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The Oxford Handbook of Military Psychology

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Michael D. Matthews

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The *Oxford Library of Psychology*, a landmark series of handbooks, is published by Oxford University Press, one of the world's oldest and most highly respected publishers, with a tradition of publishing significant books in psychology. The ambitious goal of the *Oxford Library of Psychology* is nothing less than to span a vibrant, wide-ranging field and, in so doing, to fill a clear market need.

Encompassing a comprehensive set of handbooks, organized hierarchically, the *Library* incorporates volumes at different levels, each designed to meet a distinct need. At one level is a set of handbooks designed broadly to survey the major subfields of psychology; at another are numerous handbooks that cover important current focal research and scholarly areas of psychology in depth and detail. Planned as a reflection of the dynamism of psychology, the *Library* will grow and expand as psychology itself develops, thereby highlighting significant new research that will have an impact on the field. Adding to its accessibility and ease of use, the *Library* will be published in print and, later, electronically.

The *Library* surveys psychology's principal subfields with a set of handbooks that captures the current status and future prospects of those major subdisciplines. This initial set includes handbooks of social and personality psychology, clinical psychology, counseling psychology, school psychology, educational psychology, industrial and organizational psychology, cognitive psychology, cognitive neuroscience, methods and measurements, history, neuropsychology, personality assessment, developmental psychology, and more. Each handbook undertakes to review one of psychology's major subdisciplines with breadth, comprehensiveness, and exemplary scholarship. In addition to these broadly conceived volumes, the *Library* also includes a large number of handbooks designed to explore in depth more specialized areas of scholarship and research, such as stress, health and coping, anxiety and related disorders, cognitive development, or child and adolescent assessment. In contrast to the broad coverage of the subfield handbooks, each of these latter volumes focuses on an especially productive, more highly focused line of scholarship and research. Whether at the broadest or the most specific level, however, all of the *Library* handbooks offer synthetic coverage that reviews and evaluates the relevant past and present research and anticipates research in the future. Each handbook in the *Library* includes introductory and concluding chapters written by its editor to provide a roadmap to the handbook's table of contents and to offer informed anticipations of significant future developments in that field.

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nation's and world's most productive and best-respected psychologists have agreed to edit *Library* handbooks or write authoritative chapters in their areas of expertise.

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—Peter E. Nathan,
Editor-in-Chief
Oxford Library of Psychology

ABOUT THE EDITORS

Janice H. Laurence

Janice H. Laurence is an associate professor in the College of Education at Temple University in Philadelphia. Previously, she served as the director of human resource development for the Army's Human Terrain System. From 2004 to 2007, she was the director of research and analysis within the Office of the Under Secretary of Defense (Personnel and Readiness). From 2000 to 2004, she was a research professor at the Naval Postgraduate School. Dr. Laurence spent much of her career as a social science contract researcher concentrating in the military setting. She is the past editor (and current associate editor) of the journal *Military Psychology*.

Michael D. Matthews

Michael D. Matthews is currently a professor of engineering psychology at the United States Military Academy, West Point. He served as president of the American Psychological Association's Division of Military Psychology from 2007 to 2008, and is a Templeton Foundation Senior Positive Psychology fellow. Collectively, his research interests center on soldiers' performance in combat and other dangerous contexts.

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CONTRIBUTORS

Marcelyn Atwood

Colonel, U.S. Air Force, Retired
The Crisp Atwood Group, LLC
Alexandria, Virginia

Paul Bartone

Life Sciences Directorate
Center for Technology and National
Security Policy
National Defense University
Washington, D.C.

Stephen H. Behnke

American Psychological Association
Ethics Office
Washington, D.C.

Yizhaq Benbenisty

Military Psychology Center, IDF

Uzi Ben-Shalom

Bar-Ilan University & Tactical Command
College, IDF

Bradford Booth

ICF International
Fairfax, Virginia

Lolita M. Burrell

Department of Behavioral Sciences
and Leadership
United States Military Academy
West Point, New York

Donald J. Campbell

Department of Behavioral Sciences
and Leadership
United States Military Academy
West Point, New York

Rhonda L. Cornum

Director
Comprehensive Soldier Fitness
U.S. Army
Arlington, Virginia

Britt Damon

U.S. Army Human Terrain System

Karin De Angelis

Department of Sociology
University of Maryland

Jarle Eid

Department of Psychosocial
Science
University of Bergen, Norway

Morten G. Ender

U.S. Military Academy
West Point, New York

Armando X. Estrada

Department of Psychology
Washington State University
Vancouver, Washington

Stephen L. Goldberg

U.S. Army Research Institute
for the Behavioral and Social
Sciences
Orlando, Florida

Robert Holliday

King's College London

Matthew Jakupcak

Deployment Health Services
Primary Care-Mental Health
Integration Team
VA Puget Sound Health
Care System

Aileen Kenney

Department of Operations Research
Naval Postgraduate School

Yechezkel Klar

Department of Psychology
Tel Aviv University

Gerald P. Krueger

Krueger Ergonomics Consultants
Alexandria, Virginia

Gerry Larsson

Swedish National Defense College
Karlstad, Sweden

Janice H. Laurence

Associate Professor
Adult and Organizational Development
College of Education
Temple University
Philadelphia, Pennsylvania

Suzanne Lederer

ICF International
Fairfax, Virginia

Francois Lescreve

Defense Staff, Belgium

Paul B. Lester

Director of Research & Development,
Comprehensive Soldier Fitness
U.S. Army
Arlington, Virginia

Ragnhild B. Lygre

Psychiatric Health Care for Children
and Adolescents – BUP Sentrum
Helse Bergen, Norway

Panagiotis Matsangas

Department of Operations Research
Naval Postgraduate School

Michael D. Matthews

Professor of Engineering Psychology
Department of Behavioral Sciences
and Leadership
U.S. Military Academy
West Point, New York

Montgomery McFate

U.S. Naval War College

Nita Lewis Miller

Department of Operations Research
Naval Postgraduate School
Monterey, California

Olivia Moorehead-Slaughter

American Psychological Association
Ethics Committee

Davin Pavlas

Department of Psychology, and Institute
for Simulation and Training
University of Central Florida

James J. Picano

U.S. Army Reserve

Rebecca I. Porter

Colonel, Office of the Surgeon General
U.S. Army
Falls Church, Virginia

Neal A. Puckett, Esquire

Lieutenant Colonel, U.S. Marine
Corps, Retired
Puckett & Faraj, PLLC
Alexandria, Virginia

Robert R. Roland

U.S. Army, Retired

Michael G. Rumsey

U.S. Army Research Institute
for the Behavioral and Social
Sciences

Diane M. Ryan

Department of Behavioral Sciences
and Leadership
U.S. Military Academy
West Point, New York

Eduardo Salas

Department of Psychology
University of Central Florida
Orlando, Florida

David R. Segal

Department of Sociology
University of Maryland

Marissa L. Shuffler

Department of Psychology,
and Institute for Simulation
and Training
University of Central Florida

Gretchen R. Vogelgesang

Consultant, Federal Management
Partners
Alexandria, Virginia

Amy W. Wagner

Portland Veterans Administration
Medical Center
Portland, Oregon

Thomas J. Williams

U.S. Army War College
Carlisle, Pennsylvania

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The Handbook of Military Psychology

An Introduction

Janice H. Laurence and Michael D. Matthews

Abstract

There is an important and critical link between psychology and the military. Given the relevance of the study of human behavior to the profession of arms, military psychology represents the concatenation of the numerous specialties and subfields of the discipline in the context of the military. Military psychology contributes to recruiting, training, socializing, assigning, employing, deploying, motivating, rewarding, maintaining, managing, integrating, retaining, transitioning, supporting, counseling, and healing military members. These areas are hardly distinct, and the chapters in this handbook have contents that cross these boundaries. However, the handbook's material has been organized into five sections: (1) Clinical Psychology, (2) General Psychological Contributions to Eclectic Emerging Concerns, (3) Industrial/Organizational Psychology, (4) Applied Experimental Psychology, and (5) Social Psychology.

Keywords: military psychology, clinical psychology, industrial/organizational psychology, applied experimental psychology, social psychology

The soldier above all others prays for peace, for it is the soldier who must suffer and bear the deepest wounds and scars of war.

—*Douglas MacArthur*¹

There is an important, even critical link between the discipline of psychology and the military. Given the relevance of the study of human behavior to the profession of arms, military psychology represents the concatenation of the numerous specialties and subfields of the discipline within the context of the military. Seligman and Fowler (2011, p. 82) recently reminded us that “[t]he history of American psychology has been shaped by national need. This has been true of both the science of psychology and the practice of psychology.” Indeed, the science and practice of psychology in the military have a venerable history dating back to World War I, when Yale biopsychology professor and American Psychological Association (APA) president Robert M. Yerkes led intelligence testing and clinical assessment research and development efforts (Society for Military

Psychology, 2011a; 2011b; 2011c). According to then-Major Yerkes (1918, p. 113), “it is clear that the demand for psychologists and psychological service promises, or threatens, to be overwhelmingly great.”

The demand for psychological contributions to the military led to the inclusion of the Division of Military Psychology (Division 19) among the first group of formal subdivisions within the 1945 reorganization of the American Psychological Association (APA). In 2003, Division 19 changed its name to the “Society for Military Psychology” to reflect its growing international composition. Today, the membership of Division 19 represents a cross-section of both the profession and the science of psychology, counting among its ranks clinical, industrial-organizational, experimental, engineering,

and social psychologists. Since those early days, psychology has continued to show its value to and draw inspiration from the military (Bingham, 1947; Driskell & Olmstead, 1989).

The Need for Psychology

The military is our nation's largest employer. As of fiscal year (FY) 2009, there were over 2.2 million military members (including members on active duty and those in the Reserves and National Guard: Department of Defense, 2010a). This personnel count is modest relative to the troop levels garnered before conscription (i.e., the draft) ended in 1973, but it is impressive nonetheless. Enlisted members and officers of the Army, Navy, Marine Corps, and Air Force are organized into teams and hierarchical units, not just in the modern infantry and lethal combat specialties, but also in hundreds of diverse, technologically sophisticated support and service occupations. Soldiers, sailors, Marines, and airmen serve in thousands of locations, at home and abroad, on land and at sea. They engage in or support missions that include conventional and irregular warfare, counterinsurgency, peacekeeping, humanitarian assistance, evacuation, and homeland defense. They solemnly swear to support and defend the Constitution of the United States against all enemies and to obey the orders of the President of the United States. For many, the fulfillment of this oath and dedication to duty requires multiple and extended deployments and grave risk. Sadly, over the course of the wars in Iraq and Afghanistan (from October 7, 2001, through March 7, 2011), 5,913 military members have died and 42,593 have been wounded. Given these sobering statistics and demands, our countrymen in uniform are heralded as the military's most important resource. Accordingly, the quality of life of service members and their families is a critical priority for military leadership and Department of Defense policymakers. As stated in the 2010 Quadrennial Defense Review: "Given the continuing need for substantial and sustained deployments in conflict zones, the Department must do all it can to take care of our people—physically and psychologically" (Department of Defense, 2010b, p. 16). Thus, military psychology plays a crucial role in fulfilling our nation's obligation to those who serve.

A Summary of Handbook Contents

Military psychology contributes to recruiting, training, socializing, assigning, employing, deploying, motivating, rewarding, maintaining, managing,

integrating, retaining, transitioning, supporting, counseling, and healing military members. These areas are hardly distinct, and the chapters in this handbook have contents that cross these boundaries. However, the handbook has been organized into five sections: (1) Clinical Psychology, (2) General Psychological Contributions to Eclectic Emerging Concerns, (3) Industrial/Organizational Psychology, (4) Applied Experimental Psychology, and (5) Social Psychology.

The military maintains strong clinical and health research and practice programs geared toward developing and delivering effective preventions, assessments, interventions, and treatments for traumatic experiences and the "everyday" stress of military life. The first section of the handbook (Chapters 2 through 4) is devoted to psychology's contribution in the area of mental health and fitness. Chapters 5 through 10 compose the second section, which highlights emerging concerns and brings relevant clinical and other psychological perspectives to the "front lines," in more direct support of combat and other operations. Mission-oriented military psychologists face unique ethical challenges as they contribute to military effectiveness while respecting human dignity and rights on all sides. Furthermore, as our military members are increasingly asked to engage in non-kinetic ways with people and communities within the area of operation, psychology's efforts to enhance cultural awareness and international interactions can be instrumental in building necessary partnerships and in understanding, preventing, or mitigating acts of misconduct by military forces brought on by the stress of war.

As evidenced in Chapters 11 through 15 (Section 3), psychologists have continued their work in the areas of military selection, classification, and leader development, which are core concerns for industrial/organizational (I/O) psychology. Military I/O psychologists have continued to advance psychometrics in cognitive and non-cognitive predictor and criterion domains. In addition to developments on the "I" side of I/O psychology, military psychology has advanced the understanding of leadership on the "O" side. In addition to the assessment of military suitability and leadership potential overall, military psychology has made significant contributions in assessment for high-risk jobs and understanding leadership in dangerous contexts.

Certainly, applied experimental psychology has a hand in military performance effectiveness. Section 4 of the handbook contains six chapters (16 through 21) that address key topics in this domain. The U.S.

military—the world’s largest education and training institution—has long relied on psychologists for skills-training content, techniques, systems, and strategies. Sophisticated weapons systems, platforms, and technology offer critical advantages only if they can be mastered. Thus, human physiological functioning, information processing, cognition, decision making, and so forth remain key ingredients to victory. Individual performance and drill and practice are not enough to ensure success. The military relies on teams, units, and other group structures that must be well structured, managed, and led if they are to solve problems effectively and efficiently.

Morale—the emotional bond that holds the group together and is a result of unit cohesion and esprit de corps—has been recognized as critical for combat effectiveness since World War II. The final section of this handbook (Chapters 22 through 26) addresses critical social-psychological topics. Military psychologists continue to promote social solidarity and smooth misunderstandings and tensions among diverse personnel subgroups based upon minority status, gender, and sexual orientation. Military families represent another social construction that is critical to military effectiveness. Quality of service and quality of life are critical for overall military readiness and well-being.

This *Handbook of Military Psychology* was both a pleasure and a challenge to compile. Among the challenges was deciding on which content to draw from the myriad subdisciplines within psychology. The topics included are thus extensive, but not exhaustive. Perhaps a bigger challenge was vying for the time of the contributors—busy top experts on vital topics in military psychology in a time of war and transformation.

Clearly, the military puts psychology to good use. And the relationship between the military and psychology has been mutually beneficial. For example, the military has significantly increased clinical psychologists’ understanding of stress in general, and informed modern methods of treatment. The psychometric advances made in the military setting have also been applied to the wider society. Training and human-factors research and applications in the military have applicability to the civilian sector. Despite these and other mutual contributions, some psychologists tend to distance themselves from the military (Laurence, 2007; Seligman & Fowler, 2011). Military psychologists are as diverse in their

opinions and political leanings as in the topics they study. Supporting the military’s understanding of human behavior is not tantamount to advocating war. As proud military psychologists, the editors remind you of the beginning quote and hope that military psychology helps our men and women in uniform realize the benefits and deal with the burdens of service.

Note

1 Retrieved from http://www.brainyquote.com/quotes/keywords/soldier_5.html#ixzz1GCzrfW0

References

- Bingham, W. V. (1947). Military psychology in war and peace. *Science*, *106*(2747), 155–160.
- Defense Manpower Data Center. (2011). Global war on terrorism: Casualties by military service component—active, Guard, and Reserve: October, 7, 2001, through March 7, 2011. Retrieved on March 10, 2011, from http://siadapp.dmdc.osd.mil/personnel/CASUALTY/gwot_component.pdf.
- Department of Defense. (2010a). Population representation in the military services: Fiscal Year 2009. Retrieved on March 10, 2011, from <http://prhome.defense.gov/MPP/ACCESSION%20POLICY/PopRep2009/>.
- Department of Defense. (2010b). Quadrennial Defense Review. Available at <http://www.defense.gov/qdr/qdr%20as%20of%2029jan10%201600.pdf>.
- Department of Defense. (2010). Strategic Management Plan: Fiscal Year 2011. Available at <http://dcmo.defense.gov/documents/FY-2011-SMP-dtd-12302010.pdf>.
- Department of Defense. (2010). Fiscal Year 2011 Budget Request: Washington, D.C.: Office of the Under Secretary of Defense Comptroller. Available at http://comptroller.defense.gov/defbudget/fy2011/FY2011_Budget_Request_Overview_Book.pdf.
- Driskell, J. E., & Olmstead, B. (1989). Psychology and the military: Research applications and trends. *American Psychologist*, *44*(1), 43–54.
- Laurence, J. H. (2007). Behavioral science in the military. In M. K. Welch-Ross & L. G. Fasig (Eds.), *Handbook on communicating and disseminating behavioral science* (pp. 391–405). Thousand Oaks, CA: Sage.
- Seligman, M. E. P., & Fowler, R. D. (2011). Comprehensive soldier fitness and the future of psychology. *American Psychologist*, *66*(1), 82–86.
- Society for Military Psychology. (2011a). Intelligence testing in the United States military. Retrieved March 10, 2011, from <http://www.apa.org/divisions/div19/about2divisionhistory.html>.
- Society for Military Psychology. (2011b). World War II and the birth of the Division of Military Psychology. Retrieved March 10, 2011, from <http://www.apa.org/divisions/div19/militarypsychology1.html>.
- Society for Military Psychology. (2011c). Military psychology overview. Retrieved March 10, 2011, from <http://www.apa.org/about/division/div19.aspx>
- Yerkes, R. M. (1918). Psychology in relation to the war. *Psychological Review*, *25*(2), 85–113.

Comprehensive Soldier Fitness

Why? And Why Now?

Rhonda L. Cornum *and* Paul B. Lester

Abstract

Comprehensive Soldier Fitness (CSF) is part of a long-term preventive health strategy to strengthen soldiers, their families, and army civilians, and increase readiness through a holistic program of longitudinal assessment and education. It focuses on psychological as well as physical health, using the same model that has long been accepted for physical fitness training in the Army. Comprehensive Soldier Fitness (CSF) is an education and training program for everyone; it is not a therapeutic program focused on people with particular diagnoses or disabilities. And CSF is a long-term investment strategy, not a “stand down,” “chain-teach,” or other single or annual event. Just as physical fitness is not achieved by a single visit to the gym, psychological strength is not achieved by a single class or lecture. It is achieved by learning, practicing what you have learned, seeing the results, and then learning more. The program is designed to help the large population of normal people become more resilient when faced with stressful events, by training cognitive techniques and interpersonal skills that will help them continue functioning in a turbulent world, and helping them successfully confront future challenges with a positive outlook.

Keywords: Comprehensive Soldier Fitness, emotional strength, psychological fitness, resilience, Army

Introduction

Almost a decade of war in Afghanistan and Iraq has resulted in an Army that is better equipped, better trained, and better led than any time in at least the last 60 years (Miles, 2007). But years of difficult and repeated deployments have been combined with an aggressive operational tempo, even for the soldiers and families remaining in the United States. These realities have widened the gap between the expectations of people brought up in our Western culture of comfort, and the realities of modern warfare and military service. The result was unfortunately predictable; increasing rates of drug use, alcohol abuse, indisciplines (e.g., suicide, violent crime, family violence), and psychological and physical symptoms of all sorts (Hoge, Auchterlonie, & Milliken, 2006; Kuehn, 2009; Milliken, Auchterlonie, & Hoge, 2007). These undesirable outcomes did not occur

randomly throughout the population. Young, junior soldiers are the most likely to manifest these outcomes; older, and more senior, members are relatively protected (Army G-1, personal communication, January 27, 2010). And, as shown recently by the results of the Millennium Cohort study, the negative effects of exposure to war are significantly clustered in the population of people who start out physically and psychologically less robust (LeardMann et al., 2009).

Until quite recently, the military services dealt with inappropriate behavior and behavioral health issues primarily in two ways. First, when indiscipline or a problem was noted in individuals, the Army, often with congressional pressure, responded by mandating additional training for the entire force¹. Examples of this include instituting “Trafficking in Persons” training, when a problem

with prostitution and illegal immigration was highlighted, particularly in the Balkans and Korea (Quigley, 2004). Similarly, beginning in 2007, training to increase awareness of post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI) was mandated (U.S. Department of the Army, 2007). This training was instituted in part as an effort to decrease the stigma associated with seeking psychological assistance, and in part to inform soldiers and commanders of the often-unspecified symptoms associated with these conditions. Suicide-prevention training has been required for years, and sexual assault- and sexual harassment-prevention training was revamped and reinvigorated in 2008 (U.S. Department of Defense, 2008). A potential problem with this approach is that “success” is determined by what percentage of the force received the training, but not whether the negative outcome was ameliorated, or whether a knowledge gap was closed. Compliance with the mandate was measured, not whether the mandated training was effective. For example, while 100% of the force receives training in suicide-prevention annually, and expenditures for suicide-prevention research and training have drastically climbed, so did the rate of suicide; the rate of suicides increased continuously from 2004 to 2010 (U.S. Department of the Army, 2010a). And while stigma associated with seeking mental health care declined from the mid-1990s until 2004 (when it was not a major talking point), it has not appreciably declined in the operational force since that time (U.S. Department of the Army, 2009; U.S. Department of Defense, 2005). A perhaps unintended consequence is that training requirements rarely seem to go away; additional requirements are simply added as new problems are recognized.

The second way the Department of Defense (DOD) dealt with an increase in psychological health problems was to increase screening for symptoms, and increase the number of physicians, psychologists, and social workers available to provide treatment. Instead of waiting for a soldier to manifest symptoms and electively seek treatment, the entire DOD went for an annual screening (the PHA, or Periodic Health Assessment), which emphasizes psychological symptoms (U.S. Department of Defense, 2006). For service members deploying to, or returning from, an overseas deployment, the Pre- and Post-Deployment Health Assessments (PDHAs) were mandated in 2005 (Clinton, 2001).

Later, the Post-Deployment Health Reassessment (PDHRA) was added as an additional mandatory screening, to be accomplished within six months of

returning from any deployment (Winkenwerder, 2001). These assessments comprise lists of symptoms, asking the service members to check any that they have. In some cases, the soldier is asked to identify the cause of the symptoms. When soldiers endorse a sufficient number of symptoms, a referral to a health care provider is generally initiated. These efforts were well intended. Unfortunately, they proceeded without clinical practice guidelines to ensure appropriate treatment, or a systemic evaluation of the outcomes of people who did (or did not) initiate the recommended referrals, nor did they systematically track whether or not people who checked symptoms on the surveys had a different outcome than people who did not. The result is that it remains unknown if enhanced screening, and enhanced referrals, have had a positive effect on the mental health of the population, or any other measure of effectiveness (Johnson et al, 2007; Milliken, Auchterlonic, & Hoge, 2007), although some positive evidence is beginning to emerge (Warner et al., 2011).

Early in his tenure, General George Casey, then Chief of Staff of the Army, recognized these strategies were insufficient. Disease-finding and treatment, though extremely important, is a flawed approach if the goal is increased military readiness and performance (Casey, 2011). He tasked the Army staff to devise and implement a comprehensive fitness program, aimed at increasing the psychological (and physical) health of the entire force. On October 1, 2008, the Directorate of Comprehensive Soldier Fitness (CSF) was established (Cornum, Matthews, & Seligman, 2011). The mission was simple: Develop and institute a holistic fitness program for soldiers, families, and Army civilians in order to enhance performance and build resilience. This chapter details the evolution of this program, from inception through implementation and early results, with an eye to the future.

Concept Development

The first step was recognizing that physical and psychological fitness are related. It has been suggested for years that they are inextricably linked, and the more that we learn about neurobiology, the more obvious this becomes (Holmes & Rahe, 1967; Manderscheid et al., 2010; U.S. Department of Health and Human Services, 1996, 2002; World Health Organization, 2007). To make the program to improve “total health” more manageable, CSF adopted the seven domains of health described by the World Health Organization in 1948 (World Health Organization, 1948). Of these seven (physical, social,

emotional, spiritual, family, professional, and financial), two seemed already well established in the Army. Robust programs of professional development were in place, including well documented counseling and evaluation criteria. There were accepted promotion and elimination standards; there was really no imperative to change the way “professional” fitness was being assessed or trained. Financial “fitness” is somewhat less well defined. But compensation within the DOD is determined by law; within a given rank and time in a service bracket, there is no opportunity for an individual to alter his income. Therefore, financial fitness is not emphasized in CSF, except as it applies to family strength and satisfaction. Nevertheless, until CSF was instituted, there was no mechanism to assess the entire population’s “total” fitness in the remaining five domains. Physical fitness came the closest, as the Army has been administering a physical fitness test since before World War I (U.S. War Department, 1907). But, the physical fitness test alone does not assess physical health, but rather proxy indicators of health that are quite vulnerable to debate. In terms of actual “health,” the only assessment tools being used were screening tools designed to find disease. “Absence of disease” does not define health (Manderscheid, Ryff, Freeman, et al., 2010; World Health Organization, 2007). While absence of specific diagnoses may define minimum standards of health, it does not give people tools to thrive. The goal of the Army is optimum—not just minimum—readiness and performance. A way to measure comprehensive health that included social, emotional, family and spiritual fitness was needed if the Army wanted to be able to measure improvements above the minimum.

Physical Fitness Model

Comprehensive Soldier Fitness, very simply stated, was designed to do for psychological fitness and health what the Army has done for physical fitness for many, many years (U.S. Department of the Army, 1998). The vital pillars are (a) assessment and reassessment, (b) continuous training, and (c) acceptance by the Army culture that fitness is the responsibility of the commander. How this paradigm works, and how it was used to design the CSF program, is described below.

First, there are physical (medical) standards that a prospective service member must meet in order to enlist or be commissioned as an officer. These standards are outlined in Army Regulation (AR) 40–501 (2010b). Immediately upon entering the service,

there is the initial assessment of physical fitness, called the Army Physical Fitness Test, or APFT. This test currently consists of three events: pushups, sit-ups, and a two-mile timed run. The APFT is administered multiple times during initial entry training, and is administered every six months throughout the entire career of every soldier. The APFT is age- and gender-adjusted, and scored on a 0–300 scale. “Passing” is 200, as long as one receives at least 60 points in each event. Soldiers are encouraged to improve their performance in many ways, by giving them a “badge” for achieving over 270 (U.S. Department of the Army, 2006a), commenting about their ability to “lead by example” in physical excellence on their annual evaluations and counseling, and in other ways. AR 40–501 also has standards for continued service. When a service member is injured or becomes ill, he is given a “profile,” a designation that delineates the limitations on his duties and deployment. If the condition, injury, or disease that renders him unqualified for service is permanent, the service member must either have the condition waived (and the member continued on active service), or be separated. Depending on a number of factors, the soldier can be medically retired, discharged with a separation bonus, or simply discharged, depending on the condition and the cause (U.S. Department of the Army, 1987, 2006b).

The second pillar is training, both organizational and individual. The Army has organized training programs in essentially every unit, with the aim of increasing the physical fitness of the members. Most units have daily thrice weekly physical training (PT). Additionally, many, if not most, members of the Army also have a personal physical training program. They may go to either a military or private fitness facility in the evenings or weekends, may practice “crossfit” or some other commercial program, or may do a long individual run or race on the weekends.

The last point that is vital to the success of the physical fitness program in the Army is the recognition and acceptance that the assessment of and training for physical fitness are the responsibility of the operational Army. Routine physical training; the semiannual measurement of height, weight, and body fat (if indicated); and the APFT is conducted completely by nonmedical personnel in every unit. The Army leaders, from noncommissioned officers to general officers, take the physical fitness of their subordinates as a personal responsibility and a reflection of their leadership.

The above discussion is not intended to diminish the vital importance of the Army Medical Department (AMEDD) in maintaining the health of the force. The assessments of “health” (annual periodic health assessment) are performed in two parts: first by the service member using an online survey, and then the medical system is invoked to perform the mandated hearing and dental screenings, as well as investigate any new findings the soldier disclosed. Through its Public Health Command, the AMEDD is responsible for surveillance, finding early warning signals of environmental and disease risks, and recommending mitigation strategies (U.S. Army Public Health Command [Provisional], 2011). And the medical research community is deeply involved in evaluating innovations in training, dietary supplements, and military clothing. These research efforts are incorporated into Army policies when appropriate. An example was the recognition that attempting to increase their run time and distance too fast was resulting in a very high rate of stress fractures in basic trainees. Surveillance of trends in injuries resulted in this fact’s being recognized, so the practice in basic training was altered. Regardless, commanders—not medics—are responsible for the fitness and readiness of their units and the soldiers who compose those units.

The Comprehensive Soldier Fitness Model

Comprehensive Soldier Fitness replicated the physical fitness model in almost every way. There are standards within the same medical standards regulation (AR 40–501) that delineate what psychological health histories are incompatible with military service. Following qualification, the first step is an assessment that measures emotional, social, family, and spiritual strength. Soldiers are now assessed upon entry, and will be retested annually thereafter, with the goal of holistically improving. Second, education and training modules have been, and continue to be, developed. Based on the individual soldier’s level of fitness in the four psychological domains, different training modules are recommended. Soldiers can access all of the modules virtually, making the modules equally accessible to all service components (active, National Guard, and Reserves), as well as to geographically dispersed individuals (recruiters, Reserve Officer Training Corps (OTC) detachments, etc).

Resilience training is being instituted organizationally, as formal instruction in all leadership development schools within the Army (U.S. Department

of the Army, 2010c). The ability of first-line supervisors and commanders to instill resilience in their subordinates was enhanced by instituting a Master Resilience Training (MRT) curriculum. Leaders are using their MRTs to help reinforce resilience-building concepts and practices while they are designing training and during deployments. It is essential to use the model of “soldiers teaching soldiers” in order to gain acceptance from the force that psychological strength is important, teachable, and their responsibility. To this end, the responsibility for ensuring compliance with annual assessment and resilience training was given to the commanders to implement at the unit level. The separate components of the program are discussed in more detail below.

Individual Assessment, Individual Training

Development of the Global Assessment Tool, or GAT, was recently thoroughly described by Peterson, Park, and Castro (2011). In summary, it is a short inventory that allows a soldier to assess him- or herself in four domains of psychological fitness (social, emotional, family, and spiritual). Currently comprising 105 mostly Likert-scale-type questions, the possible score is 0 to 5 in each dimension. The GAT is notable for several reasons. First, it is an inventory that allows the psychological fitness of soldiers to be plotted over time, and it describes a soldier’s areas of strength as well as areas of weakness. It is not a screening tool looking for disease or dysfunction; the GAT is used to describe degrees of health and fitness within psychological domains. The Army recognizes that populations consist of a spectrum of individuals, from the ill to the “super healthy,” with most people falling somewhere in between. It is important to focus attention on this wide middle expanse of the “spectrum of normal”; these are the soldiers who will be fighting the next war and responding to the next disaster. The Army leadership recognized that we need soldiers who are more than simply without symptoms of a diagnosis; the Army needs soldiers with the psychological assets, tools, and resources to perform optimally. The Army needs them to be as psychologically fit as possible, and has recognized both the opportunity and the responsibility to train for this, just like for physical fitness or technical proficiency.

The results of the GAT are completely confidential: no one has access to either individual answers or anyone’s results, except the individual actually taking the assessment. Confidentiality was essential in order to elicit meaningful responses from individuals.

The results are accumulated in the soldier's Fitness Tracker, a custom-designed software application that CSF developed and maintains (Fravell, Nasser, & Cornum, 2011). This tracking application enables the individual to track his own performance over time, and to see how training and experiences have affected his psychological fitness. The SFT has a compliance reporting capability that enables commanders to access compliance information within their units. Commanders cannot see any of the actual results, either individually or collectively.

Immediately upon completing the GAT, results are presented graphically back to the individual. This feedback is critical, given that it is well established that feedback is an important factor in motivating people to change their behavior (DiClemente et al., 2001). Simultaneously, links are provided to appropriate online training modules in each domain. Currently, twenty online resilience modules are available, with more under development. These recommendations are based on an algorithm in the grading mechanism, which is anticipated to become more sophisticated as the program develops, experience is gained with results, and more modules are deployed. The online training modules, as well as the determination of precisely what knowledge, skills, and behaviors are desired within each domain, are the culmination of the work of military and civilian experts in each field (Algoe & Fredrickson, 2011; Cacioppo, Reis, & Zautra, 2011; Gottman, Gottman, & Atkins, 2011; Pargament & Sweeney, 2011). Additionally, there are other resources, such as "Strong Bonds" (an Army weekend retreat program for couples) that soldiers can participate in that "count" as learning in various domains (Stanley et al., 2010). In addition, should taking the GAT result in someone's feeling an urgent need for intervention of some sort, there is also a link, www.militaryonesource.com, an online resource that can get the person to a chaplain, counselor, or behavioral health professional immediately.

Institutional Training

Recognizing that soldiers come to the Army with a wide variety of educational and life experiences, communication and coping skills, the Army is striving to fit "resilience training" into initial entry training, for both officers and enlisted personnel. Given that resilience enables people to face challenges successfully and bounce back more quickly from adversity, the earlier it can be enhanced, the better. If they can learn resilient thinking skills in initial entry training, and use them during the transformation

from civilian to soldier, they are launched on the correct trajectory. The success of teaching resilience skills during basic training was demonstrated in 2004 in the Navy (Williams et al., 2004) but there are no studies demonstrating clearly that this training will be effective in the general Army population. A recent completed randomized controlled study in the Army examined the impact of two hours of classroom resilience training in the initial week of basic training on a host of behavioral and performance outcomes (outlined in Lester et al., 2011), and analyses are ongoing. Based on some initial positive findings, the curriculum is currently being revised to spread the training over the nine weeks of basic training, and studies are in progress to determine the value of resilience training in initial entry training.

In addition to teaching some specific resilient thinking skills during initial entry, the Army has committed to educating the total force on what constitutes resilience, why it is important, and how everyone's resilience can be enhanced. There are blocks of instruction being developed, ensuring that the training is progressive and sequential as the soldiers attending the schools progress in rank. An important contribution of education during leadership schools is combating a large volume of misinformation about psychological health and disease. Some misinformation has been innocently delivered by well-intentioned but misinformed speakers; some has been promulgated by the popular media, which thrives on sensationalized news². Perhaps some is intentionally delivered as part of an information operation campaign by organizations with malign intent towards the U.S. military. Regardless of the source of misinformation, education on realistic expectations of post-traumatic stress, post-traumatic growth, normal responses to stress, and actions one can take to mitigate stress, is very important (Seligman & Fowler, 2011).

Soldiers Teaching Soldiers: Master Resilience Trainers

Noncommissioned officers (NCOs) are the backbone of the Army, whether training incoming recruits, in garrisons, or deployed fighting wars or providing humanitarian assistance (U.S. Department of the Army, 2001). Young soldiers try to emulate them; young officers learn from them; commanders depend on them. General Martin Dempsey, commander of Training and Doctrine Command, recently stated that "leader development is job number one" for the Army (Dempsey, 2009).

Noncommissioned officers are the first-line leaders in the Army: there is no group of individuals who need good resilience skills more than the NCOs. They bear the brunt of military actions, solve their own personal and professional problems, are role models and mentors to their subordinates in operational units, and teach everything, including resilient thinking skills, to soldiers in the training environment. Despite these expectations and demands, the early GAT results revealed that non-commissioned officers have the same wide spectrum of results as the junior enlisted, and only a modestly higher mean. To better prepare these important first-line leaders to be resilient and to train their subordinates, the Army instituted Master Resilience Trainers for the delivery of resiliency training within their units (Reivich, Seligman, & McBride, 2011). The MRT program has been exhaustively described and is based on the Penn Resiliency Program with input from the Walter Reed Army Institute of Research and the strong sports psychology program at the U.S. Military Academy (Adler et al., 2009; Gillham et al., 2006; Gillham et al., 2007; Seligman, Schulman, & Tryon, 2007). A mission-focused collaboration among professionals from the University of Pennsylvania, the U.S. Army's Medical Research and Materiel Command, and West Point resulted in a course that has received overwhelming endorsement from soldiers who have participated, and from commanders who have received these individuals back into their units. The ten-day program teaches vital thinking skills, enhanced communication skills, military-specific coping strategies, and the rudiments of sports psychology. Half of the course is devoted to teaching the skills themselves, the other half to how to impart them. At the end of the

course, the MRTs are expected to live the skills they have been taught, use the skills during formal and informal counseling, and teach these skills to subordinates. In addition, MRTs are expected to teach the skills during periodic, structured courses identified on unit training calendars, and to use specific deployment POIs (programs of instructions) based on rotation schedules. Lastly, MRTs serve as the commander's advisor regarding resilience and CSF-related issues, and know when to refer soldiers for professional counseling.

The Program to Date

Since the inception of the program, a lot has been done, and even more remains to be done. Early results of the GAT, comprising over 400,000 soldiers, show that the mean and distribution of all the fitness scores were skewed "to the right," as shown in Figure 2.1 for "emotional fitness." This was expected: most soldiers are doing well by any measure, especially given that the population is preselected for physical and psychological health (Christeson, Taggart, & Messner-Zidell, 2009; Smith et al., 2007). Results showed few gender differences, and service component (active, National Guard, or Reserve) did not make a meaningful difference (among means, less than 5%). The slightly higher mean scores of the two reserve components is likely to reflect the older average age, and increased "dwell," or time between deployments, of the reserve components.

With increasing military rank, the means of all measures of psychosocial fitness tended to be slightly higher. Until the GAT has been followed longitudinally, it will remain unknown if the increasing score with increasing rank represents the effects of the

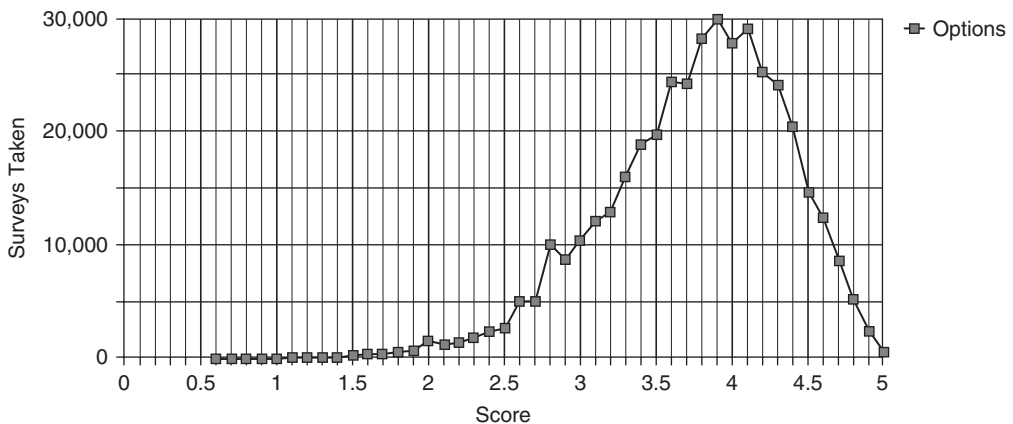


Fig. 2.1 GAT results for "Emotional Fitness".

“up-or-out policy” in the Army (i.e., Do psychologically stronger people get promoted at a different rate, or do they elect to stay longer?), or if it simply represents maturing of people’s coping, decision making, and communication skills. Regardless, there was an almost identical, and very wide, spectrum of variation within each rank, from Private First Class to General Officer. The very low rates of negative outcomes in the higher ranks suggest that they have developed adequate coping skills and manifest good performance regardless of their psychological strengths or weaknesses, but the rates also suggest that education and training has the potential to be beneficial at all age and grade levels.

The effects of institutional resilience training, individual modules, and having MRTs in units is unknown so far; the program is too new. However, the leadership of the Army wants to preclude continuing programs without evidence of efficacy from now into the future. Therefore, a scientifically robust assessment of CSF as a whole, and of its individual components, is ongoing as the program rolls out. The Army Inspector General, as well as the RAND Corporation, has also been tasked to evaluate the CSF program in the next year.

Future Directions

Although a great deal was accomplished in the first 18 months after CSF was established, there is much that can, and will, be added. The Army decided not to wait until the “perfect” program was available; in this fluid and highly complex environment, the program was considered too important to delay. As the Secretary of Defense said in the fall of 2009, “the 75 percent solution fielded in months is often far better than the 99 percent solution that might take years” (Gates, 2009). Implementation of CSF was begun as soon as possible, with full expectation that the program would continue to grow and evolve as time went on. The following seven issues have been identified as “must do,” and are at varying stages of development and accomplishment.

As the Comprehensive Soldier Fitness program was being designed and implemented, it became obvious that soldiers’ families needed to be included. As soldiers attended the MRT course, they immediately gave the feedback that we needed to find a way to include families. Family members are not preselected by the Army as soldiers are, and are coming from an even broader “spectrum of normal” than what the Army is drawing soldiers from. The stresses on families left behind during deployments are different from what the soldier faces, but they may be

no less significant (Mansfield et al., 2010; Wong & Gerras, 2010). Studies with children of military families are showing that it is not simply deployment that affects kids, but a complex interaction of deployment, the mental health of the caregiver, and even the societal approval of the military action combined that affect children of military parents (Wong & Gerras, 2010). So strengthening the family member left at home could only be helpful. A “family” GAT, designed for adults, was developed and began to be made available in 2010. It is very similar to the “soldier” version, but without the “unit,” “wartime mission” and “Army values” language of the original. The Family GAT, and the follow-on education and training modules, are available to all adult family members, as well as others with an Army Knowledge Online account. In addition, there is collaboration among the CSF and Public Health Command to make resilience training one of the offerings at the Fitness Centers, by having some of their civilian staff attend MRT training.

An important aspect of psychological health that requires greater attention is the potential for post-traumatic growth (PTG). A recent meta-analysis of over 100 PTG studies shows that there are several psychological strengths associated with greater likelihood of developing PTG (Prati & Pietrantonio, 2009). Essentially, all of the attributes and thinking skills taught in the Master Resilience Training are the same skills that were shown to increase the likelihood of experiencing PTG following a significant adverse event. Comprehensive Soldier Fitness is only in the infancy of specifically teaching people about PTG and ways to increase the likelihood of experiencing it, and our team is currently analyzing data that may suggest that the training is effective. The Army has enlisted the input of the most knowledgeable people in the field to assist with identifying the attributes, and ways to instill them, with the goal of giving soldiers and their families the greatest possibility of experiencing post-traumatic growth following significantly adverse events (Tedeschi & McNally, 2011).

Comprehensive Fitness for Civilians is a work in progress. With ever increasing numbers of civilians being deployed, and our increasing dependence on the civilian workforce, the need to increase the resilience of the civilian workforce is becoming obvious. There are significant challenges to deploying an assessment and training program for a civilian workforce, not the least of which are the very different laws and regulations that cover Department of

Army Civilians (DA Civilians) and contractors. The access that civilians may, or may not, have to the military computer network makes this a challenge. While the work they do may in some cases be indistinguishable, the laws governing supervisory authority, benefits, and training are very different for soldiers, DA Civilians, and contractors. A civilian assessment has been devised, and individual training can be made available, but the implementation of “Civilian Strong” has only just begun.

One of the top priorities of Chairman of the Joint Chiefs Admiral Mullen is the “Health of the Force” (Wilson, 2010). Comprehensive Soldier Fitness is a program that could easily be adapted and adopted by other DOD agencies. CSF scientific staff members have attended several joint conferences and have shared program material with joint agencies. Additionally, CSF scientific staff members recently contributed to a soon-to-be-published Chairman to the Joint Chiefs of Staff Instruction (CJCSI) document that will target Total Military Fitness. Several Air Force personnel are being trained every month as MRTs, and the Marines are evaluating the potential to adapt CSF for their use.

In the future, the Army plans to deliver the results of the GAT with more descriptive information than the current, bar graph only, format. Feedback from many soldiers who have taken the GAT is that they want to see where they fall in the “spectrum of normal,” compared to others of the same demographic characteristics, and compared to the Army as a whole. As discussed by Peterson et al., it is also possible to provide a narrative description of the greater and lesser psychological strengths revealed by the responses.

The currently measured parameters of height, weight, and APFT scores are indicators of physical health, but these are insufficient to adequately gauge an individual’s physical health. There are other indicators of health, such as blood pressure, tobacco use, blood glucose, and plasma lipids that are known to be associated with morbidity and mortality. These are known to be important, but suboptimal values of these indicators are asymptomatic, often for many years, while their effect on the person’s health works to reduce their longevity and health. Comprehensive Soldier Fitness is working with the Army Medical Department’s Public Health Command to integrate key indicators of soldiers’ physical health into a grade, similar to the emotional, social, spiritual, and family feedback that people now get after taking the GAT. In any given year, not every soldier has each of these measurements done (except height, weight,

and APFT score). The soldier Fitness Tracker will use whatever information is available that year, and normalize the results to the same 0–5 score for the physical domain as is currently done for the four other domains of health.

In addition to simply delivering the GAT and the training modules, and tracking the soldier’s progress at the individual level, the SFT software can be developed to integrate GAT results with other types of training; for example, with the Client Tracking System of Army Community Service, or the Digital Training Management System within the Army operations directorate (G-3/5/7). This would be useful if the Army was interested in how the other types of training or educational programs affect the domains of health. In the future, the Army leadership could examine the relationships between comprehensive health and the myriad well-being indicators collected by the Army G-1. This analysis at the total Army level will enable the Army to determine the effects of the training and interventions it provides. It should be used in the future to help determine what services should be maintained, expanded, or eliminated.

Conclusions

Comprehensive Soldier Fitness represents the Army’s effort to improve each individual’s ability to deal successfully with the personal and professional stresses, and take greater advantage of the opportunities associated with service in the modern military. There is recognition at every level of leadership that we are asking more and more from our military men and women and their families. We expect them to be ready to deploy to austere, dangerous environments, to perform difficult and often ambiguous missions, and to do it over and over again. We expect families to continue to function successfully despite the long hours, and often unanticipated and lengthy deployments, of their loved ones. It is our responsibility to prepare each of them, as well as possible, to be able to accomplish and take pride in their military service, and return to reintegrate into positive relationships and communities. The Army launched the “Army Strong” campaign in 2006. In reality, the CSF program seeks to operationalize the “Army Strong” campaign. It seeks to educate soldiers, enabling them to overcome hardships and adverse events, bounce back, and grow stronger in the process. The end state of CSF is a fitter, more resilient, and readier Army, comprising individuals with “strong minds and strong bodies.”

Notes

1 As opposed to simply treating, or punishing, individuals manifesting the problem.

2 Example: when headline reads “30–40% of Soldiers return from Iraq with symptoms of Post Traumatic Stress Disorder.” That may well be true; *symptoms* of PTSD are non specific, and often transient. An analogy would be: people who return with a headache are displaying symptoms a brain tumor, but certainly most people with a headache do not have that diagnosis.

References

- Adler, Amy B., Bliese, Paul D., McGurk, Dennis, et al. (2009). Battlemind debriefing and battlemind training as early interventions with soldiers returning from Iraq: Randomization by platoon. *Journal of Consulting and Clinical Psychology, 77*(5), 928–940.
- Algoe, S. B., & Fredrickson, B.L. (2011). Emotional fitness and the movement of affective science from lab to field. *American Psychologist, 66*(1), 35–42. doi: 10.1037/a0021720
- Cacioppo, J., Reis, H. T., & Zautra, A. J. (2011). Social resilience: The value of social fitness with an application to the military. *American Psychologist, 66*(1), 43–51. doi: 10.1037/a0021419
- Casey, G. (2011). Comprehensive Soldier Fitness: The vision of psychological resilience in the U.S. Army. *American Psychologist, 66*(1), 1–3. doi: 10.1037/a0021930
- Christeson, W., Taggart, A. D., & Messner-Zidell, S. (2009). Ready, willing and unable to serve: 75 percent of young adults cannot join the military. Retrieved on January 25, 2010, from <http://cdn.missionreadiness.org/NATEE1109.pdf>.
- Clinton, J. J. (2001, October 25). Updated policy for pre- and post-deployment health assessments and blood samples. Retrieved January 23, 2011, from http://www.tricare.mil/policy/ha01pol/01_017.pdf
- Cornum, R., Matthews, M., & Seligman, M. E. P. (2011). Comprehensive Soldier Fitness: Building resilience in a challenging institutional context. *American Psychologist, 66*(1), 4–9. doi: 10.1037/a0021420
- Dempsey, M. (2009, April 17). General Dempsey speech at the George C. Marshall Army ROTC seminar, Lexington, VA. Retrieved on January 25, 2011, from <http://www-tradoc.army.mil/pao/Speeches/Gen%20Dempsey%202008-09/MarshallROTCAward041709.html>
- DiClemente, C. C., Marinilli, A. S., Singh, M., & Bellino, L. E. (2001). The role of feedback in the process of health behavior change. *American Journal of Health Behavior, 25*, 217–227.
- Fravell, M., Nasser, K., & Cornum, R. (2011). The soldier Fitness Tracker: Global delivery of Comprehensive Soldier Fitness. *American Psychologist, 66*(1), 73–76. doi: 10.1037/a0021632
- Gates, R. M. (2009). Speech delivered on October 5 to the Association of the United States Army (AUSA). Retrieved on January 25, 2011, from <http://www.defense.gov/speeches/speech.aspx?speechid=1383>.
- Gillham, J. E., Hamilton, J., Freres, D. R., Patton, K., & Gallop, R. (2006). Preventing depression among early adolescents in the primary care setting: A randomized controlled study of the Penn Resiliency Program. *Journal of Abnormal Child Psychology, 34*, 203–219.
- Gillham, J. E., Reivich, K. J., Freres, D. R., Chaplin, T. M., Shatté, A. J., Samuels, B., et al. (2007). School-based prevention of depressive symptoms: A randomized controlled study of the effectiveness and specificity of the Penn Resiliency Program. *Journal of Consulting and Clinical Psychology, 75*, 9–19.
- Gottman, J. M., Gottman, J. S., & Atkins, C. (2011). The Comprehensive Soldier Fitness Program: Family skills component. *American Psychologist, 66*(1), 52–57. doi: 10.1037/a0021706
- Hoge, C. W., Auchterlonie, J. L., Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *Journal of the American Medical Association, 295*, 1023–1032.
- Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research, 11*(2), 213–221.
- Johnson, S. J., Sherman, M. D., Hoffman, J. S., James, L. C., Johnson, P. L., Lochman, J. E., et al. (2007). The psychological needs of U.S. military service members and their families: A preliminary report. The American Psychological Association’s Presidential Task Force on Military Deployment Services for Youth, Families and Service Members. Retrieved on January 23, 2011, from <http://www.ptsd.ne.gov/publications/military-deployment-task-force-report.pdf>.
- Kuehn, B. M. (2009). Soldier suicide rates continue to rise. *Journal of the American Medical Association, 301*, 1111–1113.
- LeardMann, C., Smith, T. C., Smith, B., Wells, T. S., Ryan, M., and the Millennium Cohort Study Team. (2009). Baseline self-reported functional health and vulnerability to post-traumatic stress disorder after combat deployment: Prospective U.S. military cohort study. *British Medical Journal, 338*, b1273.
- Lester, P. B., McBride, S., Bliese, P. D., & Adler, A. B. (2011). Bringing science to bear: An empirical assessment of the Comprehensive Soldier Fitness program. *American Psychologist, 66*(1), 77–81. doi: 10.1037/a0022083
- Manderscheid, R. W., Ryff, C. D., Freeman, E. J., et al. (2010). Evolving definitions of mental illness and wellness. *Preventing Chronic Disease, 7*(1), 1–6.
- Mansfield, A. J., Kaufman, J. S., Marshall, S. W. et al. (2010). Deployment and the use of mental health services among U.S. Army wives. *New England Journal of Medicine, 362*(2), 101–109.
- Miles, D. (2007, Sept. 26). Army leaders urge congressional support to meet current, future demands. *American Forces Press Service*. Retrieved on January 25, 2011, from <http://www.globalsecurity.org/military/library/news/2007/09/mil-070926-afps05.htm>.
- Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *Journal of the American Medical Association, 298*, 2141–2148.
- Pargament, K. I., & Sweeney, P. J. (2011). Building spiritual fitness in the Army: An innovative approach to a vital aspect of human development. *American Psychologist, 66*(1), 58–64. doi: 10.1037/a0021657
- Peterson, C., Park, N., & Castro, C. (2011). Assessment for the U.S. Army Comprehensive Soldier Fitness program: The Global Assessment Tool. *American Psychologist, 66*(1), 10–18. doi: 10.1080/17439760500372739
- Prati, G., & Pietrantonio, L. (2009). Optimism, social support, and coping strategies as factors contributing to post-traumatic

- growth: A meta-analysis. *Journal of Loss and Trauma*, 14(5), 364–388.
- Quigley, S. L. (2004, Sept. 21). DOD fights human trafficking with training, awareness. *American Forces Press Service*. Retrieved January 22, 2011, from <http://www.defense.gov/news/newsarticle.aspx?id=25245>.
- Reivich, K., Seligman, M. E. P., & McBride, S. (2011). Master Resilience Training in the U.S. Army. *American Psychologist*, 66(1), 25–34. doi: 10.1037/a0021897
- Seligman, M. E. P. & Fowler, R. D. (2011). Comprehensive Soldier Fitness and the future of psychology. *American Psychologist*, 66(1), 82–86. doi: 10.1037/a0021898
- Seligman, M. E. P., Schulman, P., & Tryon, A. M. (2007). Group prevention of depression and anxiety symptoms. *Behavior Research and Therapy*, 45, 1111–1126.
- Smith, T. C., Zamorski, M., Smith, B., Riddle, J. R., LeardMann, C. A., Wells T. S., et al. (2007). The physical and mental health of a large military cohort: Baseline functional health status of the Millennium Cohort. *BMC Public Health*, 7, 340.
- Stanley, S. M., Allen, E. S., Markman, H. J., Rhoades, G. K., & Prentice, D. (2010). Decreasing divorce in Army couples: Results from a randomized clinical trial using PREP for Strong Bonds. *Journal of Couple and Relationship Therapy*, 9, 149–160.
- Tedeschi, R., & McNally, R. (2011). Can we facilitate post-traumatic growth in combat veterans? *American Psychologist*, 66(1), 19–24. doi: 10.1037/a0021896
- U.S. Army Public Health Command (Provisional). (2011). Mission statement. Retrieved on January 24, 2011, from <http://phc.amedd.army.mil/organization/Pages/default.aspx>.
- U.S. Department of the Army. (1987). Army Regulation (AR) 635–10: Processing personnel for separation. Retrieved on January 24, 2011, from http://armypubs.army.mil/epubs/pdf/R635_10.PDF
- U.S. Department of the Army. (1998). Army Field Manual (FM) 21–20: Army physical fitness training. Retrieved on January 24, 2011, from http://usmilitary.about.com/gi/o.htm?zi=1XJ&zTi=1&sdn=usmilitary&cdn=careers&tm=4&gps=81_189_1260_921&f=10&su=p284.9.336.ip_p554.18.336.ip_&tt=2&bt=1&bts=1&st=17&zu=http%3A//www.stevespages.com/page7c.htm.
- U.S. Department of the Army. (2001). Field Manual (FM) 7–22.7: The Army noncommissioned officer guide. Retrieved January 24, 2011, from <http://www.hqusareur.army.mil/NCOoutlook/Documents/FM%207-22-7.pdf>.
- U.S. Department of the Army. (2006a). Army Regulation (AR) 600–8-22: Military awards. Retrieved on January 24, 2011, from http://armypubs.army.mil/epubs/pdf/R600_8_22.pdf.
- U.S. Department of the Army. (2006b). Army Regulation (AR) 635–40: Physical evaluation for retention, retirement, or separation. Retrieved on January 24, 2011, from http://armypubs.army.mil/epubs/pdf/R635_40.PDF.
- U.S. Department of the Army. (2007, July 11). ALARACT 153/2007 Announcement of Army mild traumatic brain injury (MTBI)/post-traumatic stress disorder (PTSD) awareness and response program. Retrieved January 22, 2011, from http://www.pdhealth.mil/downloads/ALARACT_153-2007_ANNOUNCEMENT.pdf.
- U.S. Department of the Army. (2009). Mental Health Advisory Team Report VI: Operation Enduring Freedom. Retrieved February 9, 2010, from http://www.armymedicine.army.mil/reports/mhat/mhat_vi/mhat-vi.cfm.
- U.S. Department of the Army. (2010a). Army health promotion, risk reduction, suicide prevention report 2010. Retrieved January 22, 2011, from http://www.armyg1.army.mil/hr/suicide/docs/Commanders%20Tool%20Kit/HPRRSP_Report_2010_v00.pdf.
- U.S. Department of the Army. (2010b). Army Regulation (AR) 40–501: Standards of medical fitness. Retrieved on January 24, 2011, from http://armypubs.army.mil/epubs/pdf/r40_501.pdf.
- U.S. Department of the Army. (2010c). All Army Activities (ALARACT) 097/2010: Comprehensive Soldier Fitness. Retrieved on January 24, 2011, from http://www.25idl.army.mil/PT/ALARACT%202010/ALARACT_097_2010_COMPREHENSIVE_SOLDIER_FITNESS_EXECUTION_ORDER.pdf.
- U.S. Department of Defense. (2005). Department of Defense survey of health-related behaviors among active duty military personnel. Retrieved January 11, 2011, from http://www.ha.osd.mil/special_reports/2005_Health_Behaviors_Survey_1-07.pdf.
- U.S. Department of Defense. (2006, Jan. 3). Department of Defense Instruction Number 6025.19: Individual Medical Readiness (IMR). Retrieved January 23, 2011, from <http://www.dtic.mil/whs/directives/corres/pdf/602519p.pdf>.
- U.S. Department of Defense. (2008, Nov. 7). Department of Defense directive for the sexual assault prevention and response (SAPR) program. Retrieved January 22, 2011, from www.sapr.mil
- U.S. Department of Health and Human Services. (1996). Guide to clinical preventive services. Retrieved on January 23, 2011, from <http://odphp.osophs.dhhs.gov/pubs/guidecps/PDF/Frontmtr.PDF>.
- U.S. Department of Health and Human Services. (2002, June 20). Physical activity fundamental to preventing disease. Retrieved on January 23, 2011, from <http://aspe.hhs.gov/health/reports/physicalactivity/physicalactivity.pdf>.
- U.S. War Department. (1907, Dec. 4). President Theodore Roosevelt's guidelines to the Secretary of War for an officer physical fitness test, published for Army dissemination. General Order no. 240, Washington, D.C.
- Warner, C. H., Appenzeller, G. N., Parker, J. R., Warner, C. M., & Hoge, C. W. (2011). Effectiveness of mental health screening and coordination of in-theater care prior to deployment to Iraq: A cohort study. *American Journal of Psychiatry* 168(4), 378–385.
- Williams, R. A., Hagerty, B. M., Yousha, S. M., Horrocks, J., Hoyle, K. S., & Liu, D. (2004). Psychosocial effects of the BOOT STRAP intervention in Navy recruits. *Military Medicine*, 169(10), 814–820.
- Wilson, E. (2010, Jan. 25). Mullen: Health of force, families vital to success. *American Forces Press Service*. Retrieved on January 25, 2011, from <http://www.ng.mil/news/archives/2010/01/012610-Health.aspx>.
- Winkenwerder, W. (2001, Dec. 7). Implementation of Department of Defense/Veteran Affairs post-deployment health evaluation and management clinical practice guideline. Retrieved January 23, 2011, from http://www.pdhealth.mil/guidelines/downloads/view/1/1_HA_Mem_Merged.pdf.
- Wong, L. & Gerras, S. (2010). The Effects of Multiple Deployments on Army Adolescents. Retrieved on January 25, 2011,

from <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=962>

World Health Organization. (1948). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference, New York, June 19–22, 1946, and entered into force on April 7, 1948. Retrieved on

January 23, 2011, from http://whqlibdoc.who.int/hist/chronicles/chronicle_1947.pdf.

World Health Organization. (2007). Strengthening mental health promotion: Fact Sheet 220. Retrieved on January 23, 2011, from <https://apps.who.int/inf-fs/en/fact220.html>.

Combat-Related Stress Reactions Among U.S. Veterans of Wartime Service

Amy W. Wagner and Matthew Jakupcak

Abstract

Although many military personnel and veterans demonstrate resilience and growth following high-stress military operations, a sizeable proportion experience a range of mental health and adjustment difficulties during their service and post-deployment. This chapter reviews the current literature on the most common mental health difficulties experienced by present-day U.S. military and veteran populations exposed to combat, with an emphasis on post-traumatic stress disorder (PTSD) and suicide. Attention is given to factors related to the development and maintenance of these difficulties and evidence-based practices for the treatment of these disorders. We conclude with a brief discussion of barriers to treatment, innovative strategies to address those barriers, and recommendations to improve treatment and readjustment for those who have served in high-stress military operations.

Keywords: PTSD, mental health, suicide, war, veterans

Although many military personnel and veterans demonstrate resilience and growth following high-stress military operations, a sizeable proportion experience a range of mental health and adjustment difficulties, during service and post-deployment. This chapter reviews the current literature on the most common mental health difficulties experienced by present-day U.S. military and veteran populations exposed to combat, with an emphasis on post-traumatic stress disorder (PTSD) and suicide. Attention is given to factors related to the development and maintenance of these difficulties and evidence-based practices for the treatment of these disorders. We conclude with a brief discussion of barriers to treatment and innovative strategies to address these barriers.

Historical and Contextual Perspective

High-stress military operations such as wartime service can have debilitating psychological effects (Hyams, Wignall, & Roswell, 1996). There is historical evidence of wartime stress reactions, beginning

with descriptions of the “irritable heart” symptom observed among U.S. Civil War soldiers. During World War I, “breaking down” in battle or appearing anxious, dazed, detached, or easily startled, was referred to as “effort syndrome,” “shell shock,” or “trench neurosis.” During World War II and the Korean War, the terms “battle fatigue,” “combat exhaustion,” or “operational fatigue” were used to describe similar acute combat stress reactions. Also observed in military personnel and veterans of the Vietnam War, these constellations of stress reactions were initially dubbed the “Vietnam syndrome” and later recognized as post-traumatic stress disorder (PTSD). PTSD was introduced in the third edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-III; 1980). Currently, the DSM-IV (2000) defines PTSD as an anxiety disorder characterized by exposure to a traumatic event with enduring and significant re-experiencing of symptoms, avoidance of stimuli associated with the trauma, and problems attributable to hyperarousal (Table 3.1). A wide range of events that occur in the course of

Table 3.1 DSM-IV Diagnostic criteria for PTSD

Criterion A: Stressor

The person has been exposed to a traumatic event in which both of the following have been present:

1. The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.
2. The person's response involved intense fear, helplessness, or horror.

Criterion B: Intrusive Recollection

The traumatic event is persistently re-experienced in at least *one* of the following ways:

1. Recurrent and intrusive distressing recollections of the event (images, thoughts, or perceptions). Recurrent distressing dreams of the event. Note: in children, there may be frightening dreams without recognizable content
2. Acting or feeling as if the traumatic event were recurring (e.g., flashbacks)
3. Intense psychological distress at exposure to internal or external cues of the traumatic event
4. Physiological reactivity upon exposure to internal or external cues of the traumatic event

Criterion C: Avoidance/Numbing

Persistent avoidance of stimuli associated with the trauma, and numbing of general responsiveness, as indicated by at least *three* of the following:

1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. Efforts to avoid activities, places, or people that arouse recollections of the trauma
3. Inability to recall an important aspect of the trauma
4. Markedly diminished interest or participation in significant activities
5. Feeling of detachment or estrangement from others
6. Restricted range of affect (e.g., unable to have loving feelings)
7. Sense of foreshortened future

Criterion D: Hyper-arousal

Persistent symptoms of increasing arousal, indicated by at least *two* of the following:

1. Difficulty falling or staying asleep
2. Irritability or outbursts of anger
3. Difficulty concentrating
4. Hyper-vigilance
5. Exaggerated startle response

Criterion E: Duration

Duration of symptoms is more than one month

Criterion F: Functional Impairment

The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

wartime service can be experienced as traumatic, according to the DSM-IV criterion A, including (but not limited to) being a perceived target of attack (threat of physical injury or death); observing, participating in, or hearing about the injury or killing of others, sexual assault, accidents that result in serious injury or death, and even natural disasters. Proposed changes to PTSD diagnostic criteria for the upcoming DMS-V include the separation of the avoidance cluster into discrete symptom clusters that distinguish behavioral avoidance symptoms and negative mood alterations (e.g., emotional numbing, persistent guilt, or negative self-evaluation).

Contemporary terms such as “combat stress reaction,” “combat operational stress,” “combat operational stress reaction” and “combat stress” are still commonly used in combat and military settings rather than the diagnostic label of PTSD (Campise, Geller, & Campise, 2006). The various terms used to describe stress reactions to military service during times of war is perhaps reflective of the cultural and contextual differences that exist between military and civilian environments. For example, recent research indicates that many military personnel exposed to high-stress environments such as combat may not report feeling “fear, helplessness, or horror,” the DSM-IV criterion required in the definition of the traumatic exposure that precipitates PTSD; yet military personnel may still meet the remaining criteria for PTSD (Adler et al., 2008). Also, behaviors considered functional in a high-stress military context, such as hypervigilance, may become a problem in a civilian context; therefore, only becoming a sign of “disorder” as the context of the stress response changes. It is important to note that these differences in culture and context may inadvertently increase stigma for enduring mental health difficulties and interfere with effective treatment-seeking post-deployment.

The scope of this chapter includes war-related mental health problems with a particular emphasis on PTSD (as defined at the time of the study) and suicide. Limiting the focus to PTSD and suicide is based on the prevalence and impact of these problems and was necessary for the scope of this chapter. However, this emphasis does obscure the overall impact of serving in a war zone on mental health as well as on social and occupational functioning; the reader is encouraged to seek additional resources for a comprehensive understanding of the personal and societal effects of war-zone exposure. We have chosen to widen the scope of the chapter to U.S. service members who deployed to Vietnam,

Gulf War I, and the current wars in Iraq and Afghanistan, as the majority of research to date is specific to these cohorts.

Prevalence of Mental Health Problems Across Conflicts

VIETNAM WAR

The National Vietnam Veterans Readjustment Study (NVVRS; Kulka, et al, 1990) is a population-based study that utilized *clinical interviews*, considered the gold standard of assessment in epidemiological research (Ramchand et al., 2008) to examine mental health problems among Vietnam veterans. Between November, 1986, and February, 1988, national samples of male and female veterans who served in Vietnam, Vietnam-era veterans (who did not serve in Vietnam directly), and a matched community sample underwent thorough diagnostic interviews for lifetime and current (past six months) rates of major psychiatric disorders (Jordan et al., 1991). Overall, there were few differences in rates of psychiatric disorders between veterans who served in Vietnam and those who served elsewhere during that period, and the majority did not meet criteria for any psychiatric diagnosis (Jordan et al., 1991; Schlenger et al., 1992). However, there were notable exceptions.

PTSD, in particular, was found to be more prevalent for theater veterans, and this held true for the population as a whole as well as for subgroups. For men, the rate of current PTSD was 15.2%, significantly higher than that found for both Vietnam-era veterans (2.5%) and civilians (1.2%). The lifetime rate of PTSD among male theater veterans was 30.9%. Rates were similar among female veterans of Vietnam (current and lifetime rates were 8.5% and 26.9%, respectively), suggesting that war zone service is sufficient to elevate rates of PTSD, regardless of whether one is involved in direct combat operations (women primarily served in support roles such as nursing). Furthermore, rates of current major depressive episodes were higher among those who served in theater compared to era veterans and civilians (for men, 2.8% vs. 5% vs. 4%; for women, 4.3%, vs. 1.4% vs. 8%). Female veterans who served in theater were also found to have higher rates of “any” current psychiatric disorder when disorders were combined (10.1% vs. 5.4% vs. 5.9%). Minority groups were found to have higher rates of PTSD than whites, with rates highest among Hispanics (Schlenger et al., 1992). Hispanic veterans were also more likely to meet criteria for lifetime alcohol abuse and dependence and generalized anxiety

disorder compared to whites or blacks (Jordan et al., 1991).

Level of combat stress was found to be a strong predictor of mental health problems (Jordan et al., 1991; Schlenger et al., 1992). Jordan and colleagues (1991) conducted an analysis of NVVRS data that included all psychiatric diagnoses *except* PTSD. Among male veterans with high war-zone stress exposure, 63% had at least one lifetime psychiatric diagnosis (of nine assessed, not including PTSD), compared to 45% with low to moderate stress exposure; and 30% had a least one current diagnosis, compared to 13% of those with low to moderate stress exposure); in addition, male veterans with high war-zone stress were likelier to meet lifetime criteria for most of the diagnoses assessed compared to those with low war-zone stress. Examining PTSD alone, Schlenger and colleagues (1992) reported 36% of men exposed to high combat stress met criteria for current PTSD, compared to 8% with low to moderate stress (Schlenger et al., 1992). Patterns were similar (though rates were generally lower) for female veterans.

Dohrenwend and colleagues (2006), noting changes in the DSM since the 3rd edition, as well as inconsistencies between PTSD rates and the number of veterans who served in combat roles, conducted a reevaluation of the NVVRS data utilizing additional sources of data to evaluate PTSD criteria and exposure to war-zone stressors. Findings indicated lower rates of current and lifetime PTSD compared to the original NVVRS reports (9.1% and 18.7%), although these rates remained significantly higher than rates in the general population, with higher rates of current and lifetime PTSD observed among veterans with the highest levels of war-zone stress. The results of the original NVVRS study and the reevaluation study suggest that, although there has been a significant mental health toll of war on many veterans, the majority of Vietnam-era veterans have not developed war-related PTSD, and approximately half of those with PTSD symptoms experience significant reductions or complete remissions over time.

The Vietnam Experiences Study (VES) was conducted by the Centers for Disease Control in 1988. Participants were all male U.S. Army veterans randomly selected from the larger population of Army veterans who served during the Vietnam War period. Like the NVVRS, the sample included both those who served in Vietnam (Vietnam theater) and a sample who served elsewhere during the same period (Vietnam era). In 1985 and 1986, a random

subsample of the original sample (2,490 Vietnam-theater and 1,972 Vietnam-era veterans) participated in an in-person interview that included the Diagnostic Interview Schedule (based on DSM-III criteria for psychological disorders). A number of disorders were found to be more prevalent currently (past month) among the theater veterans, including major depression (4.5% vs. 2.3%), generalized anxiety (4.9% vs. 3.2%) and alcohol abuse or dependence (13.7% vs. 9.2%). Current and lifetime rates of combat-related PTSD were evaluated for theater veterans only; 2.2% met criteria for PTSD in the past month, and 14.7% met the criteria at any point during or after service. Rates of PTSD varied according to military occupational specialty (MOS). Those with a tactical MOS were approximately twice as likely to meet criteria for either current or past PTSD. Furthermore, of those with current PTSD, comorbidity with other disorders was common—66% also met criteria for major depression or generalized anxiety and 39% met criteria for alcohol abuse or dependence.

Thompson, Gottesman, and Zalewski (2006) conducted a reevaluation of both the original NVVRS study and the VES study in an attempt to reconcile the discrepancies in prevalence estimates of PTSD in the Vietnam veteran population. They determined that discrepancies were attributable to several factors, including differences in sensitivity and specificity in the measures used between the studies (the NVVRS used more sensitive methodology, including higher cutoff scores on measures, multiple measures, and a six-month time frame; while the VES used a more specific approach, including lower cutoff scores on their measure, a single measure, and a one-month time frame). Using uniform diagnostic criteria based on the DSM-III-R (1987) they reported estimates of current PTSD for the NVVRS and VES studies to be 2.9% and 2.5%, respectively, based on both a narrow and a specific set of criteria, and 15.8% and 12.2%, based on broader and more sensitive criteria.

In summary, the NVVRS, VES, and reevaluations of these studies generally indicate that the vast majority of military personnel who have served in the Vietnam War have not met criteria for psychiatric disorders, although service in the Vietnam War is associated with an increased risk of developing certain disorders such as PTSD and depression (with some indication of increased risk for generalized anxiety and alcohol-use disorders). PTSD has been the most common psychiatric disorder reported

among Vietnam veterans and is commonly associated with the presence of other psychiatric disorders as well. Certain subgroups of Vietnam veterans appear more susceptible to the development of PTSD, including those with higher combat exposure, those who held tactical duties, and veterans of Hispanic descent. However, both studies shared certain methodological limitations that affected their interpretability. Both studies were retrospective, requiring veterans to reflect on experiences and symptoms 15 to 20 years after Vietnam, and neither provided verification of service characteristics and experiences (Maguen, Suvak, & Litz, 2006). As noted by Maguen and colleagues (2006), retrospective reporting is often inaccurate, influenced by the level of self-reported current distress as well as PTSD symptoms.

GULF WAR

The first Gulf War was unique in its brevity—combat operations were limited to less than a week of ground war operations. However, prior to and following this period, U.S. forces were on alert to threats of chemical weapons directed toward U.S. ground forces, extending the period of potential exposure to stressful or traumatic events. In 1995, the Department of Veterans Affairs initiated a population-based survey (National Health Survey of Gulf War Era Veterans and Their Families) based on a stratified random sample of 15,000 U.S. troops deployed to the Gulf region, compared to 15,000 troops of the same era deployed elsewhere (Kang et al., 2003). Potential veterans were stratified by sex, unit component (active, reserve, National Guard), and branch of service. Kang and colleagues (2003) summarized data on PTSD from the initial report, collected approximately five years after the war and based on 20,917 respondents. Utilizing the “PTSD Checklist,” 12.1% of the theater veterans scored in the range of “probably PTSD”; this is compared to 4.3% of veterans deployed elsewhere (representing an odds ratio of 3.1, CI = 2.8–3.5). Demographic predictors of PTSD included being female, older, nonwhite, of enlisted rank, and being from the Army or National Guard. Stress severity, defined according to location of service and degree of combat exposure, was strongly associated with PTSD; rates of PTSD ranged from 3.3% for those with minimal stress exposure, to 22.6% for those with the highest levels of stress exposure.

Toomey and colleagues (2007) obtained a subsample of those who participated in the same National Health Survey of Gulf War Era Veterans and Their Families (1,061 theater veterans and

1,128 era veterans) and utilized in-person clinical interviews to assess a range of mental health disorders, including PTSD. This study, conducted approximately ten years after the Gulf War, assessed for disorders that began during the period of the war (era-onset) and reassessed any continuing presence of these disorders within the year prior to the interview. Deployed veterans were found to have a higher prevalence of several era-onset mental disorders than the non-deployed veterans, including major depressive disorder (7.1% vs. 4.1%), PTSD (6.2% vs. 1.1%), panic disorder (1.2% vs. 1%), and specific phobias (1.9% vs. 8%). Within the year of the interview (ten years later), era-onset major depressive disorders continued to be more prevalent among those deployed than those not deployed (3.2% vs. 8%), as were era-onset anxiety disorders (a composite variable that did not include PTSD; 2.8% vs. 1.2%). Of those with era-onset PTSD, deployed and non-deployed veterans did not demonstrate statistically different rates of PTSD ten years later (1.8% vs. 6%). While this study was strengthened by the use of clinical interviews, weaknesses included the retrospective nature of reporting for era-onset diagnoses and the limited scope of the assessment (only era-onset disorders and their prevalence ten years later were assessed, therefore omitting disorders with delayed onsets).

WARS IN IRAQ AND AFGHANISTAN

Currently, large-scale research efforts are underway to examine the mental health consequences (including predictive and protective factors) of serving in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). Active-duty service members, reservists, members of the National Guard, and veterans separated from military service are being assessed pre-deployment, during deployment, and at various lengths of time post-deployment. These cross-sectional and longitudinal designs utilize validated self-report and screening tools that allow for more accurate and efficient assessments, therefore greatly increasing the scope and quality of research conducted.

Hoge and colleagues (2004) conducted one of the first large-scale evaluations of mental health problems among active duty soldiers and Marines deployed to Iraq and Afghanistan. This cross-sectional investigation allowed for a comparison between a cohort immediately prior to deployment (2,530 Army soldiers) and another cohort, three to four months after six- to eight-month deployments

(3,671 Army soldiers and Marines). PTSD, depression, and anxiety were evaluated by well-validated self-report screening instruments; two additional items were included to assess problem drinking. Rates of mental health problems were significantly higher among the service members following deployment. Using strict criteria for evaluating their screening instruments (which probably resulted in an over-representation of false negatives), rates for any of the three disorders assessed were significantly higher after deployment than before (9.3% vs. 13.6%) with PTSD being the most prevalent post-deployment (5.0% vs. 9.2%). Alcohol misuse was reported by 25.4% of the entire sample post-deployment (vs. 14.8% pre-deployment). Rates of mental health problems corresponded to the level of combat. Among those exposed to five or more firefights, rates of PTSD post-deployment increased to 19.3%, and being wounded or injured significantly increased the odds of meeting screening criteria for PTSD.

In April, 2003, one month after the initiation of the ground war in Iraq, the U.S. Department of Defense mandated that all service members complete a health and mental health screening assessment immediately following their deployment, the Post-Deployment Health Assessment (PDHA; as described in Hoge, Auchterlonie, & Milliken, 2006). This was soon followed by the inclusion of a second assessment three to six months post-deployment (the Post-Deployment Health Reassessment, PDHRA, as described in Milliken, Auchterlonie, & Hoge, 2007). These assessments have allowed for an unprecedented longitudinal, population-based assessment of mental health problems associated with serving in war-related operations. Questions assess depression, PTSD, suicidal ideation, interpersonal concerns, and interest in receiving (or having received) mental health care. It is important to note that the presence of mental health problems is assessed by one- to four-item screening instruments (which have been shown to have a high rate of false positives; see Ramchand et al., 2008). In the first analysis of PDHA data, conducted on 303,905 Army soldiers and Marines, the presence of any mental health concern was reported by 19.1% of those deployed to Iraq and 11.3% of those deployed to Afghanistan (Hoge et al., 2006). Again, PTSD symptoms were the most common concern, with 9.8% of those deployed to Iraq and 4.7% of those deployed to Afghanistan meeting screening criteria. Of those who screened positive for PTSD, the vast majority (79.6%) reported exposure to combat experiences.

Analysis of the PDHRA data indicates that rates of mental health problems significantly increase over time following deployment. Milliken, Auchterlonie, and Hoge (2007) report data obtained from 88,235 Army soldiers deployed to Iraq, immediately post-deployment (PDHA) and six months later (PDHRA). Rates for any reported mental health problem increased from 17.0% to 27.1% among active duty soldiers and from 17.5% to 35.5% among National Guard and reservists. PTSD symptoms were again the most common mental health problem reported at both times; positive PTSD screens increased from 11.8% to 16.7% among actives and from 12.7% to 24.5% among reservists. Positives for an item assessing interpersonal conflict increased the most over time, from 3.5% to 14.0% among active duty soldiers, and from 4.2% to 21.1% among reservists. Although not assessed in the PDHA, items assessing alcohol misuse were endorsed by 11.8% of active duty and 15.0% of reservists in the PDHRA.

Hoge and colleagues (2007) provided further evidence that mental health problems may endure or increase over time. In this cohort study, 2,863 Army soldiers obtained from four combat infantry brigades who served in Iraq were surveyed one year post-deployment using strict criteria for assessing the presence of PTSD. The prevalence of PTSD in this sample was 16.6% (compared to 5% obtained from a similar sample pre-deployment), similar to that obtained in the population-based PDHRA six months post-deployment. Among those injured in the line of duty (a proxy for more severe combat exposure), rates of PTSD were 31.8%, compared to 13.6% among those never injured.

The Department of Veterans Affairs (VA) has also engaged in efforts to track health care utilization among returning veterans through the development of the VA OIF/OEF Roster, a database of OIF and OEF veterans who have enrolled in VA health care. Seal and colleagues published two consecutive reports of rates and predictors of mental health disorders among returning veterans derived from this database (Seal et al., 2007; Seal et al., 2009). In the years 2002 through 2008, 289,328 veterans were included in the database and met study criteria for first-time users, representing approximately 35% of all separated (discharged) OIF/OEF veterans. Per electronic medical records, clinician-derived diagnoses of mental health disorders steadily increased over time, such that by 2008, 37% received new diagnoses of a mental health disorder (i.e., at any time during the study period, the veteran received a

new diagnosis of a mental health disorder). PTSD was the most prevalent disorder (22%), followed by depression (17%). The increase in rates of mental health diagnoses over time was related to both length of time in the VA health care system (veterans were likelier to receive a mental health diagnosis over time) and to cohort effects (mental health diagnoses of increased in later cohorts entering the VA health care system). It is important to note that the length of time since their (last) deployment was not reported, making it difficult to compare the results of this study to the previously reported longitudinal studies of U.S. military service members, and the VA sample reflects veterans seeking health care, probably overly representing veterans with mental health concerns. Nonetheless, similar to studies of non-separated military personnel, risk of mental health disorders among veterans was higher among members of the National Guard and Reserves and correlated with indicators of combat exposure, including being of enlisted rank (not an officer), a member of the Army (vs. other branches), and being deployed more than once.

RAND Corporation recently conducted a large population-based survey of current mental health problems among individuals (service members and veterans) previously deployed to Iraq and Afghanistan (Schell & Marshall, 2008). They sought a representative sample that included all military branches, enlisted as well as officers, and reservists and National Guards as well as active-duty service members drawn from 24 geographical areas of the United States. Using a random-digit-dialing methodology, they completed 1,965 phone-based interviews from August of 2007 to January of 2008, reflecting a 44% response rate. PTSD and depression were assessed for the past month, using well-established measures for PTSD and depression with scoring procedures that maximally reduced false positives and negatives. Rates of current PTSD and depression were both 14%, comparable to those found by previous studies. As approximately one-third of the sample had returned from their last deployment a minimum of 36 months previously, this study provided further evidence that mental health problems can be enduring over time. Higher rates of PTSD were found among members of the Army and Marines, those in the National Guard and Reserves, enlisted personnel, women, and Hispanics. Longer deployments and greater degree of combat exposure were strong predictors of PTSD across demographics. Furthermore, PTSD and depression were highly comorbid with similar predictors of depression.

Depression was additionally predicted by currently being discharged or retired.

In summary, studies of Gulf War and OIF/OEF veterans are generally consistent with those of Vietnam War veterans, indicating resilience and the absence of mental health disorders among the majority of veterans and the presence of a range of disorders among a sizable subsample. Across all eras and studies with varied methodologies, PTSD has been consistently reported as the most common mental health disorder, affecting approximately 15% of service members. Depression is also common and frequently comorbid with PTSD. Rates of PTSD and other mental health problems appear to increase in the immediate months and initial year(s) following the return from deployment, perhaps related to an initial reluctance to report problems while still engaged with the military, or to an increase in problems when faced with reintegration into civilian life. Furthermore, as indicated in studies of Iraq and Afghanistan veterans, successive cohorts of service members have higher rates of mental health problems over time, perhaps reflecting the accumulated effects of multiple deployments. Consistent predictors of PTSD and other mental health problems are degree of combat exposure, number and duration of deployments, being of enlisted rank, and for Iraq and Afghanistan veterans, being deployed as a member of the National Guard or Reserves. Some studies have also found that being female and being of Hispanic ethnicity are risk factors as well. Results from studies of Vietnam veterans suggest that rates may decrease over longer periods of time post-deployment, perhaps due to natural recovery or the receipt of treatment.

Suicide Among U.S. Service Members Deployed to War Zones

Recent national attention to suicide among U.S. service members and veterans enrolled in VA care underscores the importance of better understanding the relationship between serving in a war zone and suicidal behavior. However, this task is complicated by methodological limitations in suicide research. As described in Eaton et al. (2006), the low rate at which suicides occur can result in large fluctuations in rates over time or between groups, and any found differences between groups may be due to confounding variables, such as demographic variables. This can be a special problem when comparing military populations, with relatively restricted demographics, to non-military populations. Also, it can be difficult to accurately identify deaths as suicides,

as the decedent's intent may not be known, or because the mortality report is not complete. Carr and colleagues (2004) conducted a reevaluation of military deaths during a one-year time period and concluded that approximately 21% additional deaths, previously identified as "accidents" or "undetermined," could be more accurately classified as suicides.

Further complicating our understanding of the relationship between exposure to combat and suicide is some evidence to suggest that military service in general may be a *protective* factor in overall suicide risk. In a large population-based study, Eaton and colleagues (2006) reported suicide rates for all active-duty service members in the U.S. military from 1990 to 2000 as obtained from the Defense Medical Surveillance System (Department of Defense). These rates were compared to civilian rates for the year 2000, as reported by the Centers for Disease Control (CDC), adjusting for demographic differences. Military rates were found to be 20% lower than the civilian rate, which was statistically significant. Several additional studies have documented decreased overall mortality rates (which include suicide rates) of veterans compared to matched cohorts of civilians (Boehmer et al., 2004; Kang & Bullman, 2001, 2008). This suggests that that service members may have certain resilience factors for suicide compared to the general population, which could obscure our ability to observe an impact of serving in a war zone on suicide.

Indeed, examination of individual studies suggests that the relationship between serving in a high-stress military context and suicide is complex, and a direct relationship between serving in a war zone and suicide has not been well established. The initial report of the Vietnam Experience Study conducted by the CDC (1987) found that during the early follow-up period (zero to five years post-discharge) a 17% increase in mortality due to "external causes" was observed among the Vietnam-theater veterans, which included a significant increase in suicide. However, a 30-year follow-up of this same sample indicated no significant group differences in mortality rates due to suicide (Boehmer et al., 2004). While rates of death due to overall external causes remained significantly higher for the Vietnam-theater veterans, these differences were accounted for by the differences observed in the first five years post-discharge. Thomas, Kang, and Dalanger (1991) found no increased risk of death by suicide among 4,582 female veterans who served in Vietnam compared to a similar sample of female veterans who did not serve in Vietnam.

Likewise, no association has been found between serving in the first Gulf War and suicide rates. Kang and Bullman (1996, 2001) conducted a population-based evaluation of causes of mortality among all veterans who served in the Gulf War, compared to Gulf War–era veterans and a representative cohort in the general population. In their first evaluation (1996), conducted approximately two and a half years after the end of the Gulf War, Gulf War veterans had a significantly elevated mortality rate due to all causes combined compared to Gulf War–era veterans; however, there were no differences in suicide rates between groups. By seven years after the end of the Gulf War, overall mortality rates were slightly *lower* among the Gulf War veterans compared to Gulf War–era veterans (for male veterans; rates between theater and era female veterans were the same) and suicide rates remained equivalent.

Our knowledge of suicide rates among those who have served in the current conflicts in Iraq and Afghanistan is limited by the recency of these conflicts. Kang and Bullman (2008) have conducted the only peer-reviewed investigation to date. In this study, suicide rates were examined among all 490,346 veterans who served in OIF or OEF and were separated (alive) from active duty between October, 2001, and December, 2005, as identified from the Defense Manpower Data Center. Suicide data were obtained from the National Death Index as reported by December 31, 2005, and assessed by a standardized mortality ratio, which computes the number of observed suicides compared to the expected rates, based on information from the U.S. general population, controlling for key demographic variables. The overall risk of suicide was not elevated in this group compared to the population as a whole.

Additional information on suicidal behavior among OIF/OEF service members can be obtained from government reports; however, these are not subjected to the same type of peer review as published studies and often do not include statistical analyses. The Mental Health Advisory Team was established by the Office of the U.S. Army Surgeon General, in part to assess the behavioral health of soldiers participating in OIF (OEF military personnel are not included in this report). Annual reports summarize data to date, the most recent of which, at the time of this publication, was published in 2009 (MHAT-VI). Data on active-duty service members suggest a trend for increasing rates of suicide since the original MHAT report in 2003, until 2008. As of 2008 there were 162 confirmed suicides

among OIF service members, reflecting a rate of 21.5 (per 100,000); this figure is expected to increase as some deaths were still categorized as “pending suicide” at the time of the report. Additional figures are obtainable for the Department of Defense Suicide Event Report (DoDSER). Formed in 2008, the DoDSER is a centralized and standardized data collection and reporting system in which multiple military services now document information on suicide among service members, across conflicts and military branches. In 2008, information was submitted on 90% of suicides. Data are reported for combined confirmed and suspected active duty suicides and corroborate increases in suicides each year from 2001 to 2008 (160 to 267 for these two years, respectively, corresponding to overall rates of 10.3 and 15.8) (Hawkins, 2010). It is unclear how military suicide rates or trends compare to those of demographically similar individuals in the general population.

While an overall association between serving in a war zone and suicide has not been supported, several studies have found fairly strong relationships between exposure to high-stress military operations and suicide among certain subgroups of military personnel. In particular, consistent associations have been found between suicide and the presence of mental disorders among those who have served in war. For example, in the Kang and Bullman (2008) study described above, while OIF/OEF veterans as a group did not demonstrate an increased risk of death by suicide, those with a documented mental disorder in VA treatment records were significantly more likely to die by suicide than those without (standard mortality ratio = 1.77, CI = 1.01–2.87). While psychopathology is frequently associated with increased risk for suicide in the general population (Harris & Barraclough, 1997; Kessler, Borges, & Walters, 1999), of significance to this current review is growing evidence that PTSD in particular is associated with suicidal behavior among veterans and civilians (Jakupcak et al., 2009; Panagioti, Gooding, & Tarrier, 2009).

Bullman and Kang (1994) reported data on a large sample of Vietnam veterans obtained from the Agent Orange Registry (AOR; a voluntary, VA-sponsored database) from July, 1982, and July, 1990, compared to vital statistics (obtained from several sources) up to August, 1990. Adjusting for covariates (age, race, year of exam), veterans with a diagnosis of PTSD (assessed by clinical interview, most using DSM-III criteria) were four times likelier to commit suicide than veterans without PTSD;

in a comparison with estimates from the general population, veterans with PTSD had a near seven-fold increased risk of death by suicide. Moreover, the risk of suicide was nearly doubled among veterans with both PTSD and comorbid mental disorders, compared to veterans with PTSD alone. Some caution should be used in interpreting these results, however, as the low overall rate of suicide influences statistical significance and may limit generalizability (e.g., the actual difference in number of suicides between the PTSD and non-PTSD samples in this study was four).

Supporting these findings, a recent study by Jakupcak and colleagues (2009) found a strong and unique association between PTSD and suicidal ideation among a sample of OIF/OEF veterans presenting for care at a VA facility (and subsequently referred for mental health care). In this sample of 407 participants, current PTSD was found to significantly predict current suicidal ideation after controlling for age and other mental health diagnoses (including depression, alcohol, and drug abuse). Furthermore, the comorbidity of PTSD with other mental health diagnoses greatly increased the likelihood of suicidal ideation, such that those with two or more comorbidities were almost six times likelier to endorse suicidal ideation than those with PTSD alone. These findings are highly relevant in light of recent data indicating that, among OIF/OEF veterans diagnosed with a mental disorder, 27% have three or more coexisting disorders (Seal et al., 2007), as well as the well-supported link between suicidal ideation and suicide attempts (Mann et al., 2008). It is noteworthy, too, that Kessler, Borges, and Walters (1999) reported a strong association between number of psychiatric disorders and suicide risk among the general population.

An exhaustive review of acute and long-term risk factors for suicide is beyond the scope of this chapter (see Rudd, 2008; Sullivan & Bonger, 2009). Furthermore, few studies have examined risk factors within veteran populations specifically. Nonetheless, additional established risk factors for suicide that are common in the veteran population include male sex, access to firearms, financial strain, physical disorders, homelessness, and poor social support (Lambert & Fowler, 1997). Furthermore, older age is associated with suicide risk, and there is some indication that older male veterans may be at even greater risk for suicide than older men in the general population (Kaplan et al., 2007). While knowledge of risk factors is useful for targeting subpopulations of veterans at risk for suicide, it has been demonstrated

that our ability to predict which individuals will attempt or commit suicide based on known risk factors is quite poor (Harriss & Hawton, 2005; Pokorny, 1993). This has important implications for prevention and treatment of suicidal behavior, as discussed below.

Addressing Mental Health Problems Associated with War-Zone Exposure

Based in large part on the knowledge gained from the Vietnam generation, there has been a substantial increase in efforts to address the mental health needs of present-day soldiers and veterans. This has occurred at multiple levels, including the Department of Defense, Department of Veterans Affairs, and the civilian community. Here we highlight a range of these initiatives, and we will conclude with continuing needs and recommendations.

As mentioned above, all returning service members are now being screened for health and mental health problems through the Post-Deployment Health Assessment and Post-Deployment Reassessment, a Department of Defense initiative. In addition to providing information on rates of mental health problems (for overall policy and program development purposes) the PDHA and PDHRA are, importantly, used to screen individuals to identify those in need of treatment. After completion of the PDHA and PDHRA, all service members are interviewed by a credentialed health care professional who then determines whether a referral for further evaluation or treatment is required (Hoge, Auchterlonie, & Milliken, 2006). Mental health providers are available on-site for immediate and high-risk needs (such as suicidal ideation); otherwise, service members are referred to providers in their place of residency. Milliken, Auchterlonie, and Hoge (2007) report data that suggest this screening process increases follow-through with referral to mental health services as well as self-referral. Of those referred for mental health care, 61% were shown to receive services (comparable to civilian rates of follow-through); in addition, a substantial proportion of service members with problems not considered serious enough for referral nonetheless self-referred for treatment (perhaps indicating that the screening process itself facilitated help-seeking).

Extensive screening efforts are also underway within VA medical centers. All VA patients are now required to complete screening questions for PTSD, depression, traumatic brain injury, and suicidal ideation. In tandem, Congress funded the VA to provide free health care and mental health care for

returning OIF and OEF veterans; initially this was granted for two years and recently increased to five years. As of April 15, 2010, 565,024 of OIF/OEF veterans (48% of total separated veterans) have enrolled in VA care, and of these, 49% had a documented mental disorder as a presenting problem (VA Office of Public Health and Environmental Hazards, 2010).

Knowledge about effective treatment for common mental health problems associated with serving in a war zone, particularly PTSD, has grown dramatically, and members of both the Department of Defense and the Department of Veterans Affairs have been instrumental in disseminating this information. Practice guidelines now exist that detail evidence-based psychotherapeutic and pharmacological treatments for PTSD, based on collaborations between the Department of Defense and the Department of Veterans Affairs (www.healthquality.va.gov; also see the Iraq War Clinician's Guide, <http://www.ptsd.va.gov/professional/manuals/iraq-war-clinician-guide.asp>), as well as task forces within the American Psychiatric Association (http://www.psychiatryonline.com/pracGuide/pracGuideTopic_11.aspx) and the International Society for Traumatic Stress Studies (<http://www.istss.org/Content/NavigationMenu/ISTSSTreatmentGuidelines/PTSDTreatmentGuidelines/default.htm>). Of psychotherapies, those based on behavioral and cognitive-behavioral principles have the strongest empirical support, including Prolonged Exposure (Foa, Hembree, & Rothbaum, 2007), which includes imagined and in vivo exposure, and Cognitive Processing Therapy (Monson et al., 2006), which focuses largely on identifying and changing maladaptive beliefs associated with PTSD. As discussed in Friedman, Davidson, and Stein (2009) and Marmar (2009), evidence-based pharmacotherapies for PTSD target specific symptoms and include SSRIs (also helpful for comorbid PTSD and depression), trazadone for sleep, prazosin for nightmares, anti-convulsants for more persistent anger, atypical antipsychotics for perceptual disturbances such as paranoia and extreme flashbacks, and disulfiram, naltrexone, and topiramate for comorbid alcohol abuse or dependence.

Active-duty service members have greater access to mental health care now than at any prior point in history. A wide range of behavioral health personnel have been routinely serving in theater: including psychiatrists, psychologists, social workers, psychiatric nurse practitioners, and mental health specialists. According to the MHAT-VI report, there is

approximately one behavioral health provider for every battalion-sized unit in theater, a ratio that had improved for the 2009 report over the past two years and that was viewed as sufficient for the needs of military personnel by the Task Force Medical Brigade Mental Health Staff Officer. Moreover, assessments of behavioral health providers indicate steady improvements in perceptions of the sufficiency of staffing, adequacy of training, access to resources, and interactions with command (MHAT-VI).

Within the Department of Veterans Affairs, large-scale efforts are underway to ensure that empirically based treatments are available to veterans, including training "rollouts" in which large numbers of mental health providers are trained by experts in empirically based treatments (for PTSD, depression, and substance abuse). This has been viewed as a model program for dissemination and implementation of evidenced-based practices (McHugh & Barlow, 2010). Furthermore, VA Central Office has mandated that all VA health care facilities designate an Evidenced Based Practice Coordinator within mental health divisions, whose function is to ensure effective dissemination of information and continuing implementation of evidence-based practices. Additional coordinator positions have been implemented across VA medical centers to address the range of health and mental health needs of returning veterans, including OIF/OEF Program Coordinators, Suicide Prevention Coordinators, Military Sexual Trauma Coordinators, PTSD and Substance Abuse Treatment Coordinators, and Recovery Coordinators.

Innovations in mental health service delivery and treatment development also aim to provide greater access to care, earlier interventions, and more effective interventions. For example, in both military and VA health care facilities, there has been an increase in the integration of mental health care in primary health care settings, which allows for the early provision of mental health care, eliminates the need for additional referrals and appointments (to specialty mental health clinics), and may reduce the stigma associated with seeking mental health care (which can be prohibitive for some veterans: see Hoge et al., 2004). "Telemental" health care (also known as telemedicine, telepsychiatry or telebehavioral health care) is an emerging modality for the delivery of mental health care for soldiers and veterans. Telemental health includes a variety of technologies that allows the direct communication between provider and patient (including videoconferencing

software, webcams, or telephones) and therefore can overcome many common barriers to care, including transportation, access to major medical centers, time, and perceived stigma. Preliminary research indicates that psychosocial treatments for PTSD can be effectively delivered by this modality, including trauma-processing therapies such as Prolonged Exposure (Turek et al., 2010). Related, online resources are on the increase, including psychoeducation as well as treatment options for mental health and related adjustment problems, many of which are developed by mental health experts (see, e.g., www.afterdeployment.org) and offer many of the advantages of telemental health. In addition, research within the Department of Defense, the Department of Veterans Affairs, and in the civilian sector continues to inform and improve our understanding and treatment of mental health problems in service members and veterans. For example, recent studies support interventions for building resilience to mental health problems in service members (e.g., Jha et al., 2010), reducing PTSD and depression symptoms through brief, early interventions (Adler et al., 2009), and adapting evidenced-based protocols for PTSD and depression to enhance reach and accessibility (Jakupcak et al., 2010), and enhancing evidence-based protocols through new technologies (e.g., virtual reality, Rizzo et al., 2011).

Nonetheless, despite these efforts it remains the case that large numbers of service members and veterans with PTSD and other mental health problems do not receive care or adequate care (Tanielian & Jaycox, 2008). One continuing barrier to care is the perceived stigma regarding accessing care. In the survey conducted by Hoge and colleagues (2004) reported above, of those who screened positive for a mental disorder, the majority reported perceived stigma for seeking care; specific concerns included being perceived as weak (65%), believing leadership would treat him or her differently (63%), believing that their unit would lose confidence in him or her (59%), concerns about the impact of seeking care on one's career (50%), and feelings of embarrassment (41%). Concerns about stigma, particularly the perceived negative effect of seeking care on one's career, have been replicated in a large population-based studies of service members and veterans (MHAT-VI; Tanielian & Jaycox, 2008) and shown to predict help-seeking (Stecker et al., 2010). Other barriers to mental health care that have been reported by service members and veterans include concerns about side effects of medication or the

effectiveness of treatment in general, logistical factors (e.g., finding time to spare from work or home responsibilities, the need for childcare, lack of access to care), and financial concerns (Hoge et al., 2004; Tanielian et al., 2008). These barriers may account for the relatively low rates of mental health utilization observed in OEF/OIF veterans enrolled in VHA care. Fewer than 10% of OEF/OIF veterans with PTSD and fewer than 4% of OEF/OIF veterans with depression attend the number of sessions recommended for specialized cognitive-behavioral treatments (CBT) for these disorders in the four months following their referral for mental health treatment (Seal et al., 2010).

There are additional factors that impede the provision of adequate treatment of mental health problems among service members and veterans. As noted in multiple sources (e.g., Hoge et al., 2006; Milliken et al., 2007; Tanielian & Jaycox, 2008), the numbers of service members and veterans seeking mental health care has been steadily increasing over time, while existing treatment-providing settings, including those within DOD, VA, and the community are often understaffed and/or remain insufficiently trained. Furthermore, while strong empirical support exists for cognitive-behavioral treatments for PTSD, limitations to our knowledge base remain. Few studies to date have included populations with combat-related PTSD, and smaller treatment effects are observed in studies of CBTs for combat-related PTSD relative to treatment studies of civilian and non-combat-related PTSD (Bradley et al., 2005). A number of factors specific to this population may influence case formulation and treatment outcome (e.g., military culture, severity and chronicity of traumatic exposure, presence of "moral injury" [see Litz et al. 2009], presence of comorbid problems such as substance abuse, depression, suicidal behavior, and traumatic brain injury). Furthermore, little is known about which treatments work best for which individuals (treatment matching), and dropout among all treatments for PTSD is high (Benish, Imel, & Wampold, 2008). Importantly, very little is known about effective treatments for suicidal behavior (Gaynes et al., 2004; Linehan, 2008), and as mentioned previously, knowledge of reliable predictors of suicide is also lacking. Given the apparent rise in suicide rates among service members and veterans, this is of particular concern.

Future Directions

Based on our review and informed by the RAND report (Tanielian et al., 2008), we summarize key

areas for future attention. First, more needs to be done to ensure that service members and veterans with mental health problems receive sufficient treatment. In part, this can be accomplished by increasing the numbers and positioning of well-trained mental health providers in theater, on bases, in the VA, in VA Readjustment Counseling Service Veterans Outreach Centers (Vet Centers), and in the community. Assumed in this suggestion is the need for mental health providers (within military, VA, and community health care settings) to have the opportunities and resources to obtain training in evidence-based practices for mental disorders. Efforts to address continuing barriers to accessing care are also central to increasing reach. The provision of treatment in non-mental health settings, such as primary care and in remote locations (e.g., via web-cams or the Internet) holds particular promise for reaching individuals with numerous barriers to traditional mental health care and requires additional resources and evaluations for effectiveness.

Continuing efforts to break down the stigma associated with seeking mental health care are also clearly indicated. Service members' reported concerns regarding the impact of seeking mental health care on such factors as unit morale, perceptions by command, and future employment suggest the importance of addressing stigma within military settings and among active-duty service members. This could occur through enhanced efforts to educate command (at all levels) and service members about mental health consequences of high-stress military operations with checks on the integrity with which this information is disseminated. Furthermore, increasing opportunities for confidential care within military settings (in theater and on bases) would aid access to care even within environments where negative beliefs about treatment-seeking persist (Tanielian et al., 2008). Enhanced efforts to address stigma within the military would be likely to promote reductions in self-stigma after discharge and therefore increase help-seeking among veterans as well.

More investment in research is needed to identify effective treatments for PTSD and related problems, including suicidal behavior, among service members and veterans. As mentioned, more research is needed to examine the extent to which our evidence-based treatments for PTSD are effective for service members and veterans, particularly those with multiple and chronic traumatic experiences as well as comorbidities such as substance-use problems or traumatic brain injury. Furthermore, as most cognitive-behavioral treatments for PTSD

have demonstrated similar effect sizes (Powers et al., 2010), research is also needed to determine which treatments work best for which individuals (treatment matching). Continuing treatment development and outcome research for PTSD is warranted for prevention and early intervention as well as to address the large proportion of individuals who do not engage in or benefit from our existing approaches. Furthermore, given the relatively large numbers of service members and veterans affected by PTSD, research methodologies that include evaluations of reach as well as effect size are recommended to determine the overall population impact of various interventions (see Zatzick, Koepsell, & Rivara, 2009). Regarding pharmacological treatments for PTSD, Friedman (2009) has recommended more research on neurobiological mechanisms underlying the pathophysiology of PTSD, toward the development of more targeted interventions. Finally, given the dearth of research on effective treatments for suicide, it is imperative that research in this area continue. Linehan (2008) has argued that research must focus on understanding and treating suicidal behaviors directly, as no research to date has indicated that treating associated psychological disorders reduces suicidal behaviors.

Finally, we would like to suggest that our ability to understand and address the mental health consequences of wartime service could be enhanced by efforts to conceptualize many mental health difficulties, particularly PTSD-related problems, in context—that is, as normal reactions to abnormal circumstances and as behaviors that are relatively functional in a war context while dysfunctional in civilian contexts. For example, hypervigilance is highly functional in a war zone, but can be a problem in civilian life when the level of threat is much lower. Suicidal behavior can be viewed, in some cases, as a consequence of being “armed and ready” and of training that promotes quick decision-making and solutions that emphasize “elimination of threat.” From this perspective, greater efforts could be placed on the development of training programs for reintegration into civilian life, including in-depth education and drills that allow for relearning effective responses in common civilian experiences and situations.

References

- Adler, A. B., Bliese, P. D., McGurk, D., Hoge, C. W., & Castro, C. A. (2009). Battlemind debriefing and Battlemind training as early interventions with soldiers returning from Iraq: Randomization by platoon. *Journal of Consulting and Clinical Psychology, 77*, 928–940.

- Adler, A. B., Wright, K. M., Bliese, P. D., Eckford, R., & Hoge, C. W. (2008). A2 diagnostic criterion for combat-related post-traumatic stress disorder. *Journal of Traumatic Stress, 21*, 301–308.
- American Psychological Association (APA). (1980). *Diagnostic and Statistical Manual, Version III*. Washington, D.C.
- American Psychological Association (APA). (2000). *Diagnostic and Statistical Manual, Version IV*. Washington, D.C.
- Benish, S. G., Imel, Z. E., & Wampold, B. E. (2008). The relative efficacy of bona fide psychotherapies for treating post-traumatic stress disorder: A meta-analysis of direct comparisons. *Clinical Psychology Review, 28*, 746–758.
- Boehmer, T. K. C., Flanders, W. D., McGeehin, M. A., Boyle, C., & Barrett, D. H. (2004). Post-service mortality in Vietnam veterans. *Archives of Internal Medicine, 164*, 1908–1916.
- Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry, 162*, 214–227.
- Bullman, T. A., & Kang, H. K. (1994). Post-traumatic stress disorder and the risk of traumatic deaths among Vietnam veterans. *Journal of Nervous and Mental Disease, 182*, 604–610.
- Campise, R. L., Geller, S. K., & Campise, M. E. (2006). Combat Stress. In C. H. Kennedy and E. A. Zillmer (Eds.), *Military psychology: Clinical and operational applications* (pp. 215–240). New York: Guilford.
- Carr, J. R., Hoge, C. W., Gardner, J., & Potter, R. (2004). Suicide surveillance in the U.S. military—Reporting and classification biases in rate calculations. *Suicide and Life-Threatening Behavior, 34*, 233–241.
- Centers for Disease Control Vietnam Experiences Study. (1987). Post-service mortality among Vietnam veterans. *Journal of the American Medical Association, 257*, 790–795.
- Centers for Disease Control Vietnam Experiences Study. (1988). Health status of Vietnam veterans: I. Psychosocial characteristics. *Journal of the American Medical Association, 13*, 2701–2707.
- Dohrenwend, B. P., Turner, J. B., Turses, N. A., Adams, B. G., Koenen, K. C., & Marshall, R. (2006). The psychological risks of Vietnam for U.S. veterans: A revisit with new data and methods. *Science, 313*, 979–982.
- Eaton, K. M., Messer, S. C., Wilson, A. L. W., & Hoge, C. W. (2006). Strengthening the validity of population-based suicide rate comparisons: An illustration using U.S. military and civilian data. *Suicide and Life-Threatening Behavior, 36*, 182–191.
- Foa, E., Hembree, E., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences, therapist guide*. New York: Oxford University Press.
- Friedman, M. J., Davidson, J. R. T., & Stein, D. J. (2009). Psychopharmacotherapy for adults. In E. B. Foa, T. M. Keane, M. J. Friedman, & J. A. Cohen (Eds.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies, 2nd Ed.* (pp. 269–278). New York: Guilford Press.
- Gaynes, B. N., West, S. L., Ford, C. A., Frame, P., Klein, J., Lohr, K. N. (2004). Screening for suicide risk in adults: A summary of the evidence for the U.S. Preventative Services Task Force. *Annals of Internal Medicine, 140*, 822–835.
- Harris, E. C., & Barraclough, B. (1997). Suicide as an outcome for mental disorders. *British Journal of Psychiatry, 170*, 205–228.
- Harriss, L., & Hawton, K. (2005). Suicidal intent in deliberate self-harm and the risk of suicide: The predictive power of the Suicide Intent Scale. *Journal of Affective Disorders, 86*, 225–233.
- Hawkins, J. (2010). Suicide prevention and risk reduction. Plenary address at the 2nd Annual DoD/VA Suicide Prevention Conference (January), Washington, D.C.
- Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *Journal of the American Medical Association, 295*, 1023–1032.
- Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine, 351*, 13–22.
- Hoge, C. W., Terhakopian, A., Castro, C. A., Messer, S. C., & Engel, C. C. (2007). Association of post-traumatic stress disorder with somatic symptoms, health care visits, and absenteeism among Iraq War veterans. *American Journal of Psychiatry, 164*, 150–153.
- Hyams, K. C., Wignall, F. S., & Roswell, R. (1996). War syndromes and their evaluation: From the U.S. Civil War to the Persian Gulf War. *Annals of Internal Medicine, 125*, 398–405.
- Jakupcak, M., Cook, J., Imel, Z., Fontana, A., Rosenheck, R., & McFall, M. (2009). Post-traumatic stress disorder as a risk factor for suicidal ideation in Iraq and Afghanistan War veterans. *Journal of Traumatic Stress, 22*, 303–306.
- Jakupcak, M., Wagner, A., Paulson, A., Varra, A., & McFall, M. (2010). Behavioral Activation as a primary care-based treatment for PTSD and depression among returning veterans. *Journal of Traumatic Stress, 23*, 491–495.
- Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory capacity and affective experience. *Emotion, 10*, 54–64.
- Jordan, B. K., Schlenger, W. E., Hough, R., et al. (1991). Lifetime and current prevalence of specific psychiatric disorder among Vietnam veterans and controls. *Archives of General Psychiatry, 48*, 207–216.
- Kang, H. K., & Bullman, T. A. (1996). Mortality among U.S. veterans of the Persian Gulf War. *New England Journal of Medicine, 335*, 1498–1504.
- Kang, H. K., & Bullman, T. A. (2001). Mortality among U.S. veterans of the Persian Gulf War: Seven-year follow-up. *American Journal of Epidemiology, 154*, 399–405.
- Kang, H. K., & Bullman, T. A. (2008). Risk of suicide among U.S. veterans after returning from the Iraq or Afghanistan war zones. *Journal of the American Medical Association, 300*, 652–653.
- Kang, H. K., Natelson, B. H., Mahan, C. M., Lee, K. Y., & Murphy, F. M. (2003). Post-traumatic stress disorder and chronic fatigue syndrome-like illness among Gulf War veterans: A population-based survey of 30,000 veterans. *American Journal of Epidemiology, 157*, 141–148.
- Kaplan, M. S., Huguot, N., McFarland, B. H., & Newsom, J. T. (2007). Suicide among male veterans: A prospective population-based study. *Journal of Epidemiology and Community Health, 61*, 619–624.
- Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry, 56*, 617–626.
- Kulka, R. A., Schlenger, W. E., Fairbank, J. A., et al. (1990). *Trauma and the Vietnam War generation*. New York: Brunner/Mazel.

- Lambert, M. T., & Fowler, D. R. (1997). Suicide risk factors among veterans: Risk management in the changing culture of the Department of Veterans Affairs. *Journal of Mental Health Administration, 24*, 350–358.
- Linehan, M. M. (2008). Suicide intervention research: A field in desperate need of development. *Suicide and Life-Threatening Behavior, 38*, 483–485.
- Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W. P., Silva, C., & Maguen, S. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clinical Psychology Review, 29*, 695–706.
- Maguen, S., Suvak, M., & Litz, B. T. (2006). Predictors and prevalence of post-traumatic stress disorder among military veterans. In A. B. Adler, C. A. Castro, & T. W. Britt (Eds.), *Military life: The psychology of serving in peace and combat. Vol. 2: Operational stress* (pp. 141–169). Westport, CT: Praeger Security International.
- Mann, J. J., Ellis, S. P., Waternaux, C. M., et al. (2008). Classification trees distinguish suicide attempters in major psychiatric disorders: A model of clinical decision-making. *Journal of Clinical Psychiatry, 69*, 23–31.
- Marmar, C. R. (2009). Mental health impact of Afghanistan and Iraq deployment: Meeting the challenge of a new generation of veterans. *Depression and Anxiety, 26*, 493–497.
- McHugh, R. K., & Barlow, D. H. (2010). The dissemination and implementation of evidence-based psychological treatments: A review of current efforts. *American Psychologist, 65*, 73–84.
- Mental Health Advisory Team (MHAT) VI. (2009). Operation Iraqi Freedom 2007–2009. Retrieved October, 2010, from: http://www.armymedicine.army.mil/reports/mhat/mhat_vi/mhat-vi.cfm.
- Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq War. *Journal of the American Medical Association, 298*, 2141–2148.
- Monson, C. M., Schnurr, P. P., Resick, P. A., Friedman, M. J., Young-Xu, Y., & Steven, S. P. (2006). Cognitive Processing Therapy for veterans with military-related post-traumatic stress disorder. *Journal of Consulting and Clinical Psychology, 74*, 898–907.
- Panagiotti, M., Gooding, P., & Tarrier, N. (2009). Post-traumatic stress disorder and suicidal behavior: A narrative review. *Clinical Psychology Review, 29*, 471–482.
- Pokorny, A. D. (1993). Suicide prediction revisited. *Suicide and Life-Threatening Behavior, 23*, 1–10.
- Powers, M. B., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Foa, E. B. (2010). A meta-analytic review of prolonged exposure for post-traumatic stress disorder. *Clinical Psychology Review, 30*, 635–641.
- Ramchand, R., Karney, B. R., Osilla, K. C., Burns, R. M., & Caldarone, L. B. (2008). Prevalence of PTSD, depression, and TBI among returning service members. In T. Tanielian and L. H. Jaycox (Eds.), *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery* (pp. 35–85). Santa Monica, CA: RAND Corporation.
- Rizzo, A., Parsons, T. D., Lange, B., et al. (2011). Virtual reality goes to war: A brief review of the future of military behavioral healthcare. *Journal of Clinical Psychology in Medical Settings, 18*, 176–187.
- Rudd, M. D. (2008). Suicide warning signs in clinical practice. *Current Psychiatry Reports, 10*, 87–90.
- Schell, T. L., & Marshall, G. N. (2008). Survey of individuals previously deployed for OEF/OIF. In T. Tanielian and L. H. Jaycox (Eds.), *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery* (pp. 87–115). Santa Monica, CA: RAND Corporation.
- Schlenger, W. E., Kulka, R. A., Fairbank, J. A., et al. (1992). The prevalence of post-traumatic stress disorder in the Vietnam generation: A multimethod, multisource assessment of psychiatric disorder. *Journal of Traumatic Stress, 5*, 333–363.
- Seal, K. H., Bertenthal, D., Miner, C. R., Sen, S., & Marmar, C. (2007). Mental health disorders among 103,788 U.S. veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Archives of Internal Medicine, 167*, 476–482.
- Seal, K. H., Maguen, S., Cohen, B., et al. (2010). VA mental health service utilization in Iraq and Afghanistan veterans in the first year of receiving new mental health diagnoses. *Journal of Traumatic Stress, 23*, 5–16.
- Seal, K. H., Metzler, T. J., Gima, K. S., Bertenthal, D., Maguen, S., & Marmar, C. R. (2009). Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002–2008. *American Journal of Public Health, 99*, 1651–1658.
- Stecker, T., Fortney, J., Hamilton, F., Sherbourne, C. D., & Ajzen, I. (2010). Engagement in mental health treatment among veterans returning from Iraq. *Patient Preference and Adherence, 4*, 45–49.
- Sullivan, G. R., & Bongar, B. (2009). Assessing suicide risk in the adult patient. In P. M. Kleespies (Ed.), *Behavioral emergencies: An evidence-based resource for managing risk of suicide, violence, and victimization* (pp. 59–78). Washington, D.C.: American Psychological Association.
- Tanielian, T., & Jaycox, L. H. (2008). *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. Santa Monica, CA: RAND Corporation.
- Tanielian, T., Jaycox, L. H., Schell, T. L., Marshall, G. N., Burnam, M. A., Eibner, C., et al. (2008). *Invisible wounds of war: Summary and recommendations for addressing psychological and cognitive injuries*. Santa Monica, CA: RAND Corporation.
- Thompson, W. W., Gottesman, I. I., & Zalewski, C. (2006). Reconciling disparate prevalence rates of PTSD in large samples of U.S. male Vietnam veterans and their controls. *BMC Psychiatry, 6*, 19; accessible at <http://www.biomedcentral.com/1471-244X/6/19>.
- Thomas, T. L., Kang, H. K., & Dalager, N. A. (1991). Mortality among women Vietnam veterans, 1973–1987. *American Journal of Epidemiology, 134*, 973–980.
- Toomey, R., Kang, H. K., Karlinsky, J., et al. (2007). Mental health of U.S. Gulf War veterans 10 years after the war. *British Journal of Psychiatry, 190*, 385–392.
- Tuerk, P. W., Yoder, M., Ruggiero, K. J., Gros, D. F., & Acierno, R. (2010). A pilot study of Prolonged Exposure Therapy for post-traumatic stress disorder delivered via telehealth technology. *Journal of Traumatic Stress, 23*, 116–123.
- Veterans Administration Office of Public Health and Environmental Hazards. (2010). Analysis of VA health care utilization among Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans.
- Zatzick, D. F., Koepsell, T., & Rivara, F. P. (2009). Using target population specification, effect size, and reach to estimate and compare the population impact of two PTSD preventative interventions. *Psychiatry, 72*, 346–359.

Physical Injuries; Psychological Treatment

Rebecca I. Porter

Abstract

This chapter discusses the psychological treatment of soldiers' physical injuries and, more specifically, their sequelae. Rather than spending a great deal of time detailing explicit therapies and treatment techniques, it outlines considerations for how to conceptualize the situation and treatment of a soldier who presents with a primary diagnosis related to a physical injury. The chapter suggests viewing a soldier's response to injury with consideration for the Army values and warrior ethos that are integral to how soldiers view themselves and the world. The apparent link between combat injury and the likelihood of developing psychological symptoms speaks to the need for understanding the soldier's mentality and how it impacts the treatment of combat wounds, whether they are traumatic brain injury, loss of limb, or burns.

Keywords: combat wounded, resilience, traumatic brain injury, amputation, chronic pain, post-traumatic stress disorder, military family

There is evidence that a soldier who suffers a combat injury has a greater likelihood of developing psychological symptoms as a result of being in combat (Wain et al., 2009). Even as the Army works to train and build the resilience of its force, it is important to consider how combat wounds affect the psychological health of a soldier. This chapter discusses the psychological treatment of soldiers' physical injuries and, more specifically, their sequelae. It outlines considerations for how to conceptualize a wounded soldier's reactions and offers recommendations for treatment of a soldier who presents with a primary diagnosis related to a physical injury. Such conceptualization can be useful when treating a soldier whose injuries result in chronic pain, amputation, or traumatic brain injury. In this context, "soldier" is used to refer to a member of the military, whether the military service is the Army, Marines, Navy, Air Force, or Coast Guard. A soldier can be a man or a woman, a husband or a wife, a father or a mother, a son or a daughter. The impact of the soldier's injuries

on his or her family will also be discussed. It should also be noted that most of the considerations suggested will be from the perspective of providing therapy in an outpatient setting. While similar considerations would probably apply in an inpatient setting, other literature addresses the inpatient setting in greater detail (Ruzek & Kudler, 2004; Wain & Gabriel, 2007.)

The Stoic Soldier

The first step in conceptualizing the treatment issues presented in the case of a wounded soldier is to understand the nature of soldiers in general. Soldiers are developed and trained to be tough—mentally, physically, emotionally (Christian, Stivers, & Sammons (2009). They embody the Army values of loyalty, duty, respect, selfless service, honor, integrity, and personal courage (U.S. Department of the Army, 1999). These are qualities that are highly adaptive on the battlefield, when one's survival can literally depend on one's ability to physically

persevere, mentally adapt, and emotionally distance oneself from the chaotic or dire circumstances at hand. Unfortunately, these very desirable traits for the battlefield have evolved in their importance to be somewhat enduring for soldiers after they leave the arena of conflict (Hoge, 2010). In other words, soldiers have a tendency to embrace these attributes, not just for the battlefield, but for their lives in garrison and with their families as well. Generally speaking, soldiers often believe that anything short of model physical fitness and unyielding mental toughness is somehow indicative of weakness, even a flawed character. Soldiers often adopt the sentiment that if they are not invincible, they are weak; there is no middle ground (Rudd, 2009).

Such a belief system has led to feelings of shame or guilt among soldiers who need to seek assistance for either physical or mental difficulties. Soldiers will often brag about making it 20 years in the Army and still having a medical record that contains little more than documentation of their periodic physical exams. Physical injury or inability to perform is often seen as weakness, and mental difficulties or diagnoses are laden with similar judgment or fear of stigmatization (Meichenbaum, 2009).

Soldiers often believe that seeking help with emotional or mental difficulties, in addition to being an admission of weakness, will adversely affect their careers. Such a belief is not totally unfounded. Soldiers' commanders do have at their disposal a mechanism to refer a soldier for a "Command Directed Evaluation" of mental fitness (U.S. Department of Defense, 1997). In accordance with that directive, a unit commander may receive a report of a soldier's mental health evaluation. For soldiers who desire to work in nuclear security positions, a significant psychiatric history (e.g., a suicide attempt), substance abuse, or gambling debt can disqualify them from the Personnel Reliability Program (U.S. Department of Defense, 2006).

For the average soldier who needs assistance with anxiety or mood disorders, however, an adverse impact on career could be more likely if he or she fails to seek help, rather than the reverse (Hourani, Williams, & Kress, 2006). Still, soldiers and their families often feel discouraged from seeking professional assistance to deal with the normal and not-so-normal rigors of life. Obviously then, attempting to address the sequelae of a physical injury with psychological techniques can be difficult.

With the increased psychological stress that has been placed on soldiers who are deploying to combat zones, oftentimes repeatedly, the military

has recognized that its members are not invincible. Indeed, a more realistic attribute would be for them to be resilient: capable of withstanding the stressors of life and war, with the ability to recover from temporary setbacks they may experience. Indeed, the military's desire now is for soldiers to have the physical and psychological resilience to experience positive growth following the stress of being in a war zone or other stressful experience. While efforts to quantify and interpret such an ability are being undertaken by Department of Defense (DOD) working groups, the Army has already launched its resiliency training program, Comprehensive Soldier Fitness (CSF).

Comprehensive Soldier Fitness is a holistic approach to developing the fitness (physical, emotional, spiritual, social, and family) of soldiers, their families, and Army civilians (Cornum, Matthews, & Seligman, 2011). Such fitness will enhance their mission readiness and resilience in a time of high operational tempo (OPTEMPO) and sustained conflict. Recognizing that for some service members it takes more than resilience to regain the ability to complete the mission, the Marine Corps has developed the Combat Operational Stress Continuum, which graphically displays the level of responsibility that a Marine's leadership has for getting a Marine back to duty and fully functioning, as well as the level of responsibility that the medical and chaplain communities have for that Marine (Gaskin, 2008). This model helps to take blame for psychological and physical difficulties off of the individual and encourages the organization to take responsibility for helping the individual bounce back.

Such initiatives by the military go a long way toward making it acceptable and desirable for a soldier to address whatever physical and psychological challenges he or she is facing. Nevertheless, when a soldier is wounded, there are special issues that warrant attention.

When the Invincible Warrior Is Wounded

Consider the soldier who is wounded in a combat zone. Whether wounded in a firefight, or in an accident within the relative protection of the forward operating base (FOB), the soldier's status changes instantly. Rather than being invincible, he becomes visible, tangible evidence that soldiers are vulnerable. Such a realization can be particularly potent in a war zone. This realization may stay with the soldier, long after he is medically evacuated (medevaced) to the rear.

If the soldier was one of several who were wounded, for example in an ambush, there may be

survivor guilt that he continues to experience (Hoge, 2010; Rudd, 2009). Even if others were wounded and survived in the attack, soldiers sometimes feel guilty that they were not wounded as badly as the others. Even more distressing can be the guilt that a leader feels when the others who were wounded more severely are his subordinates. The sense of responsibility for one's troops is deeply engrained in leaders.

Wounded soldiers who are evacuated from theater can also experience guilt at having left behind members of their unit to continue the fight. Although having been wounded is outside their control, they may continue to feel responsibility for their unit members, for their safety, for their completion of the mission. Immediate medical evacuation may also compound a soldier's lack of understanding of what happened on the mission, impeding his ability to have a sense of closure about what took place. The soldier may feel anger at unit leaders for apparently not providing enough information prior to a mission, or for sending the soldiers out without being properly prepared. Being medically evacuated and essentially cut off from the unit, a soldier can be left with stress from many questions, lingering doubts, and anger that can affect his rehabilitation efforts and even the healing of his wounds (Kiecolt-Glaser et al., 1995).

Soldiers who are wounded in a theater of war are frequently heralded as heroes upon their return to the United States. Depending upon the circumstances of injury and individual psychological makeup, the soldier may feel unworthy of such recognition. Even if wounded in situations that, from the outsider's perspective, appear to be clearly combat-related, the soldier may feel he was just in the wrong place at the wrong time, performed stupidly, and thereby incurred injury, or simply did nothing heroic to warrant the special recognition that is being afforded him.

Similarly, a wounded soldier may also recall his feelings related to the incident of injury and feel guilt. Perhaps he felt scared, paralyzed, or even relieved to have been wounded. Such feelings, while in fact very normal, are not often discussed with soldiers as being a likely response to combat, danger, or injury. In the event that a wounded soldier was not exposed to these sorts of possible reactions prior to entering combat, education about these phenomena may be helpful (Hoge, 2010).

Yet another intangible that may affect a wounded soldier in recovery and therapy is how he is functioning since incurring the injury. Consideration must

be given to more than his physical functioning. Certainly physical function is important, and medical stabilization of an injury is of primary importance. But recall the sense of self that the stoic soldier likely possesses: He sees himself as a soldier and a leader. To be a soldier and leader is to be physically fit and capable, to lead by example, to be invincible—or nearly so.

The injury itself is an insult to a soldier's sense of self. So, too, can be the decreased physical ability that comes from the injury. For a person who defines himself as a (fit and capable) soldier and leader, decreased physical ability can be psychologically devastating—there is a loss of self. More than the very real loss of functioning, though, is the change in how other soldiers treat the wounded member. One soldier described what he perceived as disparaging looks he received as he made his way to formation on crutches and had to take a seat during longer formations. Because of the pain medications he was on, the unit had to assign him a driver to take him to his medical appointments, confirming in the soldier's mind just how impotent he had become.

Oftentimes, the wounded soldier's routine is reduced to being shuttled to a series of medical appointments that bear little resemblance to a soldier's typical day. Boredom can contribute to the feeling of uselessness. He may find himself missing formations or falling asleep at inappropriate times due to necessary pain medications. One soldier described the humiliation he felt after losing a significant segment of bowel in an attack, an injury that left him with little control over his bowels. He described having to frequently excuse himself from duties to clean himself and change his underwear. "I used to be a squad leader in combat," he lamented. "Now I shit my pants like a baby every day."

When working with soldiers who are experiencing this level of loss of identity as a soldier, it may be helpful to be particularly mindful of treating them like soldiers. For instance, use their rank when addressing them, even in situations in which first names would be acceptable. Show them the amount of respect that you would any other soldier of their rank and experience. They do not need pity; they get plenty of it elsewhere. They need respect. Just as important, they should be required to afford others the requisite respect that is due. Allowing them to forego military bearing, forget traditional customs and courtesy, even relaxing haircut standards, does them a grave disservice. It communicates that they are no longer seen as soldiers.

In addition to perhaps having lost some of their identity as a soldier, patients may be experiencing a loss of other, very important parts of their identity. One soldier who had returned with significant limitations in strength and range of motion in his shattered arm expressed dismay that he could no longer throw a football with his sons. Since sports had been a primary way that he interacted with his sons, the loss of his physical ability initially felt to him like he could not be a good father. Recognizing this loss and then helping the soldier to find other ways to be a good father was important to his rehabilitation. Some wounded soldiers may feel similarly unable to fulfill what they think are necessary roles for a spouse. Pain and physical functioning may impede sexual function or contribute to irritability that strains the marital relationship. However these roles might be impacted by the injury and change in functioning and relationships, it is important to be attuned to the possibilities, explore them with the soldier patient, normalize the feelings that go along with the changes, and then together to identify new roles that can contribute to regaining function.

Chronic Pain

Oftentimes, soldiers first present in an outpatient psychology or behavioral medicine clinic, having been referred because of chronic pain. This referral may come after months of other referrals to try to ascertain why the soldier is in continued pain, particularly if the majority of his physical wounds have healed. This pattern of referrals and a “last ditch” effort of referring the soldier to Psychology sets up a very difficult situation from which to begin treatment: any resistance and stigma about seeking mental health treatment that the soldier may have felt before is compounded by the belief that he is being referred to Psychology because his symptoms are all in his head. In this situation, the clinician has some significant impediments to overcome.

Rather than trying to ignore the soldier’s desire not to be in a Psychology clinic, it seems most helpful to acknowledge that the soldier might be concerned about what others are thinking—“I’m crazy, I’m making this up; I’m weak; there’s no hope for me.” At this point, talking with the soldier about these beliefs and explaining the long, frustrating process by which many pain patients often get referred to the Psychology Clinic can help normalize the soldier’s experience.

It should be noted here that a more ideal clinical pathway (for patients with chronic pain, for example), would include a psychologist as part of a

multidisciplinary team so that patients observe that it is a matter of course to be evaluated by a psychologist. When physiatrists, psychologists, anesthesiologists, nutritionists, and physical/occupational therapists, for example, work together in a multidisciplinary center, the efficacy of chronic pain treatment is probably better (Flor, Fydrich, & Turk, 1992).

Regardless of how the soldier with chronic pain ends up in a psychologist’s office, it is helpful to provide some education about the nature of pain, theories of pain, and particularly how one might develop chronic pain. Begin by explaining from a physiological standpoint how the autonomic system works (fight or flight response), how adaptive it is for the body to register acute pain, and how the body’s muscles reactively and instinctively brace around an acute injury to protect it. While such bracing is useful initially, it becomes counterproductive once the initial injury has healed. Consider how taxing it is for the muscles to continue to brace, to continue to protect an injury that no longer needs protection. The tensed muscles eventually become painful, much like holding a one-pound dumbbell at arm’s length: while easy at first, it would eventually become painful to maintain. Helping the soldier conceptualize his chronic pain in this way sets the stage for him to accept the necessity and logic of learning muscle relaxation and “stress management” techniques. Similarly, having laid the foundation of understanding how the autonomic nervous system facilitates or impedes arousal, the soldier can see a logical reason to try the strategies you will prescribe.

Skills that the soldier may find helpful include diaphragmatic breathing and progressive muscle relaxation. Training these skills with the aid of biofeedback may help the soldier to shed some preconceived notions that what he learns in the psychologist’s office is all fuzzy and without scientific basis. Rather, the graphic representation of the soldier’s influence over his own body can serve at least two very important functions: it provides “evidence” that he is having an impact on his condition, and it reinforces a feeling of control that the soldier may have lost in his change of identity and roles that came with the original injury.

As treatment progresses, it is important to keep in mind the nature of a soldier. Recall that soldiers are accustomed to pushing themselves physically. When they begin to make progress in pain management, they have a natural tendency to want to push themselves, to regain the physical prowess that was once a central part of their identity. Anyone who has dealt with chronic pain sufferers knows that the

unfortunate result of such enthusiasm is usually that the patient ends up taking “two steps backward” in his pain management. The watchword for activity and pain management should be “moderation.” It is important not to become completely inactive when working to recover from chronic pain; inactivity only compounds the pain. On the other hand, one needs to exercise good judgment and moderation when presented with a day during which pain is more tolerable or even absent.

Another very important concern when working with soldiers with injuries or chronic pain is that of pain medication. It is not unreasonable for a soldier to receive medication to deal with the pain he is experiencing. The soldier may receive narcotics, which can lead to dependence, or there may be several different medications prescribed for pain and other complications of the injury. (Recall the soldier who was mentioned earlier, whose bowel function was compromised.) Taking this very important aspect of the soldier’s treatment into consideration requires attentiveness to the whole of his treatment plan and communication with, at least, the clinician who is prescribing the pain medication. Changes in medication or a decision to decrease the amount of narcotics that a patient is using can be incorporated into the psychology treatment plan, allowing the psychologist to provide the patient with skills to handle attendant anxiety or increases in general arousal.

As important a consideration as medication is the possible, even likelihood of comorbid depression. In a recent study on the comorbidity of chronic pain and depression, almost 35% of the participants with chronic pain also met the diagnostic criteria for depression (Miller & Cano, 2009). It is difficult to say, oftentimes, which came first: the depression or the chronic pain, but when both are present, they need to be treated. Often patients will experience some relief from chronic pain when they are treated pharmacologically for depression. This is understandable, given the analgesic effect that many antidepressants have.

Regardless of which set of symptoms appears first, the combination of conditions in a soldier with injuries presents a complex picture. To summarize, you have a stoic soldier for whom the simple act of getting wounded may be shameful. He might have been medically evacuated because of the injuries, thereby leaving behind unit members to fight without him. There may be guilt associated with the situation, with being recognized as a hero, or with having allowed other members of the team to

be wounded. One soldier who received a Purple Heart for injuries he incurred during a mortar attack mumbled through tears of shame, “I’m only a supply guy. I was just doing my job on the FOB and got hit. I’m not a hero.”

Physical injury and decreased physical ability can result in a loss of identity, particularly if physical prowess and mental toughness were a large part of how the soldier identified himself or herself. Compound the situation with a string of doctor’s appointments, numerous medications, strained relationships with other soldiers and family members, chronic pain, and possible depression. We have not even begun to talk about post-traumatic stress disorder (PTSD) or traumatic brain injury (TBI), and already we see a soldier patient who is at increased risk for suicide.

Suicide rates across the armed services have been on the rise, particularly since the start of contingency operations in Iraq and Afghanistan (U.S. Department of the Army, 2010). Review of the circumstances of the suicides, however, has failed to find a direct link between the suicides and deployment to a war zone. Still, the military and its family members are stressed. Whether a soldier is deployed or not, the stressors of military life for service members and their families are significant and sustained.

Despite concerted efforts to address growing numbers of suicides in the military, the Army (for example) continues to experience rising numbers: 115 suicides in 2007, 140 in 2008, and 160 in 2009 (Zoroya, 2010). Clearly, clinicians working with this population, in this day and age, need to be especially mindful of current suicide rates in the military. Be alert to the combination of pain, psychosocial pressures, and possible polypharmacological treatment the soldier may be receiving.

Post-Traumatic Stress Disorder

This section will not delve into the demonstrated efficacy of various treatments for PTSD. Entire volumes have been written on the topic. For the purposes of this chapter on the psychological sequelae of physical injuries, the important point is to know that there is increased likelihood of developing acute stress disorder or PTSD symptoms with a traumatic physical injury (Wain et al., 2009). Not surprisingly, some studies suggest that the early seriousness of a physical injury is highly associated with later development of PTSD or depression (Grieger et al., 2006).

The possibility that the soldier has PTSD is an important consideration if you plan to use stress

management or other techniques to manage autonomic dysregulation or chronic pain. The attendant anxiety, intrusive memories, and sleep disruption of PTSD can make such skills more difficult to master. It is also important to remember that family relationships and sexual functioning can be impacted by PTSD, even if the initial physical injury does not.

Traumatic Brain Injury

Traumatic brain injury, which is also at increased risk of occurrence in the event of a traumatic injury, may impact the treatment for other physical injuries. Even in the case of mild TBI, or concussion, personality changes, irritability, and concentration difficulties can complicate treatment, to say the least. In response to the large numbers of what has been called the signature injury of the current conflicts, awareness of the signs and symptoms of a TBI has increased. Even the National Football League has come under scrutiny for the toll that repeated concussions, a form of traumatic brain injury, have on players' cognitive and social functioning (Schwarz, 2009). The NFL recently modified its protocols for the handling of players who are diagnosed with a concussion, in order to better ensure their safety (Neale, 2009). If a TBI is the only physical injury that the soldier has sustained, he may feel additional frustration because there may be no outward physical evidence of injury. When others cannot see the injury, they may be less likely to understand the soldier patient's change in personality and behavior.

The longstanding Defense and Veterans Brain Injury Center (DVBIC) continues assessment, treatment, and research of TBI, whether the brain injury occurs in combat or in other traumatic accidents. Their services and the services of neuropsychologists and other healthcare professionals around the Department of Defense are augmented by the National Intrepid Center of Excellence for Psychological Health and TBI (NICOE) in Bethesda, Maryland. Organizations like these and state brain injury associations are excellent resources for clinicians requiring additional training and information in the treatment considerations for patients with brain injuries.

Amputation

With the loss of a limb or other appendage come additional challenges for the soldier patient. The shame, guilt, pain, and medication issues may still be present, but can be compounded by the fact that even what used to be the simplest of actions now

requires considerable effort and practice. The loss of one or several limbs is a reminder, every day, of what it means to sacrifice for service to one's country (Klocek, 2008). Losing a limb can be likened to losing a loved one, with the attendant grieving that one might expect, and the patient may even go through a prolonged grieving process (Wain et al., 2009).

From the point at which the soldier becomes aware of an amputation or serious injury, he may have concerns about his physical abilities, rejection, and the future. Indeed, concerns about limitations on interactions with family and sexual performance are paramount. One amputee cried bitterly in therapy, "I can't give my kids a bath, and I'm in too much pain to even make love to my wife." The adjustments that the soldier patient must make affect his family as well. The wife of an amputee commented, years after her husband's injury, "It was hell living in our house for a long time. He was so angry."

The soldier patient may be working with a physical therapist and other healthcare professionals for a prolonged period, during which his resilience may be tested on a daily basis. In addition to body image concerns, fear of failure, and relearning skills of basic living, the soldier patient is likely to be on pain medications or in treatment for anxiety or mood disorders. Communication and coordination with the members of the healthcare team is important for the soldier's rehabilitation and recovery.

Burns

Severe burns are another physical injury that requires the clinician to conceptualize the treatment of the soldier as described above, but they can also involve severe disfigurement or loss of function. Even as a burn heals, scar tissue and tightening skin can make physical therapy painful. Probably most profoundly, not only might this soldier have lost a major part of his identity due to decreased physical functioning, but the person he sees in the mirror looks different, too. He may be reminded of this repeatedly if others react noticeably to his appearance.

Family

One cannot talk about treating soldiers without considering their families. Today's military is a "more married" force than in generations past (Matthews, 2009). But even single soldiers have families, whether their family is their parents, their children, or their girlfriend or boyfriend. Much attention is given to assisting soldiers and their

families with the reunion after being deployed to a war zone. Family Readiness Groups (in the Army) and chaplains provide education and reassurance to families and service members to prepare them for the eventual homecoming of deployed soldiers. But injury and medical evacuation from theater prevent such emotional and logistical preparation from occurring.

In addition to the family and the soldier not having the typical time to prepare for a reunion, a reunion after injury occurs under difficult circumstances. Perhaps the injuries of the soldier are so severe as to be life-threatening, or they change the level of functioning for the soldier. The soldier may need to rely more heavily on family members, thus feeling like a burden or even being perceived as one (Mateczun & Holmes, 1996).

It is important to include the family in treatment wherever possible—and appropriate. Including a spouse in a therapy session may go a long way toward facilitating communication in a couple or debunking misguided beliefs each has about the other and how they are affected by the injury. Similarly, children who are angry or fearful because of their parent's injuries can benefit from being included in the treatment process. Family members can also provide the soldier important feedback about his progress in rehabilitation or recovery, outside of the view of medical professionals. They can be an integral part of the soldier's recovery and adjustment. In fact, Gottman, Gottman, and Atkins (2011) found that it is possible to affect communications and the marital relationships of deployed soldiers and their stateside family members by teaching them critical social skills. Indeed, military families have a great deal to offer a soldier in facilitating recovery from combat injuries. Not only can they provide much-needed support and feedback, military families and children exhibit great resilience and strength in the face of myriad challenges (Park, 2011).

Summary

This is not a treatment guide. Rather, it is intended to be a helpful way to conceptualize your patient who is a soldier with physical injuries. Those injuries will probably benefit from the use of various psychological methods of treatment. For the stoic soldier, the mere fact of being wounded can be an insult to his identity as a strong, invincible warrior. It is an affront that unforgivingly highlights his vulnerability. Compound that with the possible shame of losing unit members at the time the injury

occurred, or having to leave comrades to continue the fight “alone” when the soldier is medically evacuated, and there is cause for additional guilt. The soldier and his family may not have time to adjust to the homecoming, and the pain, anger, and guilt that the soldier is likely to feel makes their reunion even more difficult.

During treatment, the soldier may resist being seen in a psychology clinic, dealing with chronic pain, or grappling with polypharmacological interventions. Depression can easily set in, and combined with possible impulse-control issues from a TBI and access to multiple pain medications, can easily put the soldier at risk for suicidal ideation or intent. All of this is to say that the soldier with physical injuries can benefit from treatment by a psychologist or other mental health professional. With careful consideration of the myriad powers at work in a soldier's recovery, we can make a profound difference.

References

- Christian, J. R., Stivers, J. R., & Sammons, M. T. (2009). Training to the warrior ethos: Implications for clinicians treating military members and their families. In S. M. Freeman, B. Moore, & A. Freeman (Eds.), *Living and surviving in harm's way: A psychological treatment handbook for pre- and post-deployment of military personnel* (pp. 27–47). New York: Routledge, Taylor & Francis Group.
- Cornum, R., Matthews, M. D., & Seligman, M. E. P. (2011). Comprehensive soldier fitness: Building resilience in a challenging institutional context. *American Psychologist*, 66(1), 1–4.
- Flor, H., Fydrich, T., & Turk, D. (1992). Efficacy of multidisciplinary pain treatment centers: A meta-analytic review. *Pain*, 49(2), 221–230.
- Gaskin, T. (2008, August). Combat operational stress control (COSC) program update. Presentation at the HQMC COSC Conference, San Diego, CA. PowerPoint Slides retrieved from <http://www.usmc-mccs.org/cosc/conference/documents/Presentations/Tuesday%2012%20Aug/Gaskin%20-%2012%20Aug%20Plenary%20COSC%20Program%20Update.pdf>.
- Gottman, J. M., Gottman, J. S., & Atkins, C. L. (2011). Comprehensive soldier fitness: Family skills component. *American Psychologist*, 66(1), 52–57.
- Grieger, T. A., et al. (2006). Post-traumatic stress disorder and depression in battle-wounded soldiers. *The American Journal of Psychiatry*, 163(10), 1777–1783.
- Hoge, C. W. (2010). *Once a warrior, always a warrior: Navigating the transition from combat to home, including combat stress, PTSD, and mTBI*. Guilford, CT: Globe Pequot.
- Hourani, L., Williams, T., & Kress, A. (2006). Stress, mental health, and job performance among active duty military personnel: Findings from the 2002 Department of Defense health-related behaviors survey. *Military Medicine*, 171 (9), 849–856.
- Kiecolt-Glaser J. K., Marucha, P. T., Malarkey, W. B., Mercado, A. M., Glaser, R. (1995). Slowing of wound healing by psychological stress. *Lancet*, 346: 1194–1196.

- Klocek, J. W. (2008). The physical and psychological impact of your injury and disability. In N. D. Ainspan & W. E. Penk (Eds.), *Returning wars' wounded, injured, and ill: A reference handbook* (pp. 50–66). Westport, CT: Praeger Security International.
- Mateczun, J. M., & Holmes, E. K. (1996). Return, readjustment, and reintegration: The three R's of family reunion. In R. J. Ursano & A. E. Norwood (Eds.), *Emotional aftermath of the Persian Gulf War: Veterans, families, communities, and nations* (pp. 369–392). Washington, D.C.: American Psychiatric Press.
- Matthews, M. D. (2009). The soldier's mind: Motivation, mindset, and attitude. In S. M. Freeman, B. A. Moore, & A. Freeman (Eds.), *Living and surviving in harm's way: A psychological treatment handbook for pre- and post-deployment of military personnel* (pp. 9–26). New York: Routledge.
- Meichenbaum, D. (2009). Core psychotherapeutic tasks with returning soldiers: A case conceptualization approach. In S. M. Freeman, B. A. Moore, & A. Freeman (Eds.), *Living and surviving in harm's way: A psychological treatment handbook for pre- and post-deployment of military personnel* (pp. 193–210). New York: Routledge.
- Miller, L. R., & Cano, A. (2009). Comorbid chronic pain and depression: Who is at risk? *Pain*, 10(6), 619–627.
- Neale, T. (2009, December 03). NFL institutes new concussion policy. *MedPage Today*, p. 1.
- Park, N. (2011). Military children and families: Strength during peace and war. *American Psychologist*, 66(1), 65–72.
- Rudd, M. D. (2009). Depression and suicide: A diathesis-stress model for understanding and treatment. In S. M. Freeman, B. A. Moore, & A. Freeman (Eds.), *Living and surviving in harm's way: A psychological treatment handbook for pre- and post-deployment of military personnel* (pp. 239–258). New York: Routledge.
- Ruzek, J. I., & Kudler, H. (2004). Treatment of medical casualty evacuees. In *Iraq War clinician guide, 2nd ed.* (pp. 46–49). Retrieved from <http://www.ptsd.va.gov/professional/manuals/iraq-war-clinician-guide.asp>.
- Schwarz, A. (2009, Dec. 20). NFL acknowledges long-term concussion effects. *New York Times*. Retrieved from <http://www.nytimes.com/2009/12/21/sports/football/21concussions.html>.
- U.S. Department of the Army. (1999). *Army leadership: Be, know, do* (Field Manual No. 22–100). Washington, D.C.: Headquarters. Retrieved from <https://rdl.train.army.mil/soldierPortal/atia/adlsc/view/restricted/9502-1/fm/22-100/toc.htm>.
- U.S. Department of the Army (2010). *Army health promotion, risk reduction, suicide prevention report*. Washington, D.C.: Headquarters. Retrieved from http://usarmy.vo.llnwd.net/e1/HPRRSP/HP-RR-SPReport2010_v00.pdf.
- U.S. Department of Defense. (1997). *Mental health evaluations of members of the Armed Forces* (DOD Directive 6490.1). Washington, D.C. Retrieved from www.dtic.mil/whs/directives/corres/pdf/649001p.pdf.
- U.S. Department of Defense. (2006). *Nuclear weapons personnel reliability program* (DOD Directive 5210.42-R). Washington, D.C. Retrieved from www.dtic.mil/whs/directives/corres/pdf/521042r.pdf.
- Wain, H. J., Bouterie, A., Oleshansky, M., & Bradley, J. C. (2009). Psychiatric intervention with the orthopedically injured. In M. K. Lenhart (Ed.), *Care of the combat amputee* (pp. 265–275). Washington, D.C.: Government Printing Office.
- Wain, H. J., & Gabriel, G. M. (2007). Psychodynamic concepts inherent in a biopsychosocial model of care or traumatic injuries. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry*, 35, 555–573.
- Zoroya, G. (2010, Jan. 29). Army suicide “crisis” leads to action: Officers urged to tell soldiers they're valued. *USA Today*, p. A1.

Operational Psychology

Foundation, Applications, and Issues

Thomas J. Williams, James J. Picano, Robert R. Roland, and Paul Bartone*

Abstract

Operational psychology involves the application of the science of behavior to national security, law enforcement, and military operations. This chapter explores foundational descriptions of operational psychology, discusses its links to other areas of psychology, and addresses its scope of practice. An overview of how operational psychology is applied in support of national security operations is emphasized. In particular, we discuss the application of operational psychology in support of counterintelligence operations, direct and indirect assessments, and assessment and selection of individuals for support to these types of operations.

Keywords: operational psychology, national security, law enforcement, military, counterintelligence, indirect assessment, OSS, espionage

Operational psychology is an emerging and exciting new sub-specialty within the profession of psychology. Operational psychologists promote an ethical framework for applying the science of behavior to threats to national security, intelligence operations, and law enforcement activities (see, e.g., Kennedy & Williams, 2010).

Since the September 11, 2001, terrorist attacks in the United States, operational psychologists have been increasingly recognized as making important contributions in support of national security, law enforcement, national defense, and national intelligence activities (see, e.g., Williams et al., 2006). The attacks on September 11, which targeted U.S. financial and military centers, along with the planned but courageously thwarted attack on another U.S. governmental center (i.e., the U.S. Capitol building), helped highlight the advent of a “global jihad” and the changing nature of a type of war that now poses a national security threat to the foundations of our society. The increase and expanded role of global terrorist activities as threats to both national

and global security are at the center of a debate over whether these are criminal or military acts. However, this debate does not address the more important point, that the extremists are targeting and attacking our national interests in an effort to destroy our nation-state and advance their own, largely religiously inspired, interests.

Consequently, individuals acting on their expressed, collective vision of a global jihad have revealed motivations focused on taking determined actions with the intention of threatening and attacking our fundamental values and way of life. While sharing a collective vision, or “base” (cf. al-Qaeda, or “the base”) of ideas, the al-Qaeda organizational structure and philosophy is “centralization of decision

* The views expressed in this article are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the United States Government.

and decentralization of execution” (al-Hammadi, 2005), which incites individual actors to carry out that vision. Operational psychologists have made, and can make, important contributions by leveraging their understanding of these “individual actors,” their motivations and behavior across cultural domains, and the settings that foster their origination. As was the case in the First World War, psychologists have played and hopefully will continue to play an important and often critical role in helping defend our national interests as the spectrum and nature of war evolves and continues to threaten our society (see, e.g., Williams & Kennedy, 2010; Yerkes, 1918). A recent special issue of *Military Psychology* (Williams & Johnson, 2006) featured a call-to-action for psychologists to better define their roles and responsibilities in military and national security settings, noting:

Operational psychologists must remain responsive and adaptive to the vigorous operational tempo and continuous challenge of serving a nation at war. Because of these often unique and challenging practice applications and environments, both military and other government agency psychologists increasingly face unique clinical concerns, practice challenges, and professional stressors (p. 262).

Implied in the call-to-action above is a realization that operational psychologists most often are professional psychologists who quickly grasp the strategic nature of their activities and who are willing to share their expertise to “operate” within austere and/or dangerous settings in support of national security.

In that same special issue, Williams and colleagues (2006) defined operational psychology as

actions by military psychologists that support the employment and/or sustainment of military forces to attain strategic goals in a theater of war or theater of operations by leveraging and applying their psychological expertise in helping to identify enemy capabilities, personalities, and intentions; facilitating and supporting intelligence operations; designing and implementing assessment and selection programs in support of special populations and high-risk missions; and providing an operationally focused level of mental health support (pp. 194–195).

Staal and Stephenson (2006) further highlighted how operational psychologists leveraged a historically *medical-care-focused role* to one now more focused on intelligence operations, specifically linking their actions to “the use of psychological principles and skills to improve a commander’s decision

making as it pertains to conducting combat and/or related operations.”

It is perhaps useful to reflect on what exactly is meant by “operational psychology.” The word “operational” in operational psychology is derived from the Old French *operacion*, meaning “the performance of some science or art,” and from Late Latin, “to have effect, be active, cause,” as in “causing an action.” Both of these meanings reflect the root word “operation” with its emphasis on “action, performance, and work,” and the underpinnings of “science or art”; also its generally accepted military sense of “operation,” which denotes a “series of movements and acts.” These derivations and meanings combine to capture both the conceptual and functional bases of operational psychology as a subfield of psychology in which the *application of the scientific principles and practices of psychology that involve the operational psychologist’s taking actions, performing activities, or providing consultation in support of national security, military intelligence, or law enforcement activities and/or programs.*

The Foundation of Operational Psychology

The early descriptions of operational psychology and the various roles for operational psychologists have helped define and clarify an emphasis on their work in applied settings both in support of national security and in support of law enforcement and intelligence communities (see, e.g., Bartone et al., 2010; Office of Strategic Services (OSS), 1948; Rowe, Gelles & Palarea, 2006; Williams et al., 2006).

An early representation of the term “operational psychology” was used to describe the assessment procedures used in astronaut selection, with a focus on the “operation” and human factors relevant for space travel (Williams et al., 2006). Picano, Williams, and Roland (2006) also provide an overview of the linkage between the attributes of interest that are assessed and the demands of the positions. These attributes often include the ability to learn and process information (e.g., motivational, intellectual, and cognitive abilities); innovation and initiative in the absence of clear rules; emotional stability and character traits; and physical fitness and stamina to perform the duties and maintain operational security (see, e.g., Picano, Williams, & Roland, 2006). Specific assessment and selection processes have been developed for several groups, often when the focus is on high-risk or security processes: police officers (e.g., Arrigo & Claussen, 2003; Cochrane, Tett, & Vandecreek, 2003); special forces personnel (Banks, 2006; Bartone et al., 2008;

Milgram, 1991); intelligence personnel (OSS, 1948); aviators (Berg et al., 2002); Maschke, 2004); and astronauts (Brady, 2007; Musson, Sandal, & Helmreich, 2004; Santy, 1994).

The scope of practice and various functions also indicate how operational psychologists focus their expertise and research interests on the operational art and science of the profession of psychology to support national security objectives in applied activities. As a consequence, their contributions can range from advising a military combat commander to enhance his understanding of the personality of an adversary (see, e.g., Williams et al., 2006), to helping inform national policies regarding the science behind *educing* information (see, e.g., Fein, Lehner, & Vossekuil, 2006). Indeed Fein, Lehner, and Vossekuil's theory of "educing information" made a major contribution to helping inform what was then a national debate on the scientific basis for obtaining information from others (e.g., during interrogations by police or by intelligence agencies). Their study also revealed the importance and relevance of having "operationally focused" psychologists use their experience and expertise to make contributions to and help inform national security policy.

As practitioners of an emerging sub-discipline, operational psychologists often find themselves in very dynamic situations with few benchmarks or empirical guidelines for how others have done this in the past (see, e.g., Kennedy & Williams, 2010). Like many of the founding members of the profession of psychology, operational psychologists must often possess an adventuresome (but informed) pioneering spirit, which is often very helpful in setting the conditions for their success. Consequently, operational psychologists remain open-minded about the demands they confront, while staying firmly grounded on the ethical foundation of the practice of psychology (see, e.g., Kennedy & Williams, 2010; Staal & King, 2000; Stephenson & Staal, 2007).

Operational psychology is clearly rooted in the clinical discipline of psychology, but professional activities may also depend on a developed expertise in other psychological specialties (e.g., social, cross-cultural, personality, police, political, learning and perception, individual and group differences, and forensic psychology). Indeed, the art and science of operational psychology is emerging and similar to how William Osler described medicine: "a science of uncertainty and an art of probability" (Silverman, Murray, & Bryan, 2008, p. 129). Given the extraordinarily diverse settings and cultures within which

operational psychologists may operate, they must also be interdisciplinary in their scope of activities, often drawing on such diverse disciplines as anthropology, sociology, military science, political science, and international law (Eid & Johnsen, 2005; Johnsen & Eid, 2006).

Consequently, operational psychologists examine aspects of human behavior directly related to "operational activities," often carried out in conjunction with national intelligence or military operations. The practice of operational psychology includes: assessment and selection (Picano et al., 2002); indirect assessment (i.e., profiling; Grisso, 2001; Williams et al., 2006); risk assessment (Fien & Vossekuil, 1998); security clearance evaluations (Bloom, 1993; Young, Harvey, & Staal, 2010); interrogation support (Dunivin et al., 2010); advisory opinions (see, e.g., Kennedy, Borum, & Fien, 2010); and encompasses situations before, during, and after operations have taken place (e.g., Williams et al., 2006). This chapter provides an overview of operational psychology support to national security operations, which includes support to counterintelligence operations, assessment and selection, and counterespionage investigations.

National Security Operations and Practices **FOUNDATION**

Operational psychologists have played important roles in support of national security operations and practices. They provide both direct and indirect support to intelligence community operations, to Department of Defense intelligence activities, and to combatant commanders involved in military operations. While psychologists have long been in a supporting role in law-enforcement activities, new challenges and opportunities are expanding that role in support of counterintelligence, homeland security, the Federal Bureau of Investigation (FBI), and terrorist threats (see, e.g., Mangelsdorff, 2006).

SUPPORT TO CI OPERATIONS

Support to counterintelligence activities was among the earliest roles performed by operational psychologists (see Kennedy, Borum, & Fein, 2010; Williams et al, 2006). Support to counterintelligence operations can range from assessing the security-clearance risk factors (Bloom, 1993; Young, Harvey, & Staal, 2010) and training employees about vulnerability factors related to individuals convicted of espionage, to actual support to counterintelligence/counterespionage investigations (see, e.g., Crawford & Bosshardt, 1993; Herbig & Wiskoff, 2002;

Kipp, 2001; Kramer, Heuer, & Crawford, 2005). It might also involve conducting “vulnerability to committing espionage” assessments, evaluating a sensitive source for their suitability and stress-tolerance to working undercover (Krause, 2009, Mulloy, 2009), or their suitability for working behind enemy lines as an asset supporting national security objectives (cf. Office of Strategic Services [OSS], 1948; Shumate & Borum, 2006). This is one of the more fascinating and challenging areas of practice for an operational psychologist, and in many ways, it goes to the heart of human nature in assessing individuals for their potential involvement in or their propensity toward spying, often described as the second-oldest profession.

Specific practice areas might involve validating the psychological strengths and vulnerabilities of someone who has volunteered for counterintelligence operations (Kennedy, Bornum, & Fein, 2010). Since an individual volunteers to become involved in these types of operations, it is important to carefully assess their motivations for doing so and to understand the potential impact of any psychological vulnerability. For example, since the individual may experience increased stress, the question may arise as to what extent this individual possesses a coherent sense of self-identity, how well they cope, what is their willingness to follow instructions, and so forth: all are important factors to consider (cf. OSS, *Assessment of Men*). Since the individual who is volunteering for participation in an activity that no one may be able to fully comprehend, or even anticipate the full implications of (due to uncertainty about what might happen behind enemy lines or how a potential adversary may react), it is also important for operational psychologists to understand the foundation of helping behavior and the characteristics that lead to involvement (see, e.g., Latane & Darley, 1970). The OSS staff (1948) emphasized in *Assessment of Men* the need to assess the whole person, noting:

For researchers into normal personality, the OSS system of assessment, or something comparable to it, is essential, since most other selection systems do not include investigations of the dynamic components of the total personality and without these, one cannot even hope to understand the character structure of human beings (p. 467).

Determinations of an individual’s psychological processes and an understanding of the interplay of culture and behavior and the influence of cultural systems on the values and belief systems of individuals is

also critical (see, e.g., Inglehart & Baker, 2000; Kluckhohn, 1954, for an early review; see also Seul, 1999, for a discussion of how religion can serve identity needs). Since operational psychologists will provide support around the world, they need to remain aware of and attuned to the cultural differences in values (see, e.g., Hofstede’s 1980, 2001: discussions of *power distance*, *uncertainty avoidance*, *individualism*, and *masculinity*); in how the values deemed important in different cultures (see, e.g., Schwartz’s [1994] seven value types: *embeddedness*, *affective autonomy*, *intellectual autonomy*, *hierarchy*, *mastery*, *egalitarian commitment*, and *harmony*), and alert to the perceptions of national character stereotypes that reflect the personality traits of typical members within a culture (see, e.g., Tarracciano et al., 2005). An example for the type of cultural awareness that an operational psychologist should have is provided by Sue and Sue (1990) in the context of cross-cultural counseling. Individuals whose primary language at home is different from the one they use when meeting with others may depend more heavily on the nonverbal cues, such as tone of voice, facial expressions, and body movements (Sue & Sue, 1990).

Operational psychologists in support of counterintelligence operations have expertise and experiences that make them valuable contributors in vetting processes to support recruitment activities with individuals willing to participate in these types of activities (i.e., to become a spy against one’s own nation). Although the motivation to engage in espionage may be complex, it is perhaps useful to think of it as ultimately coming down to a choice that places two competing values in contrast (e.g., conformity to one’s national identity, in contrast with the freedom and self-direction or power an individual may feel from their spying activities). Since values are seen as guiding principles in people’s lives and exist across contexts, they are seen as relatively stable personality attributes (see, e.g., Peterson & Seligman, 2004). This suggests the importance of assessing in various ways the values an individual holds to better understand how their perceptions, attitudes, and ultimately their behavior are affected by these values (e.g., Rokeach, 1973).

Operational psychologists in support of counterintelligence operations also need to understand what Albert Bandura (1998) describes as *moral disengagement*, and the process he describes as *cognitive reconstrual*. While an individual’s moral conduct is regulated by self-sanctioning, Bandura notes how individuals will “refrain from behaving in ways that

violate their moral standards, because such behavior would bring self-condemnation” (p. 161). However, effective counterintelligence operations focus on building a relationship that allows an individual to disengage from their moral standards (e.g., in a manner equivalent to a married partner engaged in an extra-marital affair, they may have to lie about their motivations) through a process of “cognitive reconstrual,” which can occur through unconscious cognitive processes and/or through intentional training. Bandura also notes how this cognitive reconstrual can be a secondary result of association and activities. A good example of this process is offered by the infamous spy Aldrich Ames in Pete Earley’s book, *Confessions of a Spy*. In the passage relating his motivations for committing espionage against the United States, Ames provides an example of self-sanctioning of his espionage activities along with cognitive reconstrual secondary to the developed relationship of “trust” with the KGB [spy agency for the former Soviet Union] agents who were his “handlers”:

By 1985 I also felt I knew more than anyone else about the real Soviet threat, the real Soviet tiger, and I did not believe that what I was about to do would harm this country. . . . I personally felt totally alienated from my own culture. I did not feel any sense of loyalty to what mass culture had become. I did not feel part of society. . . . All these things worked against the potential barriers. The truth is that there was only one barrier left, and that was one of personal loyalty to the people I knew and unfortunately it was a not a very strong one. . . . I was afraid . . . that if I failed in loving Rosario, only a kind of living death or suicide remained for me. . . . I decided to let the KGB worry about keeping me safe. I decided not to deal with the enormity of what I had done. . . . I do feel a sense of continuing obligation and gratitude to the KGB, and I guess the reason is because the KGB stuck with me, and protected me and I think the men whom became my handlers developed a genuine warmth and friendship for me (Earley, 1997, pp. 146–147).

APPLICATIONS

The brief passage above helps highlight the opportunity for contributions by operational psychologists in helping security agencies better understand the complex interplay of motivations and personality when individuals commit espionage. Toward that end, the Federal Bureau of Investigation recently solicited a contract for psychological services in support of

their counterintelligence division’s Behavioral Analysis Program (BAP). The FBI is increasingly using psychologists with specialized expertise to assist FBI special agents in counterintelligence and counterterrorism operations and investigations (Krause, 2009). This support is easily seen as falling within the practice and specialty area of operational psychology, given its emphasis on using behavior-based and analytical techniques to assess personalities of subjects and/or targets of their investigations.

DIRECT VERSUS INDIRECT ASSESSMENTS

Understanding of how an individual’s values influence his or her behavior might come from either direct or indirect assessments. A direct assessment is possible whenever someone wishes to participate and/or is able to participate in a more thorough vetting process that might include an interview (individual and collateral), psychological testing, and file and record reviews. In a manner commensurate to a consultant’s review of a medical record, an “indirect” assessment may mean that, while the operational psychologist may not have direct access to the individual of interest, other trusted agents would, in most cases. Therefore, similar to a consultation, an indirect assessment may depend on more collateral information from third sources to include the possibility of behavioral observations, audio and video sources, photographs, and so on (see, e.g., Fields, Elbedour, & Hein, 2002; Post & Schneider, 2003; Zullo et al., 1988). Although one could assume that indirect assessments would likely be highly classified, it is interesting to note that an acknowledgement of their use by national-level intelligence services is provided in former president Jimmy Carter’s book, *Keeping Faith*. As Carter was preparing for negotiations with Egyptian president Anwar al-Sadat and Israeli Prime Minister Menachem Begin, he noted how he was provided “psychological analyses” in preparation for meeting the other two leaders:

I was poring over psychological analyses of two of the protagonists which had been prepared by a team of experts within our intelligence community. This team could write definitive biographies of any important world leader, using information derived from a detailed scrutiny of events, public statements, writings, known medical histories, and interviews with personal acquaintances of the leaders under study. . . . What made national leaders? What was the root of their ambition? What events during past years had helped to shape their characters? . . . Likely reaction to

intense pressure in a time of crisis? . . . Strengths and weaknesses? . . . I was certain they were preparing for our summit conference in a similar manner (p. 320).

Thus, these psychological profiles would seem to serve a number of purposes. For example, in the book *Gideon's Spies*, there is an account of how Israeli Prime Minister Benjamin Netanyahu's wife, Sara, began using the profiles created by the Israeli intelligence service, the Mossad:

But matters had become alarming when not only the prime minister but his wife, Sara, wanted to peer behind the looking glass into Israel's intelligence world. She had invited senior Mossad officers to call on her at home and answer her questions, claiming she was following the example of Hillary Clinton's interest in the CIA. The featureless corridors of Mossad's headquarters building in Tel Aviv had echoed with the scandalized whispers of how Sara Netanyahu had demanded to see psychological profiles of world leaders she and her husband would be entertaining or visiting (Thomas, 2009).

Completing psychological profiles, or indirect assessments, involves the melding of several important aspects of a leader's personality, motivations, decision making, and leadership style, and his or her behavior in different times, settings, and circumstances (see, e.g., Feldman & Valenty, 2001; Fields, Elbedour, & Hein, 2002). Feldman and Valenty provide a useful paradigm for indirect assessments by referencing a theoretical underpinning for the perception and stability of personality. They suggest Maddi's (1980) perception of *personality* as: "a stable set of characteristics and tendencies that determine those commonalities and differences in people's psychological behavior (thoughts, feelings, and actions) that have continuity in time and that may not be easily understood as the sole result of the social and biological pressures of the moment" (p. 13). This leads the operational psychologist to explore the core of the personality common to all people (see, e.g., McCrae et al., 2005); along with the observed and reported patterns of behaviors, feelings, and actions that have regularity and that we might construe as "traits" when represented in certain combinations (e.g., stubbornness); and finally, the developmental shapers of one's personality (see, e.g., Cummings, Davies, & Campbell, 2000, especially chapters 5 and 6).

Psychologists in general, and operational psychologists in particular, are often interested in assessing and understanding an individual's developmental

regulation and coping across their lifespan (Ram & Gerstorff, 2009). For example, given the complexity of human behavior, it would seem important to understand that intra-individual variability, trait-like capacities, and the dynamic of an individual's adaptation processes change as they age (Ram, Lindenberger, & Blanchard-Fields, 2009). As Ram and Gerstorff note, psychologists are often interested in the extent to which an individual can change, adapt, and be molded or shaped by circumstances (see especially Li, 2003, for a cultural context for this change); how robust they are in maintaining their adaptive functionality across their lifespan; and just as important, the extent to which individuals reveal an *inability* to change across the various contexts (see, e.g., Cattell, 1996).

While there are multiple reasons for why someone would volunteer for clandestine activities against their own nation, it is useful to consider that in most cases, the following four conditions are usually present: They have a major life stressor (ego, money, illness, etc.); they recognize a financial need or revenge opportunity; they have (or had) access to classified information; they have the opportunity (either awareness or contact for what to do); and perhaps most important, they have a set of underlying motives that allow the aforementioned factors to coalesce into action (see, e.g., Crawford & Bosshardt, 1993). Aldrich Ames, the infamous former CIA agent who now serves in prison for spying for the Soviet Union exemplifies well this motivational structure: His pending divorce and financial demands from his soon-to-be-ex-wife Nan, along with his relationship with Rosario (his soon-to-be-second wife whom he described as critical for his life to go on), was creating a perfect storm of financial difficulties. On a train ride back from New York City to Washington, D.C., Ames considered robbing the local bank near where he lived. He then recalled how a double agent had recently been paid \$50,000 for his information (Wiener, Johnston, & Lewis, 1995). The die was cast; he now had the life crisis, the means, the motive, and the access to commit espionage against his country. The KGB agent handling Ames, like most human intelligence operatives, was very good at assessing Ames' motivations. However, as that agent noted, their work "really consists of finding people who want to be recruited" (Cherkashin & Feifer, 2005, p. 27).

Operational psychologists can work closely with intelligence operatives to assess how individuals are putting their motives into action. In particular, since when individuals volunteer to commit espionage,

it is often related to getting money or a sense of power and freedom, it is important for operational psychologists to understand values and how values relate to personality, perceptions, attitudes, and behavior (see, e.g., Rokeach, 1973; Schwartz, 1992). Another area of relevance is one's sense of self (see, e.g., Pervin, 1984) as an organizing principle for one's view of the world. As Pervin (1999) notes, when attempting to explain the collectivism versus individualism sense of self as expressed within the culture, it is also important to realize that even the sense of self as independent or interdependent differs and may not exist within all cultures.

The importance of these insights for operational psychologists becomes evident in considering three important areas for assessing another's strengths and vulnerabilities: cognition, motives, and affect. For example, Pervin (1999) notes how research reveals that while individuals often overestimate their internal motives and underestimate the importance of external situational pressures, this "fundamental attribution error" is not evident in every culture. During interviews with individuals from diverse cultures, it is important to understand each may differ in the context, causality, and attributions for their related experiences or views of the actions of others. For example, while Indians may offer contextual explanations for their behavior (Miller, 1984), research on other cultures failed to identify the fundamental attribution error (Morris & Peng, 1994), but did find a more negative explanatory style in mainland Chinese subjects (Lee & Seligman, 1997).

Thus, a cross-cultural assessment of an individual's motives for taking an action or participating in support of a potentially clandestine operation is another area of critical importance. This motivational underpinning for action would seem important to determine when involved in the psychological vetting of an individual's ability to follow direction or accurately report their observations. For example, it is important to achieve a good cross-cultural understanding of an individual's tendency to attribute their success or failure to themselves or the situation (i.e., self-enhancement bias)—but this does not appear in every culture (Pervin, 1999). As an example, both the strength of the need for achievement and how it is manifested may differ significantly, highlighting our need to understand the process by which cultural values are internalized into goals (Pervin, 1999).

Since a great deal of our judgment about someone's credibility stems from our reading of their

emotional expressions, the dynamic between emotional expression in our own culture and what is deemed important in another culture is critical to consider. As Pervin (1999) notes, to "know the individual one must be aware of content and meaning . . . to know the nature of personality functioning one need not know each and every person" [within the culture] (p. 38).

Psychologists have long been involved in applying and lending their scientific and psychological expertise to help define and select for attributes, characteristics, and abilities desirable for certain positions, responsibilities, or actions (Anastasi, 1979, pp. 88–90). The Army Alpha and Beta tests, as well as several individual tests (e.g., the Yerkes-Bridges Point Scale, the Stanford-Binet Scale, and the Performance Scale) used during World War I represent perhaps the earliest examples the application of psychological science to national security (Terman, 1918; Yoakum & Yerkes, 1920). Importantly, Terman opens his seminal paper with a quote that is perhaps timeless and that helps set the context for the important contributions that Terman envisaged for psychologists then, and that still holds relevance for today's operational psychologists in support of current threats to national security: "The war will be won through a judicious expenditure of brain power rather than a stupendous expenditure of man power"; General Crowder, in an interview quoted in the *Literary Digest*, September 14, 1918" (Terman, 1918). Terman's stated purpose in support of the war effort was two-fold: identify which men should serve in which specialty areas to help the American military (which he described as an "assembled horde" that would be easily defeated by a well-organized and better trained German army one-twentieth its size) become a more efficient and better prepared military; and second, to reduce the time necessary for organizing and training units to get them into combat more quickly (Terman, 1918).

Taft (1959) provides an excellent overview of the foundational aspects of personality assessment of relevance to operational psychologists. He notes how personality assessment is intended to describe a person's characteristics by categorizing their traits on some communicative dimension or dimensions. Murray (1938) was one of the first to combine interviews with a battery of objective, projective, and situational tests that served as a precursor to the OSS procedures, but lacked the external criterion-related validity that Cattell's (1957) work later provided.

During World War II, psychologists once again contributed to national security by applying

psychological science to the development of an assessment and selection program for training personnel for covert operations (i.e., spies) behind enemy lines. Their intriguing and resourceful efforts were published after the war as *The Assessment of Men*, many of whose authors were assigned to the OSS, who became historically prominent psychologists (i.e., Donald Fiske, Donald MacKinnon, Eugenia Hanfmann, James Miller, H. A. Murray).

According to Taft (1959), in a perhaps ironic historical twist, the OSS assessment and selection process was informed by the procedures of the British War Officer Selection Boards, which in turn had been inspired by German officer multiple-techniques selection boards (Farago & Gitler, 1941). Their pioneering, quasi-natural social situations used leaderless discussions to judge applicants on potential social skills and helped produce the first validated material using combined multiple assessment processes (cf. Cronbach & Meehl, 1995). Taft notes that “neither time available nor the conditions [viz., the war] permitted more scientific procedures than that” (p. 335).

Thus, assessment and selection procedures have three important foci: human performance in some socially defined situation[s] (i.e., the criterion performance); performance in a defined assessment situation; and the defined, validated link between the two (e.g., predictive validity). *The Assessment of Men* remains an important and fundamental classic study that demonstrates early and important efforts by psychologists to promote the integration of the science and practice of applying psychological methods and processes in support of national security.

Assessment and selection processes and procedures in support of operational psychology have a foundation in many applied settings: one in particular is the self-presentation and representations extant in selection interviews. It is important to also note these same processes may operate when individuals are being interviewed in support of counterespionage or counterintelligence operations. That is, when either desirability or suitability characteristics are the focus of an assessment, the subject’s self-representation as well as the “assessor’s” characteristics are activated and can influence both perceptions and decisions of high-stakes decision making.

Social influence theory and interdependence theory, from the field of social psychology, offer important bases for understanding the interpersonal processes and reciprocal influences involved between those assessing and those being assessed (see, e.g., Cialdini & Trost, 1998; Levy, Collins, & Nali, 1998).

Simply stated, these processes help describe the behavior used by individuals to interpersonally influence others they are interacting with in order to benefit themselves with a favorable evaluation. Barrick, Shaffer, and DeGrassi (2009) note three such tactics that are often used: appearance, impression management (i.e., self-promotion and ingratiation), and verbal and nonverbal behavior (i.e., what they say and do in the interview).

A desirable outcome for assessment and selection is the identification of any relevant information about the suitability of the individual. To ensure completeness of that process, an operational psychologist should understand the literature on self-concealment and the personality, cultural, socioeconomic, and situational factors related to an individual’s likelihood of concealing information are of critical importance (e.g., Larson & Chastain, 1990). The psychologist should also remain alert to the cognitive consequences and/or burden experienced by those who must maintain secrecy (see, e.g., Lane & Wegner, 1990). That is, if an individual is being assessed for sensitive operations requiring them to maintain secrecy about their involvement, activities, travel, and contacts, their handlers should be apprised of any identified vulnerabilities or concerns about the impact of these responsibilities.

The book *Widows* (Corson, Trento, & Trento, 1989) provides a provocative look into the stresses encountered during what was known as GRAPHIC IMAGE, one of the most effective counterintelligence operations in history. This operation involved a U.S. Army double agent, Ralph Sigler, whose mother lived behind the Iron Curtain in Czechoslovakia, under the control of the former Soviet Union (see also Stark, 1976). Corson, Trento, and Trento (1989) provide insight into a penetration by Sigler into the former Soviet Union’s intelligence community. This account offers an intriguing description of the risks along with the psychological stresses and strains experienced by Sigler. Using interviews with Sigler’s wife and others, the authors recreate the inner turmoil experienced by a man who was asked to assume and live two separate identities. Sigler’s story ended tragically with further intrigue given the questions raised by the manner of his death. His death was ruled a suicide but important questions were raised about Sigler’s level of distress and what steps Sigler’s handlers took after Sigler failed a polygraph examination question regarding who he had told about his spying activities.

Operational psychologists can learn a great deal from the description of Sigler’s activities as well as

the stresses he faced as a double agent. This account offers a glimpse into the world of double agents and the difficulties encountered by individuals who are asked to maintain two “senses of self.” It also offers insight into how an operation can go terribly wrong when those involved do not fully understand the psychological processes and strains encountered when our nation, or any nation, asks one of its citizens to become a double agent—in essence, to split his or her identity in support of national security.

Whether we view terrorist activities as “criminal” or “military,” operational psychologists who are involved in national security operations must become experts in the human decision-making processes that can lead one to commit terrorist acts (Moghaddam, 2005; Moghaddam et al., 2005). Trying to determine the planning and likely courses of action of an adversary, individual terrorist, or terrorist group’s decision-making process is extraordinarily difficult. Nonetheless, it is imperative that we study our potential adversaries to “understand what he’ll do, how he’ll do it, what his capacity to inflict harm will be, and the environment in which he is operating—in short, knowing the scene of the crime before the crime is committed” (Behler, 2001).

We need to better understand our opponents; in particular, their mindsets and motivations. As an example, the Afghan Taliban fighters have been seen as “resolute and capable fighters” (Biddle, 2002). The analysis of their motivations for either capitulating or standing to fight is potentially very important information for negotiations and for a combatant commander to understand. Biddle (2002) provides a military historian’s view of several of these processes, many of which have clear psychological underpinnings:

- Morale or motivation
- Military training and expertise (as it relates to morale)
 - Presence or absence of popular support
 - View of defection by soldiers in Afghan culture
 - Impact of surprise on morale
 - Perceived dependency on unpredictable sources of outside support
 - Role of safe zones of operations contiguous to operational areas

Operational psychologists have a clear interest in better understanding and contributing to this literature to better identify the principles and techniques of human influence and interaction that might afford increased tactical advantage in detention or captivity. There is also the need to provide this support with

competence in diverse cultural settings, and using the most effective interpersonal techniques, to provide training in active interpersonal engagement skills that might prove maximally effective against adversaries and increase their survival in captivity. We need increased research in this area to identify and apply the critical factors and techniques of human influence in order to better achieve a tactical advantage for our soldiers or operatives in captivity. Operational psychologists have the opportunity to provide value-added support that directly assists combat commanders and the military. But of course, psychologists must always operate within a framework of sound ethical practice (American Psychological Association [APA], 2002, 2005, 2010; Kennedy & Williams, 2010).

There has been recent debate about how much involvement psychologists should have in support of national security activities (see, e.g., Barnett et al., 2007; Behnke, 2006; Behnke & Kinscherff, 2005; Carter & Ables, 2009). When viewed from the context of time and opportunity, some of the tremendous growth that has occurred within the field of psychology has come about in direct response to threats to national security and the efforts of psychologists, like other citizens, to mitigate or respond to that threat.

From the beginning of its more than 50-year history, each revision of the APA’s “Ethical Principles of Psychologists and Code of Conduct” has been guided by the following objectives first put forth by Hobbs (1948, pp. 83–84):

- To express the best ethical practices in the field as judged by a large representative sample of members of the APA;
 - To reflect an explicit value system, empirically based, as well as clearly articulated decisional and behavioral rules;
 - To be applicable to the widest possible participation among psychologists, covering all important situations and the full range of activities and role relationships encountered in the work of psychologists;
 - It should be enlightening to others about the work of psychologists.

These summarized fundamental principles for the ethics code reveal that operational psychologists can and do provide an ethical practice in operational psychology that helps bridge the gap between psychology as a profession and the public interest of protecting life, liberty, and families served by our national security strategy (see e.g., Williams & Kennedy, 2010).

Consequently, operational psychologists must seek to use the full spectrum of psychological expertise without breaking the law (Pope & Bajt, 1988) or compromising the professional and personal ethics that form the expression of our underlying values (Williams & Kennedy, 2010). Therefore, we must appreciate the need to use a model similar to that developed by the early leaders of the profession of psychology to help guide the actions of operational psychologists across national boundaries and with diverse populations (Blickle, 2004; Pettifor, 2004). In essence, operational psychologists must provide their services in an ethical manner as they confront the challenges to our values as a nation and a people.

References

- al-Hammadi, K. (2005, March 22). "The inside story of al-Qa'ida, Part 4." *Al-Quds al-Arabi*.
- American Psychological Association. (2002). Ethical principles of psychologists and code of conduct. *American Psychologist*, 57, 1060–1073.
- American Psychological Association. (2005). *Report of the American Psychological Association presidential task force on psychological ethics and national security*. Washington, D.C.: Author.
- American Psychological Association. (2010). *Ethical principles of psychologists and code of conduct (2002, Amended June 1, 2010)*. Retrieved from <http://www.apa.org/ethics/code/index.aspx>.
- Anastasi, A. (1979). *Fields of applied psychology* (2nd ed.). New York: McGraw Hill.
- Arrigo, B., & Clausen, N. (2003). Police corruption and psychological testing: A strategy for pre-employment screening. *International Journal of Offender Therapy & Comparative Criminology*, 47, 272–290.
- Bandura, A. (1998). "Mechanisms of moral disengagement." In Walter Reich (Ed.), *Origins of terrorism: Psychologies, ideologies, theologies, states of mind*. Washington, D.C.: Woodrow Wilson Center Press.
- Banks, L. M. (2006). The history of special operations psychological selection. In A. D. Mangelsdorff (Ed.), *Psychology in the service of national security* (pp. 83–95). Washington, D.C.: American Psychological Association.
- Barnett, J. E., Behnke, S. H., Rosenthal, S. L., & Koocher, G. P. (2007). In case of ethical dilemma, break glass: Commentary on ethical decision making in practice. *Professional Psychology: Research and Practice*, 38(1), 7–12.
- Barrick, M. R., Shaffer, J. A., & DeGrassi, S. W. (2009). What you see may not be what you get: A meta-analysis of the relationship between self-presentation tactics and ratings of interview and job performance. *Journal of Applied Psychology*, 94, 1394–1411.
- Bartone, P. T., Johnsen, B. H., Eid, J., Violanti, J. M., & Laberg, J. C. (2010). *Enhancing human performance in security operations: International and law enforcement perspectives*. Springfield, IL: Charles C. Thomas.
- Bartone, P. T., Roland, R. R., Picano, J. J., & Williams, T. J. (2008). Psychological hardiness predicts success in U.S. Army Special Forces candidates. *International Journal of Selection and Assessment*, 16, 78–81.
- Behnke, S. (2006). Ethics and interrogations: Comparing and contrasting the American Psychological, American Medical and American Psychiatric Association positions. *Monitor on Psychology*, 37, 66–67.
- Behnke, S. H., & Kinscherff, R. T. (co-chairs). (2005). Ethics on the frontlines—Psychology, behavioral science and national security. Proceedings of the American Psychological Association, Washington, D.C.
- Behler, R., Maj. Gen. (2001). "Homeland information: AOC can coordinate U.S. terror defense." *Defense News*, p. 13.
- Berg, J. S., Moore, J. L., Retzlaff, P. D., & King, R. E. (2002). Assessment of personality and crew interaction skills in successful naval aviators. *Aviation, Space, and Environmental Medicine*, 73, 575–579.
- Biddle, S. (2002, November). Afghanistan and the future of warfare: Implications for army and defense policy. Carlisle, PA: Strategic Studies Institute, U.S. Army War College.
- Blickle, G. (2004). Commentaries on "Professional Ethics Across National Boundaries" by Jean L. Pettifor: Professional ethics needs a theoretical background. *European Psychologist*, 9, 273–274.
- Bloom, R. W. (1993). Psychological assessment for security clearances, special access, and sensitive positions. *Military Medicine*, 158, 609–613.
- Brady, J. V. (2007). Behavior analysis in the space age. *Behavior Analyst Today*, 8, 398–407.
- Carretta, T. R. (1992). Recent developments in U.S. Air Force pilot candidate selection and classification. *Aviation, Space, and Environmental Medicine*, 63, 1112–1114.
- Carter, J. (1982). *Keeping Faith*. New York: Bantam.
- Carter, L. A., & Abeles, N. (2009). Ethics, prisoner interrogation, national security, and the media. *Psychological Science*, 6, 11–21.
- Cattell, R. B. (1957). *Personality and motivation: Structure and measurement*. New York: World Books.
- Cattell, R. B. (1966). Patterns of change: Measurement in relation to state—dimension, trait change, lability, and process concepts. In R. B. Cattell (Ed.), *Handbook of multivariate experimental psychology*. Chicago, IL: Rand McNally.
- Cherkashin, V., & Feifer, G. (2005). *Spy handler: Memoir of a KGB officer*. New York: Basic Books.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology*, Vol. 2 (4th ed., pp. 151–192). New York: McGraw-Hill.
- Cochrane, R. E., Tett, R. P., & Vandecreek, L. (2003). Psychological testing and the selection of police officers: A national survey. *Criminal Justice and Behavior*, 30, 511–537.
- Corson, W. R., Trento, S. B., and Trento, J. J. (1989). *Widows*. New York: Crown Publishers.
- Crawford, K. S., & Bosshardt, M. J. (1993). *Assessment of position factors that increase vulnerability to espionage*. Monterey, CA: Defense Personnel Security Research Center.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281–302.
- Cumming, E. M., Davies, P. T., & Campbell, S. B. (2000). *Developmental psychopathology and family process: Theory, research, and clinical implications*. New York: Guilford.
- Dunivin, D., Banks, L. M., Staal, M. A., Stephenson, J. A. (2010). Behavioral science consultation to interrogation and debriefing operations: Ethical considerations. In C. H. Kennedy &

- E. A. Zillmer (Eds.), *Military psychology: Clinical and operational applications* (pp. 85–106). New York: Guilford Press.
- Earley, P. (1997). *Confessions of a spy: The real story of Aldrich Ames*. New York: G. P. Putnam's Sons.
- Eid, J., & Johnsen, B. H. (2005). *Operativ Psykologi* [Operational Psychology]. Bergen, Norway: Fagbokforlaget.
- Farago, L., & Gittler, L. F. (Eds.) (1941). *German psychological warfare: Survey and bibliography*. Oxford, England: Committee for National Morale.
- Feldman, O., & Valenty, L. O. (Eds.) (2001). *Profiling political leaders: Cross-cultural studies of personality and behavior*. Westport, CT: Praeger Publishers/Greenwood Publishing Group.
- Fields, R. M., Elbedour, S., & Hein, F. A. (2002). The Palestinian suicide bomber. In C. E. Stout (Ed.), *The psychology of terrorism*, Vol. 2 (pp. 193–223). Westport, CT: Praeger.
- Fein, R. A., Lehner, P., & Vossekuil, B. (2006). *Educing information-interrogation: Science and art, foundations for the future*. Retrieved June 13, 2010, from <http://www.fas.org/irp/dnii/educing.pdf>.
- Fein, R. A., & Vossekuil, B. (1998). *Protective intelligence and threat assessment investigations: A guide for state and local law enforcement officials*. (NIJ/OJP/DOJ Publication No. 170612). Washington, D.C.: U.S. Department of Justice. Retrieved September 4, 2010, from http://www.secretservice.gov/ntac/PI_Guide.pdf.
- Geddes, N. (1986). The use of individual differences in inferring human operator intentions. *Proceedings of the Second Annual Aerospace Applications of Artificial Intelligence Conference*. Dayton, OH; 14–17 Oct., pp. 31–41.
- Grisso, T. (2001). Reply to Schafer: Doing harm ethically. *Journal of the American Academy of Psychiatry and the Law*, 29, 457–460.
- Herbig, K. L., & Wiskoff, M. F. (2002). *Espionage against the United States by American citizens: 1947–2001*. Monterey, CA: Defense Personnel Security Research Center.
- Hobbs, N. (1948). The development of a code of ethical standards for psychology. *American Psychologist*, 14, 107–109.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Newbury Park, CA: Sage.
- Hofstede, G. (2001). *Culture's consequences* (2nd ed.). Beverly Hills, CA: Sage.
- Hogan, M. (2003). The president's new freedom commission: Recommendations to transform mental health care in America. *Psychiatric Services*, 54, 1467–1474.
- Howe, E. G. (2003). Dilemmas in military medical ethics since 9/11. *Kennedy Institute of Ethics Journal*, 13, 175–188.
- Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change and the persistence of traditional values. *American Sociological Review* 65, 19–51.
- Jeffrey, T. B., Rankin, R. J., & Jeffrey, L. K. (1992). In service of two masters: The ethical-legal dilemma faced by military psychologists. *Professional Psychology: Research and Practice*, 23, 91–95.
- Johnsen, B. H., & Eid, J. (2006). Operational psychology: Training and development issues. *Military Psychology*, 18, S1–S2.
- Kamin, L. J. (1974). *The science and politics of IQ*. Potomac, MD: Erlbaum.
- Kendall, P. C., & Beidas, R. S. (2007). Smoothing the trail for dissemination of evidence-based practices for youth: Flexibility within fidelity. *Professional Psychology: Research and Practice*, 38, 13–20.
- Kennedy, C. H., & McNeil, J. A. (2006). A history of military psychology. In C. H. Kennedy & E. A. Zillmer (Eds.), *Military Psychology: Clinical and Operational Applications*. New York: Guilford.
- Kennedy, C. H., & Moore, B. A. (2008). Evolution of clinical military psychology ethics. *Military Psychology*, 20, 1–6.
- Kennedy, C. H., & Williams, T. J. (2010). (Eds.) *Ethical Practice in Operational Psychology: Military and National Intelligence Applications*. Washington, D.C.: American Psychological Association.
- Kennedy, K., Borum, R., & Fien, R. (2010). Ethical dilemmas in psychological consultation to counterintelligence and counterterrorism activities. In C.H. Kennedy & T. J. Williams (Eds.), *Ethical Practice in Operational Psychology: Military and National Intelligence Applications*. Washington, D.C.: American Psychological Association.
- Kipp, S. (2001). *Espionage and the insider*. San Francisco: SANS Institute.
- Cluckhorn, C. (1954). Culture and behavior. In G. Lindzey (Ed.), *Personality in nature, society, and culture*. New York: Knopf.
- Knapp, S. J., & Vandecreek, L. D. (2003). *A guide to the 2002 revision of the APA Ethics Code*. Sarasota, FL: Professional Resource Press.
- Knapp, S. J., & Vandecreek, L. D. (2006). *Practical ethics for psychologists: A positive approach*. (pp. 15–29). Washington, D.C.: American Psychological Association.
- Koocher, G. P. (2006). Speaking against torture. *Monitor on Psychology*, 37, 5.
- Koocher, G. P. (2007). Twenty-first century ethical challenges for psychology. *American Psychologist*, 62, 375–384.
- Koocher, G. P., & Keith-Speigal, P. (1998) *Ethics in psychology: Professional standards and cases*. New York: Oxford.
- Kramer, L., Heuer, R., & Crawford, K. (2005). *Technological, social, and economic trends that are increasing U.S. vulnerability to insider espionage*. Monterey, CA: Defense Personnel Security Research Service.
- Krause, M. (2009). History and evolution of the FBI's undercover safeguard program. *Consulting Psychology Journal: Practice and Research*, 61, 5–13.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.) Chicago: University of Chicago Press.
- Lane, D. J., & Wegner, D. M. (1990). The cognitive consequences of secrecy. *Journal of Personality and Social Psychology*, 69, 237–253.
- Larson, D. G., & Chastain, R. L. (1990). Self-concealment: Conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology*, 9, 439–455.
- Latané, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* Englewood Cliffs, NJ: Prentice Hall.
- Lee, Y. T., & Seligman, M. E. P. (1997). Are Americans more optimistic than the Chinese? *Personality and Social Psychology Bulletin*, 23, 32–40.
- Leo, R. A., & Ofshe, R. J., The social psychology of police interrogation: The theory and classification of true and false confessions. Available at SSRN: <http://ssrn.com/abstract=1141368>, accessed March 10, 2010.
- Levant, R. F. (2005, August). *Report of the 2005 presidential task force on evidence-based practice*. Retrieved 29 June 2008 from the American Psychological Association: <http://www.apa.org/practice/ebpreport.pdf>.
- Levy, D. A., Collins, B. E., & Nali, P. R. (1998). A new model of interpersonal influence. *Journal of Social Behavior and Personality*, 13, 715–733.

- Li, S.-C. (2003). Biocultural orchestration of developmental plasticity across levels: The interplay of biology and culture in shaping the mind and behavior across the lifespan. *Psychological Bulletin*, *129*, 171–194.
- London, P. (1986). *The modes and morals of psychotherapy* (2nd ed.), self-published.
- Madden, W., & Carter, B. (2003). Mixed agency in military medicine: Ethical roles in conflict. In E. Pellegrino (Ed.), *Textbook of military medicine: Military medical ethics* (pp. 331–365). Washington, D.C.: Office of the Surgeon General, U.S. Department of the Army.
- Maddi, S. (1980) *Personality theories: A comparative analysis*. Homewood, IL: Dorsey Press.
- Mulloy, D. J. (2009). Review of thinking like a terroristic: Insights of a former FBI undercover agent. *Terrorism and Political Violence*, *21*, 646–647.
- Mangelsdorff, A. D. (2006). *Psychology in the service of national security*. Washington, D.C.: American Psychological Association.
- Maschke, P. (2004). The acceptance of *ab initio* pilot selection methods. *Human Factors and Aerospace Safety*, *4*, 225–232.
- Milgram, N. A. (1991). Personality factors in military psychology. In Reuven Gal and A. David Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 559–572). Oxford, England: John Wiley & Sons.
- Miller, J. G. (1984). Culture and development of everyday social explanation. *Journal of Personality and Social Psychology*, *46*, 961–978.
- McCrae, R. R., Terracciano, A., & 78 members of the Personality Profile of Culture Project (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology*, *88*, 547–561.
- Moghaddam, F. M. (2005). The staircase to terrorism: A psychological exploration. *American Psychologist*, *60*, 161–169.
- Moghaddam, F. M., Marsella, A. J., Taylor, D. M., & Wessells, M. (2005). Understanding terrorism: Psychological roots and interventions. Symposium, Division 52, *Proceedings of the American Psychological Association*. Washington, D.C.
- Murray, H. A. (1938). *Explorations in personality*. New York: Oxford University Press.
- Musson, D. M., Sandal, G. M., & Helmreich, R. L. (2004). Personality characteristics and trait clusters in final stage astronaut selection. *Aviation, Space, and Environmental Medicine*, *75*, 342–349.
- Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology*, *67*, 949–971.
- Office of Strategic Services. (1948). *The assessment of men: Selection of personnel for the Office of Strategic Services*. New York: Rinehart & Company.
- Pervin, L. A. (1984). *Current controversies and issues in personality*. New York: Wiley.
- Pervin, L. A. (1999). The cross-cultural challenge to personality. In Y. T. Lee, C. R. McCauley, and J. G. Draguns (Eds.), *Personality and person perception across cultures*. Hillsdale, NJ: Lawrence Erlbaum.
- Pettifor, J. L. (2004). Professional ethics across national boundaries. *European Psychologist*, *9*, 264–272.
- Pope, K. S., & Bajt, T. R. (1988). When laws and values conflict: A dilemma for psychologists. *American Psychologist*, *43*, 828–829.
- Ram, N., & Gerstorff, D. (2009). Time-structured and net intra-individual variability: Tools for examining the development of dynamic characteristics and processes. *Psychology and Aging*, *24*, 778–791.
- Ram, N., Lindenberger, U., & Blanchard-Fields, F. (2009). Introduction to the special section on intra-individual variability and aging. *Psychology and Aging*, *24*, 775–777.
- Rowe, K. L., Gelles, M. G., & Palarea, R. E. (2006). Crisis and hostage negotiation. In C. H. Kennedy & E. A. Zillmer (Eds.), *Military psychology: Clinical and operational applications* (pp. 310–330). New York: Guilford Press.
- Rocheach, M. (1973). *The nature of human values*. New York: Free Press.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strength and virtues: A handbook and classification*. New York: Oxford University Press.
- Picano, J. J., Roland, R. R., Rollins, K. D., & Williams, T. J. (2002). Development and validation of a sentence-completion test measure of defensive responding in military personnel assessed for non-routine missions. *Military Psychology*, *14*, 279–298.
- Picano, J. J., Williams, T. J., & Roland, R. R. (2006). Assessment and selection of high-risk operational personnel. In C. H. Kennedy & E. A. Zillmer (Eds.), *Military psychology: Clinical and operational applications* (pp. 353–370). New York: Guilford Press.
- Post, J. M., & Schneider, B. R. (2003). Precise assessments of rivals vital in asymmetric war threat environment. In B. R. Schneider and J. M. Post (Eds.), *Know thy enemy* (pp. 311–320). Maxwell Air Force Base, Alabama: USAF Counterproliferation Center.
- Santy, P. A. (1994). *Choosing the right stuff: The psychological selection of astronauts and cosmonauts*. Westport, CT: Praeger.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology*, (Vol. 25, pp. 1–65). New York: Academic Press.
- Schwartz, S. H. (1994). Beyond individualism/collectivism: New dimensions of values. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. C. Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, method, and applications* (pp. 85–119). Thousand Oaks, CA: Sage.
- Seul, J. R. (1999). "Ours is the way of God": Religion, identity, and intergroup conflict. *Journal of Peace Research*, *36*, 553–569.
- Shumate, S., & Borum, R. (2006). Psychological support to defense counterintelligence operations. *Military Psychology*, *18*, 283–296.
- Silverman, M. E., Murray, T. J., & Bryan, C. S. (2008). *The quotable Osler*. Philadelphia, PA: American College of Physicians.
- Staal, M. A., & King, R. E. (2000). Managing a multiple relationship environment: The ethics of military psychology. *Professional Psychology: Research and Practice*, *31*, 698–705.
- Staal, M. A., & Stephenson, J. A. (2006). Operational psychology: An emerging subdiscipline. *Military Psychology*, *18*, 269–282.
- Stark, J. (1976). Fort Bliss Spy: Suicide or Murder? *El Paso Times*, El Paso, TX. Available at <http://elpasotimes.typepad.com/morgue/2009/02/ft-bliss-spy-suicide-or-murder.html?cid=6a00d83451c9c869e20111688a890e970c> (accessed 13 February 2010).
- Stephenson, J. A., & Staal, M. A. (2007). Operational psychology: What constitutes expertise? *The Specialist*, *26*, 30–31.
- Sue, D. W., & Sue, D. (1990). *Counseling the culturally different: Theory and practice* (2nd edition). New York: Wiley.

- Taft, R. (1959). Multiple methods of personality assessment. *Psychological Bulletin*, *56*, 333–352.
- Terman, L. M. (1918). The use of intelligence tests in the Army. *Psychological Bulletin*, *15*, 177–187.
- Terracciano, A., Abdel-Khalek, A. M., Adam, N., et al. (2005, October 7). National character does not reflect mean personality trait levels in 49 cultures. *Science*, *310*, 96–110.
- Trento, J. (2009). Trento's Take: Who kept Major Hassan in the Army and for what real purpose? Available at <http://www.storiesthatmatter.org/20091116284/Trento-s-Take/who-kept-major-hassan-in-the-army-and-for-what-real-purpose.html> (accessed February 13, 2010).
- Weiner, T., Johnston, D., & Lewis, N. A. (1995). *Betrayal: The story of Aldrich Ames, an American spy*. London: Richard Cohen Books.
- Williams, T. J., & Johnson, B. (2006). Introduction to the special issue: Operational psychology and clinical practice in operational environments. *Military Psychology*, *18*, 261–268.
- Williams, T. J., Picano, J. J., Roland, R. R., & Banks, L. M. (2006). Introduction to operational psychology. In C. H. Kennedy & E. A. Zillmer (Eds.), *Military psychology: Clinical and operational applications* (pp. 193–214). New York: Guilford Press.
- Yerkes, R. M. (1918). Psychology in relation to war. *Psychological Review*, *25*, 85–115.
- Yoakum, C. S., & Yerkes, R. M. (Eds.) (1920). *Army mental tests*. New York: Henry Holt.
- Young, J., Harvey, S., & Staal, M. A. (2010). Ethical considerations in the conduct of security clearance evaluations. In C. H. Kennedy and T. J. Williams (Eds.), *Ethical practice in operational psychology*. Washington, D.C.: American Psychological Association.
- Zullo, H., Oettingen, G., Peterson, C., & Seligman, M. E. P. (1988). Explanatory style and pessimism in the historical record: CAVing [*Content Analysis of Verbatim Explanations*] LBJ, presidential candidates, and East versus West Berlin. *American Psychologist*, *43*, 673–682.

Ethics, Human Rights, and Interrogations

The Position of the American Psychological Association

Stephen H. Behnke and Olivia Moorehead-Slaughter

Abstract

From 2004 through 2010, the American Psychological Association expended considerable time and resources examining the ethical aspects of psychologists' involvement in national-security-related interrogations. In this chapter, the authors examine APA's evolving position, beginning with the reasons that stimulated APA to begin its work on ethics and interrogations. The authors discuss in detail the policies adopted by the APA during these years and identify the motivations that led to each further development in APA policy. In addressing a series of policies adopted by APA, the authors highlight the considerable debate within the Association concerning the appropriate position for the APA to adopt and provide an overview of why the issue was so challenging for the APA membership.

Keywords: ethics, human rights, interrogation, military, national security

In 2004, the American Psychological Association (APA) began to explore the ethical aspects of psychologists' involvement in national-security-related interrogations. APA's decision to address this issue on the Association level came primarily from questions that members raised regarding ethics and national-security-related activities. As these members pointed out, the "Ethical Principles of Psychologists and Code of Conduct" (APA, 2002)—APA's Ethics Code—offered substantial guidance on issues that had been central to the practice of psychology for many decades, such as informed consent, research ethics, and authorship. The Ethics Code appeared to offer less guidance, at least in an explicit manner, regarding the ethical challenges that national-security-related work presented. For the next several years, APA's Council of Representatives, the Association's governing body, spent significantly more time exploring the ethical aspects of psychologists' involvement in national-security-related interrogations than it spent considering any other single issue. Council adopted a series of resolutions on the involvement of psychologists in

interrogations and took the rare step of amending the APA Ethics Code outside a full Ethics Code revision process. In addition to the work of Council, the APA membership passed a resolution related to national-security-related settings which established new APA policy.

In this chapter, we review APA's positions related to ethics and interrogations. The review is not intended to capture or explain every aspect of the Association's extensive work since 2004 on this topic nor, given the number and complexity of the issues, could it do so. Rather, the review is intended to highlight central aspects of the actions taken by the Association. Readers are strongly encouraged to read the original Association texts and related documents (<http://www.apa.org/news/press/statements/interrogations.aspx>) for a comprehensive understanding of the Association's evolving position.

The policies set forth in the sections that follow were the subject of considerable discussion, debate, and contention both while they were being drafted and after. Certain members in the Association felt strongly that psychologists should have no

involvement whatsoever in interrogations. Other members felt that psychologists did have a role in interrogations but should not be involved in settings that were out of compliance with international law. Still other members felt that psychologists should be present *wherever* interrogations are conducted to help ensure that interrogations are conducted in a safe, legal, ethical, and effective manner. All of these members brought great passion and energy to their positions, and all contributed their voices to APA's evolving position.

The Report of the Presidential Task Force on Psychological Ethics and National Security

In 2004, APA President Ron Levant determined that a presidential task force was the most appropriate vehicle for analyzing the ethical aspects of psychologists' involvement in national-security-related work. He therefore appointed the Presidential Task Force on Psychological Ethics and National Security (PENS). Meeting in February 2005, the APA Board of Directors charged the Task Force to

[E]xamine whether our current Ethics Code adequately addresses [the ethical dimensions of psychologists' involvement in national-security-related activities], whether the APA provides adequate ethical guidance to psychologists involved in these endeavors, and whether APA should develop policy to address the role of psychologists and psychology in investigations related to national security.

At the time the Task Force met in June 2005, media reports had surfaced regarding individuals having been abused in U.S. detention facilities. Nonetheless, the PENS Task Force did not adopt an investigative or adjudicatory role:

The Task Force noted that the Board of Directors' charge did not include an investigative or adjudicatory role, and as a consequence emphasized that it did not render any judgment concerning events that may or may not have occurred in national-security-related settings.

The Task Force members reasoned that any competent investigation would require both subpoena power and security clearances. As a private association, APA does not have subpoena power and many of the individuals who would be involved in some aspects of conducting such an investigation, such as APA staff, do not have the necessary security clearances. As a result, the Task Force determined that

any attempt to conduct an investigation would be ineffective and would serve only to demonstrate the futility of such an endeavor by APA. The subsequent work of the Senate Armed Services Committee, among other congressional committees, has underscored the superiority of congressional investigations into the relevant events.

As an introduction to the 12 statements that the Task Force set forth in its report to guide psychologists' national-security-related work, the Task Force made two points. The Task Force viewed each of these points as critical to the context in which the report would be read. The first point was in response to an argument that advising or consulting to interrogations, because this role is outside the scope of a health-care-provider role, is likewise outside the purview of the Ethics Code. The Task Force felt it necessary to reject this argument forcefully at the outset of the report. In doing so, the Task Force emphasized that regardless of their role, psychologists are always bound by the Ethics Code:

when psychologists serve in any position by virtue of their training, experience, and expertise as psychologists, the APA Ethics Code applies. The Task Force thus rejected the contention that when acting in roles outside traditional health-service-provider relationships psychologists are not acting in a professional capacity as psychologists and are therefore not bound by the APA Ethics Code.

The second point emphasized by the Task Force is that psychologists have unique contributions to make when advising and consulting to interrogation processes:

Acknowledging that engaging in such consultative and advisory roles entails a delicate balance of ethical considerations, the Task Force stated that psychologists are in a unique position to assist in ensuring that these processes are safe and ethical for all participants.

In this statement, the Task Force affirmed that psychologists have a valuable contribution to make to interrogation processes. The report goes on to expound on this notion by identifying contributions in both the operational and the research arenas.

Thus, the context for the main thrust of the PENS Task Force report—the report's 12 guiding statements—is that psychologists are always bound by the Ethics Code and that psychologists have valuable and ethical contributions to make in

interrogation processes (APA, Presidential Task Force on Psychological Ethics and National Security, 2005). Put simply, the Task Force viewed the 12 statements as flowing directly from what was already contained in the APA Ethics Code, which governs national-security-related work as it governs all areas of psychologists' professional lives.

Having set this context, the Task Force set forth its 12 statements as guidance for psychologists' involvement in interrogation processes. These 12 statements became a foundation for further Association work in the following years:

1. Psychologists do not engage in, direct, support, facilitate, or offer training in torture or other cruel, inhuman, or degrading treatment.
2. Psychologists are alert to acts of torture and other cruel, inhuman, or degrading treatment and have an ethical responsibility to report these acts to the appropriate authorities.
3. Psychologists who serve in the role of supporting an interrogation do not use health-care-related information from an individual's medical record to the detriment of the individual's safety and well-being.
4. Psychologists do not engage in behaviors that violate the laws of the United States, although psychologists may refuse for ethical reasons to follow laws or orders that are unjust or that violate basic principles of human rights.
5. Psychologists are aware of and clarify their role in situations where the nature of their professional identity and professional function may be ambiguous.
6. Psychologists are sensitive to the problems inherent in mixing potentially inconsistent roles such as health care provider and consultant to an interrogation, and refrain from engaging in such multiple relationships.
7. Psychologists may serve in various national-security-related roles, such as a consultant to an interrogation, in a manner that is consistent with the Ethics Code, and when doing so psychologists are mindful of factors unique to these roles and contexts that require special ethical consideration.
8. Psychologists who consult on interrogation techniques are mindful that the individual being interrogated may not have engaged in untoward behavior and may not have information of interest to the interrogator.
9. Psychologists make clear the limits of confidentiality.

10. Psychologists are aware of and do not act beyond their competencies, except in unusual circumstances, such as set forth in the Ethics Code.

11. Psychologists clarify for themselves the identity of their client and retain ethical obligations to individuals who are not their clients.

12. Psychologists consult when they are facing difficult ethical dilemmas.

The 12 statements are based on themes central to the Ethics Code. First, psychologists do not inflict harm; second, psychologists retain ethical obligations to *all* individuals they work with, even those who may not be identified as "clients"; third, psychologists keep separate incompatible roles; and fourth, psychologists do not go beyond their competencies. In keeping with the Board of Directors' mandate to explore whether the Ethics Code adequately addresses the ethical challenges faced by psychologists in national-security-related roles, the PENS report specifies how the Task Force derived its statements from the Ethics Code. A careful reading of the report thus reveals how the Task Force took themes central to the Ethics Code and applied them to a national-security-related context, specifically that of interrogations.

The PENS report emphasized how the locus of moral agency must reside in the individual psychologist:

The development of professional skills and competencies, ethical consultation and ethical self-reflection, and *a willingness to take responsibility for one's own ethical behavior* [emphasis added] are the best ways to ensure that the national-security-related activities of psychologists are safe, legal, ethical, and effective.

This point is important because it serves to recognize the limits of ethics codes and professional associations in the ethical behavior of individual psychologists. Ultimately, in the eyes of the Task Force, each psychologist serving in this role must make a decision for which he or she will accept ethical responsibility.

The report called for research into effective ways of gathering information:

Psychologists should encourage and engage in further research to evaluate and enhance the efficacy and effectiveness of the application of psychological science to issues, concerns and operations relevant to national security. One focus of a broad program of research is to examine the efficacy and effectiveness of

information-gathering techniques, with an emphasis on the quality of information obtained.

The report issued a further call for research on interrogators themselves:

In addition, psychologists should examine the psychological effects of conducting interrogations on the interrogators themselves to explore ways of helping to ensure that the process of gathering information is likely to remain within ethical boundaries.

The report's calls for research are noteworthy, both by virtue of underscoring the value of the *scientific* contributions psychologists are poised to make in this area of practice and because such calls highlight how little information is available to guide current practices.

The report also placed significant emphasis on culture and ethnicity:

Psychologists working in this area should inform themselves of how culture and ethnicity interact with investigative or information-gathering techniques, with special attention to how failing to attend to such factors may result in harm.

The report returned several times to the importance of understanding culture and ethnicity in eliciting information. This emphasis highlights the notion of competence, insofar as to be competent in this role, psychologists must be knowledgeable about and sensitive to how culture and ethnicity are factors in the process of gathering information.

Each of these points—identifying the individual psychologist as the ultimate locus of moral agency, calling for a broad range of research, and repeatedly underscoring the centrality of culture and ethnicity in information-eliciting processes—is critical to understanding the significance of the PENS report.

The Task Force was mindful that the PENS report would be APA's initial statement on a complex and challenging topic and that much work would inevitably follow. The Task Force therefore explicitly located itself in an unfolding story by stating that the APA should

View the work of this Task Force *as an initial step* [emphasis added] in addressing the very complicated and challenging ethical dilemmas that confront psychologists working in national-security-related activities. *Viewed as an initial step in a continuing process* [emphasis added], this report will ideally assist APA to engage in thoughtful reflection of complex ethical considerations in an area of psychological

practice that is likely to expand significantly in coming years.

Thus, rather than to end ethical exploration, the PENS report was written to begin APA's discussion. Read in this manner, the PENS report, far from foreclosing further consideration of ethics and interrogations, was an invitation to the Association to embrace the challenging ethical questions raised by an area of practice that is not explicitly and comprehensively delineated in the 2002 APA Ethics Code, but whose ethical foundation, like that of the rest of psychology, can be found in the Code's principles and standards.

Following the issuance of the PENS report, criticism arose because of the composition of the Task Force. It was pointed out that the majority of members on the PENS Task Force had Department of Defense or national-security-related affiliations. Such affiliations, it was argued, compromised the objectivity of the Task Force's work. In response to this criticism, others argued that it was necessary to have a task force composed primarily of individuals with extensive subject-matter knowledge who could fashion a report that would be most useful to individuals engaged in intelligence-gathering activities.

2005 Actions by the APA Ethics Committee, Board of Directors, and Council of Representatives

The PENS Task Force met on the final weekend of June 2005. On completion of the final draft of its report, the Task Force forwarded the report to the APA Ethics Committee, which found the 12 statements appropriate interpretations and applications of the APA Ethics Code. Thus, the Ethics Committee determined that the PENS Task Force had properly applied relevant aspects of the Ethics Code in deriving its conclusions about the guidelines that govern psychologists' involvement in interrogations.

Following review by the Ethics Committee, the Board of Directors reviewed the PENS report. The Board has available to it a mechanism in the APA bylaws whereby it may adopt policy for the Association without prior review by APA's governing body, the Council of Representatives. Relying on this mechanism, in July 2005, the Board adopted the 12 statements in the PENS report as APA policy. The reason for the Board's acting without delay was to provide immediate guidance for psychologists engaged in this area of work.

The following month, in August 2005, at the APA annual convention in Washington, DC, the

Council of Representatives reviewed the PENS report. The Council was not asked to adopt the PENS report as APA policy—the Board of Directors had taken action the previous month—but the Council did approve a series of motions in response to the PENS report. Several of these motions adopted recommendations made by the PENS Task Force, for example, that the APA write a casebook and commentary on the report and that the APA explore the possibility of creating a mechanism to provide ethics consultation to psychologists working in national security roles.

In addition to affirming several of the recommendations in the PENS report, Council adopted the following language:

Council acknowledges, based on the U.N. Convention Against Torture, that there are no exceptional circumstances whatsoever, whether induced by a state of war or a threat of war, internal political instability or any other public emergency, that may be invoked as a justification for torture, including the invocation of laws, regulations, or orders.

This statement, that there is no justification for torture, was adopted in two subsequent Council resolutions discussed in the sections that follow. In this manner, the APA's governing body had affirmed and reaffirmed that torture is always and in every instance unethical.

The 2006 Resolution

Following the Council's review of the PENS report at the 2005 annual convention, APA members had an opportunity to read the PENS report and provide feedback on their reactions. Many statements in the PENS report—for example, that “psychologists do not engage in, direct, support, facilitate, or offer training in torture or other cruel, inhuman, or degrading treatment”—met with universal agreement and support. Others drew critical reaction, such as the fourth of the 12 Task Force statements that “psychologists do not engage in behaviors that violate the laws of the United States, although psychologists may refuse for ethical reasons to follow laws or orders that are unjust or that violate basic principles of human rights.” Criticism of this statement arose because it made U.S. law, rather than international human rights norms, the standard to which psychologists who are members of the American Psychological Association must adhere. Between the 2005 and 2006 meetings, a consensus had emerged among Council members that the PENS report required elaboration.

As August 2006 approached, a group of APA division leaders and Council members began drafting a resolution that would be placed before Council at the APA's annual convention in New Orleans. The drafters focused on several issues from the PENS report that they believed merited further clarification or elaboration. At the same time, the drafters wanted to write a resolution that would not be bound to the interrogation context. As a consequence, they used language that would apply broadly across the entire range of work that psychologists do. The breadth of the resolution's scope is captured by its title, “Resolution Against Torture and Other Cruel, Inhuman, and Degrading Treatment or Punishment” (APA, 2006). The resulting resolution is applicable in all contexts in which psychologists engage in professional activities and so is not limited to advising or consulting to interrogations.

Aspects of the APA's position that drafters of the 2006 resolution felt invited further clarification and elaboration included the role of international human rights texts in guiding psychologists' behavior, the definition of torture, and the responsibility of psychologists who become aware of torture to respond. Psychologists drafting language to amend the Ethics Code also believed it important to reaffirm the APA's “no justification” policy, namely, that there is never a justification for psychologists to engage directly or indirectly in torture. Each of these points was incorporated in the resolution adopted by Council in New Orleans on August 9, 2006.

The 2006 resolution takes three steps to emphasize the role of international human rights texts. First, the resolution identifies specific international texts as relevant to psychologists' work:

BE IT RESOLVED that, based upon the American Psychological Association 1986 Human Rights Resolution, the APA reaffirms its support for the United Nations Declaration and Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment, Principles of Medical Ethics relevant to the Role of Health Personnel, particularly Physicians, in the Protection of Prisoners and Detainees against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment as well as the joint congressional Resolution opposing torture that was signed into law by President Reagan on October 4, 1984, and further supports the McCain Amendment, the United Nations Basic Principles for the Treatment of Prisoners, and the United Nations Principles on the Effective

Investigation and Documentation of Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment.

The second step in the 2006 resolution emphasizing the importance of international human rights texts draws directly on Council's action in August 2005, by invoking texts that impose an absolute prohibition against torture:

BE IT RESOLVED that the APA reaffirms its support for the United Nations Declaration and Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment and its adoption of Article 2.2, which states [T]here are no exceptional circumstances whatsoever, whether induced by a state of war or a threat of war, internal political instability or any other public emergency, that may be invoked as a justification of torture. . . .

The third step in the 2006 resolution emphasizing the importance of international human rights texts is its statement that

based upon the APA's long-standing commitment to basic human rights including its position against torture, psychologists shall work in accordance with international human rights instruments relevant to their roles.

Thus, the 2006 resolution expands the PENS report's focus on U.S. law by bringing international human rights texts to the center of the Association's ethical analyses and by stating that psychologists work in accordance with human rights instruments relevant to psychologists' roles.

In keeping with the focus on international human rights texts, and responding to a debate regarding the definition of torture occurring in the public arena, the 2006 resolution incorporates a definition of *torture* from a United Nations Convention:

BE IT RESOLVED that, in accordance with Article 1 of the United Nations Declaration and Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment, [T]he term "torture" means any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted upon a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any reason

based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official [e.g., governmental, religious, political, organizational] capacity. It does not include pain or suffering arising only from, inherent in, or incidental to lawful sanctions [in accordance with both domestic and international law]. . . .

By using a definition of torture taken from a United Nations text, the 2006 resolution moved the Association away from reliance on definitions of torture that had been suggested by individuals within the administration of President George W. Bush and that had been widely rejected. The language in the 2006 resolution therefore explicitly "de-linked" the APA's work on interrogations from reliance on U.S. administration definitions of torture.

In addition to emphasizing the importance of international human rights texts and providing a definition of torture, the 2006 resolution elaborates the PENS report statement that psychologists have an ethical obligation to report acts of torture and cruel, inhuman, or degrading treatment or punishment (CIDTP). The 2006 resolution states that over and above this reporting obligation, psychologists have an ethical obligation to intervene:

BE IT RESOLVED that should torture or other cruel, inhuman, or degrading treatment or cruel, inhuman, or degrading punishment evolve during a procedure where a psychologist is present, the psychologist shall attempt to intervene to stop such behavior, and failing that exit the procedure. . . .

The Council adopted the 2006 "Resolution Against Torture and Other Cruel, Inhuman, and Degrading Treatment or Punishment" (APA, 2006) enthusiastically. In relatively short order, however, it became clear that APA's work on this issue was not yet done. This sense—that the APA had more work to do on the issue—was stimulated by the passion of APA members with widely divergent views on the subject matter and by unfolding events in the public domain. As time went on and more information about what had occurred in national-security-related interrogations came to light, APA members believed that further commentary by the Association on the ethical aspects of interrogation was critical.

The 2007 Resolution

The 2006 resolution spoke broadly across the range of psychologists' activities. Events in the public

domain had been unfolding in a manner that led Council members to believe further elaboration and specification of the APA's position against torture in the PENS report and the 2006 resolution were necessary. In anticipation of the Council's 2008 meeting at the annual convention in San Francisco, Council members began to draft a resolution that would reaffirm the APA's position against torture and apply the PENS report and 2006 resolution to a particular set of individuals: lawful and unlawful enemy combatants, as those terms are defined in the Military Commissions Act of 2006.

The history and development of the 2007 resolution must be viewed in the context of a second proposed resolution that was referred to as the "moratorium resolution." The moratorium resolution called for a moratorium on psychologists' involvement as advisors or consultants to interrogations in settings for foreign detainees. At the 2007 annual convention, two possible resolutions were before the Council: an elaboration of the 2006 resolution and the moratorium resolution. Ultimately, the Council decided to vote on a resolution that had wide support within that body and then to vote on a revised moratorium resolution as an amendment to the main resolution. (At that point the amendment was no longer properly a moratorium resolution because it now called for an end—not just a moratorium—to roles for psychologists other than as health care providers at certain detention facilities.) The council adopted the main resolution but did not accept the amendment.

The drafters of the 2007 resolution focused on several areas in which they believed the 2006 resolution would benefit from further elaboration and clarification because it would be applied to enemy combatants. At the same time, the drafters wanted to make clear their strong and continuing support for everything in the 2006 resolution. To achieve these two goals, the 2007 resolution was titled "Reaffirmation of the American Psychological Association Position Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment and Its Application to Individuals Defined in the United States Code as 'Enemy Combatants'" (APA, 2007). By this title, the drafters made it clear that the 2007 resolution was both reaffirming and drawing on work the APA had already done as well as demonstrating how the APA's position applied to a particular set of individuals.

The 2007 resolution was therefore intended to achieve multiple goals. These goals included reiterating the APA's absolute condemnation of

torture and CIDTP, identifying specific techniques associated with abusive interrogations in order to condemn and prohibit them, stating that conditions of confinement could themselves constitute torture, endorsing civil disobedience as the ethical response to an order to engage in torture or CIDTP, and calling on U.S. courts of law to reject evidence obtained through torture or CIDTP.

As an initial matter, the resolution reiterated the APA's prohibition against torture and CIDTP in any and all circumstances:

BE IT RESOLVED that the American Psychological Association unequivocally condemns torture and cruel, inhuman, or degrading treatment or punishment, under any and all conditions, including detention and interrogations of both lawful and unlawful enemy combatants as defined by the U.S. Military Commissions Act of 2006.

Consistent with this prohibition, the resolution reiterated what was, by then, the APA's longstanding position that there is never a justification for torture or CIDTP:

BE IT RESOLVED that the American Psychological Association affirms that there are no exceptional circumstances whatsoever, whether induced by a state of war or threat of war, internal political instability or any other public emergency, that may be invoked as a justification for torture or cruel, inhuman, or degrading treatment or punishment, including the invocation of laws, regulations, or orders.

The 2007 resolution thereby reaffirmed previous APA statements and resolutions. The 2007 resolution then moved beyond what the APA had previously done in an important way. The 2006 resolution had defined torture according to a United Nations definition. As events in the public domain unfolded, drafters of the 2007 resolution believed that much greater specificity regarding what constitutes torture in the context of interrogations was needed. The drafters therefore identified a list of specific prohibited techniques:

BE IT RESOLVED that this unequivocal condemnation includes all techniques defined as torture or cruel, inhuman or degrading treatment under the 2006 Resolution Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment, the United Nations Convention Against Torture, and the Geneva Convention. This unequivocal condemnation includes, but is by no means limited to, an absolute prohibition for

psychologists against direct or indirect participation in interrogations or in any other detainee-related operations in mock executions, water-boarding or any other form of simulated drowning or suffocation, sexual humiliation, rape, cultural or religious humiliation, exploitation of phobias or psychopathology, induced hypothermia, the use of psychotropic drugs or mind-altering substances used for the purpose of eliciting information; as well as the following used for the purposes of eliciting information in an interrogation process: hooding, forced nakedness, stress positions, the use of dogs to threaten or intimidate, physical assault including slapping or shaking, exposure to extreme heat or cold, threats of harm or death; and isolation, sensory deprivation and over-stimulation and/or sleep deprivation used in a manner that represents significant pain or suffering or in a manner that a reasonable person would judge to cause lasting harm; or the threatened use of any of the above techniques to the individual or to members of the individual's family. . . .

Although this list was well received by members of the Association following the Council's adoption of the resolution, critics later pointed out that placing the techniques into three categories was problematic. The first category in the list consisted of techniques that are absolutely prohibited, such as mock executions, waterboarding, and sexual humiliation. The second category consisted of techniques such as hooding and forced nakedness "used for the purposes of eliciting information in an interrogation process." Considered especially problematic was the description of the third and final category—consisting of isolation, sensory deprivation, and overstimulation and/or sleep deprivation—insofar as these techniques were prohibited only when used "in a manner that represents significant pain or suffering or in a manner that a reasonable person would judge to cause lasting harm." Although there were sound reasons for this categorization, the wording adopted by the Council lent itself to the interpretation that psychologists were to "calibrate" the amount of suffering that a detainee was allowed to experience during an interrogation. Though this possibility had never been the drafters' intent, soon after convention had ended a consensus emerged that this wording would need to be addressed.

Drafters of the 2007 resolution felt it important to elaborate even further on the concept of torture, beyond identifying specific techniques. Discussions in the public domain had focused primarily on

techniques that the resolution identified and prohibited. Over and above specific behaviors, however, were the very conditions of confinement. The 2007 resolution states that conditions of detention settings can themselves constitute torture:

BE IT RESOLVED that the American Psychological Association, in recognizing that torture and other cruel, inhuman or degrading treatment and punishment can result not only from the behavior of individuals, but also from the conditions of confinement, expresses grave concern over settings in which detainees are deprived of adequate protection of their human rights, affirms the prerogative of psychologists to refuse to work in such settings, and will explore ways to support psychologists who refuse to work in such settings or who refuse to obey orders that constitute torture. . . .

This statement, that conditions of confinement in addition to specific behaviors, may constitute torture, was accompanied by an explicit endorsement of civil disobedience as the ethical response to torture. This endorsement was reiterated in the resolution as consistent with the APA Ethics Code:

BE IT RESOLVED that the American Psychological Association commends those psychologists who have taken clear and unequivocal stands against torture and cruel, inhuman or degrading treatment or punishment, especially in the line of duty, and including stands against the specific behaviors (in lines 81 through 100) or conditions listed above; and that the American Psychological Association affirms the prerogative of psychologists under the Ethical Principles of Psychologists and Code of Conduct (2002) to disobey law, regulations or orders when they conflict with ethics.

In two separate places, then, the 2007 resolution endorsed disobedience in the face of an order to engage in torture or CIDTP and tied this endorsement explicitly to the Ethics Code's support of civil disobedience.

The 2007 resolution reached beyond psychology in several ways. In one example, the resolution spoke directly to those in government who are in a position to influence interrogation policy:

BE IT RESOLVED that the American Psychological Association calls on the United States government—including Congress, the Department of Defense, and the Central Intelligence Agency—to prohibit the use of these methods in all interrogations and that the American Psychological Association shall inform

relevant parties with the United States government that psychologists are prohibited from participating in such methods. . . .

Following adoption of the resolution, in response to this “Be It Resolved,” the APA wrote letters to the President of the United States, the director of the Central Intelligence Agency, the Attorney General, the Secretary of Defense, and key members of Congress informing them of the APA’s position. In another example of reaching beyond psychology, the 2007 resolution called on U.S. courts to reject testimony derived from torture or CIDTP:

BE IT RESOLVED that the American Psychological Association, in order to protect against torture and cruel, inhuman, or degrading treatment or punishment, and in order to mitigate against the likelihood that unreliable and/or inaccurate information is entered into legal proceedings, calls upon United States legal systems to reject testimony that results from torture or cruel, inhuman, or degrading treatment or punishment.

Thus, the 2007 resolution spoke to members of the Association and to those outside the Association who were in a position to influence policy. Given the significance of this issue to the field of psychology and to the country, the APA felt it entirely appropriate to address both groups to convey both the Association’s absolute prohibition against torture as well as the Association’s analysis that specific techniques associated with harmful and abusive interrogations were considered torture.

The 2008 Amendment

Initial reaction to the 2007 resolution, in particular to the prohibition of specific techniques, was positive. Of particular note to commentators was the resolution’s specificity. As far as the APA could determine, no other mental health association had said precisely what was meant by the word *torture* in the interrogation context. In adopting the resolution, the APA had now done so.

At the same time the resolution was being well received, a growing consensus began to emerge that language in the paragraph identifying specific techniques lent itself to an interpretation never considered by the drafters. The language in question applied to a category of techniques that were prohibited when “used in a manner that represents significant pain or suffering or in a manner that a reasonable person would judge to cause lasting harm.” According to this interpretation, the role of

a psychologist in consulting or advising on an interrogation was to calibrate the degree of pain so that it would not reach the level of significant pain or suffering and so be prohibited by the resolution. The initial reaction of the Council members most closely involved in drafting the resolution’s language was that they had never conceptualized such a role for psychologists. Nonetheless, it became clear that many reading the resolution were confused about what the language meant.

In seeking to clarify the confusion, the drafters revisited why particular language had been applied to the techniques in question, “isolation, sensory deprivation and over-stimulation and/or sleep deprivation.” The reason was that the administration of a detention or correctional facility might require segregating individuals from other inmates or detainees, adhering to specific sleep routines, or depriving detainees or inmates from sensory input that could then expose information regarding a facility’s vulnerabilities. The original wording of the resolution was intended to make it clear that although certain techniques had no legitimate purpose at any time, in any place—sexual humiliation, for example—other activities might have a legitimate role in a detention facility.

In the fall of 2007, several members of the Council began to collaborate in an effort to clarify the resolution’s true intent. There was consensus on what the resolution was intended to accomplish: to identify and prohibit specific techniques associated with interrogations that constitute torture. There was likewise consensus that the resolution was never intended to prohibit a range of activities associated with the efficient and ethical administration of a facility. Over the course of several weeks, a number of editorial possibilities were considered, until the drafters finally proposed language that the Council enthusiastically adopted:

BE IT RESOLVED that this unequivocal condemnation includes all techniques considered torture or cruel, inhuman or degrading treatment or punishment under the United Nations Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment; the Geneva Conventions; the Principles of Medical Ethics Relevant to the Role of Health Personnel, Particularly Physicians, in the Protection of Prisoners and Detainees against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment; the Basic Principles for the Treatment of Prisoners; or the World Medical Association Declaration of Tokyo.

An absolute prohibition against the following techniques therefore arises from, is understood in the context of, and is interpreted according to these texts: mock executions; water-boarding or any other form of simulated drowning or suffocation; sexual humiliation; rape; cultural or religious humiliation; exploitation of fears, phobias or psychopathology; induced hypothermia; the use of psychotropic drugs or mind-altering substances; hooding; forced nakedness; stress positions; the use of dogs to threaten or intimidate; physical assault including slapping or shaking; exposure to extreme heat or cold; threats of harm or death; isolation; sensory deprivation and over-stimulation; sleep deprivation; or the threatened use of any of the above techniques to an individual or to members of an individual's family. Psychologists are absolutely prohibited from knowingly planning, designing, participating in or assisting in the use of all condemned techniques at any time and may not enlist others to employ these techniques in order to circumvent this resolution's prohibition.

The language of the amended paragraph was written to make it clear that the prohibition extends to techniques "considered torture or cruel, inhuman or degrading treatment or punishment" under five international human rights texts. Thus, the starting point for the analysis is asking whether a technique is considered torture or CIDTP under the named documents. The amended paragraph underscores these texts as the touchstone for determining what constitutes torture and CIDTP when the paragraph continues, "An absolute prohibition against the following techniques therefore arises from, is understood in the context of, and is interpreted according to these texts." The drafters of the amended paragraph thus used these international texts to anchor the APA's position against specific techniques of interrogation. A careful review of the five international texts and the definitions contained therein is therefore essential to understand the APA's position fully.

During the Council meeting, questions arose to confirm that the amended language would not be unduly broad. As examples, questions were asked regarding whether strip searches are appropriate, whether it is acceptable for a psychologist to advise a hostage negotiation team, whether an individual might be segregated in a cell for safety reasons or to prevent a cover story from being fabricated, and whether an individual might be prevented from seeing his or her surroundings during transporta-

tion for security reasons. There was immediate and complete consensus that each of these activities, when reviewed in the context of the five relevant texts and their definitions, did not fall within the prohibition. The point was reemphasized that the texts named in the resolution's amended paragraph provide the necessary context for the ethical analysis determining whether a particular behavior is prohibited.

The Petition Resolution

The PENS report, the 2006 and 2007 resolutions, and the 2008 amendment had focused almost exclusively on psychologists' behaviors. These texts set forth rules for psychologists regarding what behaviors were permitted, required, or prohibited. Although psychologists across the Association considered establishing such rules as essential—indeed, all roles for psychologists have governing rules—there was another aspect to the interrogation issue that was stimulating considerable discussion. A large number of APA members believed that in addition to setting forth rules governing specific behaviors for psychologists, the APA should address whether special rules should apply to settings that violate international or U.S. law.

Following adoption of the February 2008 amendment, a group of APA members drafted and brought forth a petition under a provision in the APA bylaws that allows a matter to go before the membership for a direct vote. The petition's resolution clause stated the following:

Be it resolved that psychologists may not work in settings where persons are held outside of, or in violation of, either international law (e.g., the UN Convention Against Torture and the Geneva Conventions) or the U.S. Constitution (where appropriate), unless they are working directly for the persons being detained or for an independent third party working to protect human rights.

A footnote to this paragraph read, "It is understood that military clinical psychologists would still be available to provide treatment for military personnel."

The petition was submitted in accordance with the relevant provision of the bylaws. Having received the petition, the APA's Board of Directors determined that the process should move forward as expeditiously as reasonably possible. Over the next several weeks, pro and con statements were drafted, and the petition resolution was mailed to the APA membership for a vote. In September 2008, the membership adopted the petition resolution.

Following adoption of the petition resolution, a number of questions arose regarding the meaning of the resolution clause. On its surface, the meaning of the clause seemed straightforward. In settings that violate international law or the U.S. Constitution, psychologists are limited to three roles: (a) working directly for the detainee, (b) working for an independent third party that protects human rights, and (c) providing treatment to military personnel. On deeper scrutiny, however, it became clear that the language of the clause raised significant questions that the petition resolution itself did not answer: How was it to be determined whether international law or the U.S. Constitution should apply in a given situation? Who was to determine whether a site was in violation of international law or the U.S. Constitution? Who should arbitrate competing claims regarding whether a site was in or out of compliance with the petition resolution? Does the petition resolution apply to domestic correctional facilities and psychiatric settings, many of which have been adjudicated out of compliance with the U.S. Constitution? In response to these and other questions and in anticipation of the Council's February 2009 meeting, APA President Alan Kazdin appointed a presidential advisory group.

Leading up to the Council's February 2009 meeting, two significant events occurred. First, the group appointed by President Kazdin completed the "Report of the APA Presidential Advisory Group on the Implementation of the Petition Resolution" (2008). The 18-page report set forth a series of options for the Council to consider in implementing the petition resolution and addressed a number of the questions that had arisen about the petition resolution's meaning and implications.

The second significant event that occurred prior to the Council's meeting was the inauguration of President Barack Obama. On his second day in office, President Obama issued three executive orders that addressed directly the APA's work on the issue of interrogations. President Obama's (2009a, 2009b, 2009c) three orders—"Ensuring Lawful Interrogations," "Review and Disposition of Individuals Detained at the Guantánamo Bay Naval Base and Closure of Detention Facilities," and "Review of Detention Policy Options"—addressed interrogation behaviors as well as the characteristics of the settings in which detainees are held, including the legal framework that governs the settings. The executive orders were thus highly relevant to the issues at the center of the APA's attention over the past four years. The Council's discussion regarding the petition resolution

would therefore take place in the context of the advisory group report and the President's executive orders.

At its February 2009 meeting, with APA President James Bray, the Council took three actions relevant to the petition resolution and the advisory group report. First, the Council took action to render the petition resolution official APA policy as of the February meeting. Had the Council not taken this action, the petition resolution would not have become policy until the following August, in accordance with a provision in the Association Rules. Second, the Council adopted a title for the petition resolution to clarify that it was not intended to be applied broadly to U.S. jails, detention centers, and psychiatric hospitals. The title, "Psychologists and Unlawful Detention Settings With a Focus on National Security," limited the scope of the petition resolution and made it clear that the petition resolution applied only to detention settings that are unlawful. Each of these limitations is important. Without the limiting title, psychologists in domestic facilities that have nothing to do with national-security-related work might mistakenly believe they are out of compliance with APA policy, and psychologists working in lawful detention settings could mistakenly believe that the petition resolution applies to their work. Third, and finally, the Council received the "Report of the APA Presidential Advisory Group on the Implementation of the Petition Resolution" and forwarded the report to relevant staff and boards and committees for review and appropriate action. Although the advisory group report does not constitute APA policy, the report has been used as a template for APA staff to move forward in implementing the petition resolution. An up-to-date description of the extensive implementation efforts can be viewed on the APA website at <http://www.apa.org/news/press/statements/interrogations.aspx>.

Amending the Ethics Code

The APA revises its Ethics Code on a periodic basis. These revisions highlight that the field of psychology evolves over time. The revisions also highlight that ethics is a developmental process.

The previous Ethics Code, "Ethical Principles of Psychologists and Code of Conduct" (APA, 1992), contained a standard that addressed conflicts between ethics and law. The 1992 standard stated that when a conflict arose between ethics and law, a psychologist had an ethical obligation to engage in a process of attempting to resolve the conflict.

The 1992 Ethics Code did not address what the psychologist should do if attempts to resolve the conflict were unsuccessful; the Ethics Code was simply silent on this point. In such a situation, some psychologists might engage in civil disobedience, whereas others might choose to obey the law. The 1992 Ethics Code did not guide psychologists toward either outcome.

During the 1997–2002 revision process leading up to the adoption of the 2002 Ethics Code, a significant concern arose primarily among forensic psychologists that a psychologist could be “caught” between ethics and law. Such a situation might arise, for example, if a judge ordered a psychologist to render a child custody recommendation without the psychologist’s having conducted an appropriate custody evaluation or if a judge ordered a psychologist to release information that the psychologist believed should be kept confidential. There was an impetus to make clear that if the psychologist was not able to resolve the conflict between ethics and law, the psychologist could follow the law without ethical sanction. In October 2000, at a regularly scheduled meeting of the Ethics Code Revision Task Force, draft language was added to the ethical standard on conflicts between ethics and law (Standard 1.02), to make clear that in cases in which the psychologist could not resolve the conflict between ethics and law, the psychologist could follow the law and not be disciplined. The Council adopted this language in August 2002.

Subsequent to the Council’s adoption of the 2002 Ethics Code, legal memoranda from the Bush administration were released that determined that techniques widely regarded as torture could lawfully be used in interrogations. The language in Standard 1.02, which had been drafted in October 2000 and thus had predated by several years any discussions in the Association regarding interrogation, nonetheless appeared to dovetail with the Bush administration legal memoranda to permit a psychologist to engage in interrogations tantamount to torture and then to use the Ethics Code as a defense. In such a case, the defense would be that the revised Standard 1.02 allowed a psychologist to follow the law in cases in which law and ethics conflict.

As the APA membership and the Council of Representatives came to realize that Standard 1.02 could be interpreted in a way that the drafters of the 2002 code had never considered, an impetus grew to amend the standard. The Ethics Committee put out calls for proposed language. At its February 2010 meeting, the Council adopted the following

amended language, which states that Standard 1.02 cannot be used as a defense to a violation of human rights:

Standard 1.02, Conflicts Between Ethics and Law, Regulations, or Other Governing Legal Authority
If psychologists’ ethical responsibilities conflict with law, regulations, or other governing legal authority, psychologists clarify the nature of the conflict, make known their commitment to the Ethics Code, and take reasonable steps to resolve the conflict consistent with the General Principles and Ethical Standards of the Ethics Code. Under no circumstances may this standard be used to justify or defend violating human rights.

Similar language was added to Ethical Standard 1.03, Conflicts Between Ethics and Organizational Demands. The amended language of 2010 put to rest the concern that Standards 1.02 and 1.03 could be used in a manner neither the drafters of the 2002 Ethics Code nor the Council of Representatives had ever anticipated.

Conclusion

Ethics can be viewed as a developmental process. As psychologists face new challenges in their professional lives, they encounter ethical dilemmas that have not been fully analyzed and resolved. Ideally, the APA will serve as a resource for its members by supporting a thoughtful, informed approach to addressing the ethical aspects of evolving areas of practice.

This approach was in evidence in San Francisco during the 2007 annual convention when the APA sponsored extensive programming on the ethical aspects of psychologists’ involvement in interrogations. “Ethics and Interrogations: Confronting the Challenge” was a convention program consisting of nine two-hour sessions and 44 participants with widely divergent views on the appropriate role for psychologists in military interrogations. The Board of Directors strongly supported the program as a way to ensure that all points of view were presented, as a prelude to the Council’s deliberations and further action. From the Board’s perspective, it was essential for the APA to embrace the debate, and the Board ensured an open and collegial forum for APA members to come together and voice their views.

From 2005 through 2010, APA’s governing body and the APA membership together expended extraordinary resources addressing the issue of psychologists’ involvement in interrogations. A review of statements and resolutions during this period

shows the development and elaboration of the Association's position. The APA's work was respectful of the importance and complexity of the issue and was intended to provide ethical guidance to its members and send an unambiguous and emphatic message to the public: The world's largest association of psychologists recognizes the valuable and ethical contributions of its members involved in work related to our nation's security and forcefully condemns and will not tolerate torture.

References

- American Psychological Association. (1992). Ethical principles of psychologists and code of conduct. *American Psychologist*, 47, 1597–1611.
- American Psychological Association. (2002). Ethical principles of psychologists and code of conduct. *American Psychologist*, 57, 1060–1073.
- American Psychological Association. (2006). *Resolution against torture and other cruel, inhuman, and degrading treatment or punishment*. Retrieved from <http://www.apa.org/about/governance/council/policy/torture-2006.aspx>
- American Psychological Association. (2007). *Reaffirmation of APA's position against torture and other cruel, inhuman, or degrading treatment or punishment and its application to individuals defined in the United States Code as "enemy combatants."* Retrieved from <http://www.apa.org/news/press/statements/interrogations.aspx>.
- American Psychological Association. (2008). *Bylaws of the American Psychological Association*. Retrieved from <http://www.apa.org/governance/bylaws/>.
- American Psychological Association. (2009). *Psychologists and unlawful detention settings with a focus on national security*. Retrieved from <http://www.apa.org/about/governance/council/policy/chapter-4b.aspx>
- American Psychological Association, Presidential Advisory Group on the Implementation of the Petition Resolution. (2008, Dec.). *Report of the APA Presidential Advisory Group on the implementation of the petition resolution*. Retrieved from <http://www.apa.org/ethics/advisory-group-final.pdf>.
- American Psychological Association, Presidential Task Force on Psychological Ethics and National Security. (2005, June). *Report of the American Psychological Association Presidential Task Force on Psychological Ethics and National Security*. Retrieved from <http://www.apa.org/pubs/info/reports/pens.pdf>
- Obama, B. (2009a, Jan. 22). *Ensuring lawful interrogations* [Executive Order]. Retrieved from http://www.whitehouse.gov/the_press_office/Ensuring_Lawful_Interrogations/.
- Obama, B. (2009b, Jan. 22). *Review and disposition of individuals detained at the Guantánamo Bay Naval Base and closure of detention facilities* [Executive Order]. Retrieved from http://www.whitehouse.gov/the_press_office/Closure_Of_Guantanamo_Detention_Facilities/.
- Obama, B. (2009c, Jan. 22). *Review of detention policy options* [Executive Order]. Retrieved from http://www.whitehouse.gov/the_press_office/Review_of_Detention_Policy_Options/.
- United Nations. (1982, Dec. 18). *Principles of medical ethics relevant to the role of health personnel, particularly physicians, in the protection of prisoners and detainees against torture and other cruel, inhuman, or degrading treatment or punishment*. Retrieved from <http://www.un.org/documents/ga/res/37/a37r194.htm>.
- United Nations. (1987, June 26). *Convention against torture and other cruel, inhuman or degrading treatment or punishment*. Retrieved from <http://www2.ohchr.org/english/law/pdf/cat.pdf>
- United Nations. (1990, Dec. 14). *Basic principles for the treatment of prisoners*. Retrieved from <http://www2.ohchr.org/english/law/basicprinciples.htm>
- U.S. Military Commissions Act of 2006. Chapter 47A; Subchapter I: § 948a. Definitions.
- World Medical Association. (1975, Oct.). *Declaration of Tokyo: Guidelines for physicians concerning torture and other cruel, inhuman or degrading treatment or punishment in relation to detention and imprisonment*. Retrieved from <http://www.wma.net/en/30publications/10policies/c18/>.

In Search of Psychological Explanations of Terrorism

Ragnhild B. Lygre and Jarle Eid

Abstract

The study of psychological factors contributing to terrorism has brought forward a wealth of models and theories on why people get involved in terrorism. Even though the scholarly literature on this subject has been multiplied over the last decade, there is still little, if any consensus, on what psychological factors are necessary or sufficient to explain terrorism. Some scientists emphasize factors in the individual, while others emphasize how factors in society and in groups could lead to terrorism. While many of the earlier models focused on personality traits and psychopathology, more recent models and theories emphasize terrorism as a process, where interactions between individuals, groups, and society play a vital role. Terrorism is a complicated phenomenon to study, and research on the subject suffers from many practical and methodological difficulties. Our hope is that this chapter can give a brief overview of the main research topics and questions of the vast field dealing with psychological factors contributing to terrorism.

Keywords: terrorism, psychological theories, individual-oriented, social psychological, process

Terrorists are not aliens; they are our youth. We cannot dismiss them as enemies, except in a short-range approach. In the long range, if we want to stop terrorism, we must understand terrorists.

(Ferracuti, 1982, p. 140)

Introduction

Modern warfare in terms of fourth-generation warfare and counterinsurgency operations represents a combat environment of high complexity, where the moral integrity and resilience of soldiers is an issue of utmost importance for a successful operational outcome (Olsen, Eid, & Larsson, 2010). Modern military psychology should therefore develop more knowledge about the antecedents and outcomes of true or envisioned terrorist acts and how they may represent a major threat to morale and fighting spirit in soldiers and leaders. Terrorist acts are not only a threat in times of war and operations other than war (e.g., peacekeeping or humanitarian assistance operations), but also represent a challenge

to modern society that will require a response from law enforcement and security operations personnel (Campbell, Hannah, & Matthews, 2010). In this chapter we examine current psychological models and perspectives on terrorism that could be of potential value to military psychologists in their work to shed light on possible explanations of terrorism.

In the search for contributing causes of terrorism, psychological models and theories have been called upon to explain why people participate in terrorist acts. Despite a considerable increase of published articles on the topic in recent years (Figure 7.1), there is still no consensus on the necessary and sufficient psychological factors that lead to human involvement in terrorist acts.

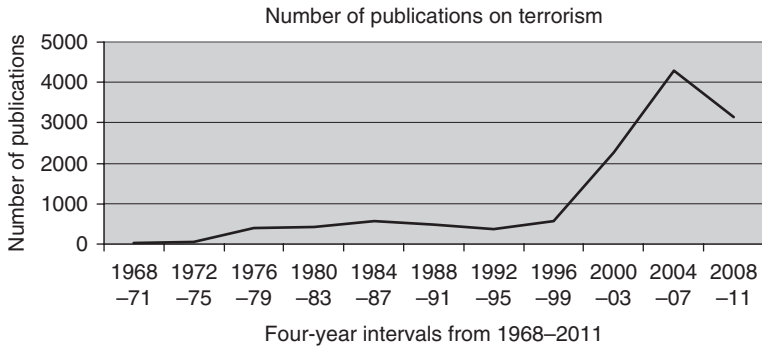


Fig. 7.1 Hits on the word “terrorism” in the ISI Web of Science database.

Problems in Defining Terrorism

In order to explain a phenomenon, it is of course essential to be able to define the phenomenon. This seems to be challenging in the case of terrorism, where there is a striking lack of consensus on how to define the concept. Silke (2001) describes this lack of consensus as the most devastating problem in research on terrorism. Shafritz, Gibbons, and Scott (1991) claim that it is unlikely that people will ever agree on a definition, as the phenomenon is so multifaceted and the scholarly approaches are so diverse. Still, many attempts have been made to promote definitions of terrorism both in psychology and in other disciplines, as well as in the popular literature. There are differences both between how different countries define terrorism, and between how different agencies within a country define terrorism. Silke (2004) notes, for instance, that in the United States, the FBI, the U.S. Department of Defense, and the U.S. State Department all seemingly have different preferences on how to define terrorism.

Despite the diversity of definitions of terrorism, and many partly overlapping and related phenomena and concepts, there are some features that seem to be common to most of the different definitions. In an attempt to describe the core aspects of terrorism, Moghaddam and Marsella (2003) point out that the definitions of *terrorism* converge around the following characteristics:

- The use of force or violence
- by single individuals or groups
- directed at civilian targets or populations
- with the intention to induce terror
- as a mean to force individuals or groups to change their political or social attitudes or decisions.

This collection of common characteristics is not without controversy, and raises the larger question of “the eye of the beholder” in that one man’s terrorist is another man’s freedom fighter. Whether one is considered a terrorist or not will thus partly depend on what goals are targeted and who is making the judgments. A consensus around the definition of terrorism is desirable because this would give an opportunity for research to develop common methodologies and approaches, and narrow the scope of the phenomena under study (Silke, 2004). There exist, however, several issues that must be overcome before scientists can establish a common definition of terrorism.

From a historical perspective, Hoffman (1998) points out that terrorism is difficult to define, because the concept’s meaning has changed frequently over the last two hundred years, and because of the lack of contemporary consensus on a definition of the phenomenon. In the 1940s and 1950s, the term *freedom fighter* was adopted as a result of the international community granting political legitimacy to such actors in support of struggles for national liberation and self-determination. Later, in the 1960s and 1970s, the term *terrorism* was often used in a revolutionary context.

Terrorism is also a word with mostly negative connotations that one usually would prefer to reserve for one’s enemies and adversaries (Hoffman, 1998). Who is a terrorist and what is defined as terrorism is thus in the eye of the beholder (Hoffman, 1998). Perception thus has an important role in relation to terrorism. Labeling someone as a “freedom fighter” or a “terrorist” may depend on whom one sympathizes with on a given issue, making terrorism a highly subjective matter. Crenshaw (1995) also describes terrorism as something subjective and highly symbolic, making it difficult to define the

phenomenon neutrally. According to Crenshaw, calling an act “terrorism” represents a moral evaluation. Therefore, Crenshaw believes that it is vital to understand terrorism in its political context.

Still another complicating factor in the search for a common definition of terrorism is that there are many different types of terrorism. Post (2007) has suggested a classification of the various forms of terrorism into political terrorism, criminal terrorism, and pathological terrorism. The main focus of this chapter will be on political terrorism, or more precisely what Post refers to as “sub-state terrorism.” Post divides sub-state terrorism into *social revolutionary*, *right-wing*, *nationalist separatist*, *religious extremist* and *single-issue terrorism*. Social revolutionary terrorist acts are described by Post as retaliation against a generation of parents who are loyal to a regime that is held responsible for problems by the new generation. An example of this form of terrorism is, according to Post, the Red Army faction in West Germany. Nationalist-separatist terrorism is described by Post as groups that are fighting to establish a new state based on ethnic dominance or homogeneity. Examples of such organizations are the Irish Republican Army (IRA) and Euskadi Ta Askatasuna (ETA), the Basque separatist movement. Religious extremist terrorism is described by Post, Ruby, and Shaw (2002b) as religious warriors who defend their faith against their religious enemies, and who respond to text interpretations by radical clerics who endorse killing in the name of their God (Post et al., 2002b). An example of this, according to Post and colleagues, is the Japanese cult Aum Shinrikyo that was responsible for the sarin gas attack on the subway in Tokyo in 1995. Religious and right-wing terrorism is described by Post and colleagues as extremist groups seeking to maintain a preserved political order or to return to an idealized “golden age” of the past where ethnic relations clearly favored the dominant majority. Such groups usually have fascist ideologies: examples of this are neo-Nazi and racist groups such as the Ku Klux Klan (Post et al., 2002b). Single-issue terrorism is described by Post (2007) as terrorism in pursuit of causes, such as environment (Earth Liberation Front) and animal rights (Animal Liberation Front).

In addition to the various forms of terrorism, there are also several different roles in a terrorist organization (Victoroff, 2005). These roles range from managers and sponsors to foot soldiers and technicians (Victoroff, 2005). Their motives and psychological profiles can be quite diverse. This

leads to the question of whether it will be possible to establish a unified theory that can explain the motivation for all the different roles within a terrorist organization. However, it is important to emphasize that the roles do not remain static, that the terrorist organizations are adaptive, and that members might move in and out of different roles in the organization.

The wide range of different definitions, roles and forms of terrorism complicates comparing and evaluating existing theories and explanatory models of terrorism. From the attempts that have been made to refine and clarify the phenomenon, it appears that some theories seem to have emphasized individual factors that might lead to terrorism (e.g. Miller, 2006; Post, 2004; Taylor & Quayle, 1994), while others have emphasized contextual and group-level forces that might lead to terrorism (e.g. Grimland, Apter, & Kerkhof, 2006; Hafez, 2006). Other theories emphasize both types of factors (e.g. Moghadam, 2003; Moghaddam 2006; Post et al, 2002).

In this chapter, the focus will be on examining possible psychological explanatory models or mechanisms that could inform our understanding of terrorism. Thus the emphasis will be on theories developed based on psychological theory and research, and not as much on other theoretical perspectives rooted in other social sciences. Clearly, a sole focus on psychological factors contributing to terrorism will not explain the phenomenon altogether, but the focus of this chapter will be on psychology’s efforts to contribute to the understanding of terrorism.

Method for Literature Selection

In preparation for this chapter, an extensive literature search was performed in *PsychINFO*, *Web of Science*, and *ProQuest* databases with the key words “psychology and terrorism” in all available years in the various databases. Hits on the two key words from the different databases were then read to determine whether they dealt with psychological causes of terrorism. This search returned 113 scholarly articles about possible psychological causes of terrorism (dissertations and book reviews excluded). Articles written in scholarly fields other than psychology were also excluded, and purely descriptive articles not presenting a theoretical explanation of why people become terrorists were excluded ($n = 70$). After excluding these groups, 43 articles were kept as the basis for the current analysis (Figure 7.2) describing psychological theories or models thought to explain terrorism.

Psychological Explanations of Terrorism

In the following sections, the psychological explanations of terrorism are grouped into three different categories: (a) individual-oriented, (b) social psychological, and (c) other explanatory models. These groups are an extended projection of the categories of psychopathological and psycho-sociological perspectives on terrorism proposed by Lia and Skjølberg (2004). Still, it should be noted that the classifications of the theories under different explanatory models are only tentative, since many theories may emphasize factors that may fit under several categories.

Individual-Oriented Explanatory Models

The individual-oriented explanatory models involve theories that describe terrorism as a result of psychopathology, personality, intra-psychic processes, or motivational conditions.

TERRORISM AS AN EXPRESSION OF PSYCHOPATHOLOGY

Psychological models viewing terrorism as a result of psychopathology constitute the majority of early attempts to use psychological concepts and theories to explain terrorism. This perspective suggests that terrorists suffer from mental disorders such as personality disorders or paranoia. Although severely criticized for their shortcomings (Horgan, 2005; Silke, 2004), these perspectives still continue to dominate the field and popular literature.

In his assessment of personality disorders among terrorists, Miller (2006) relates various personality disorders, as they are classified in the *Diagnostic and*

Statistical Manual IV (DSM-IV), to the different types of members and leaders of terrorist organizations. Miller suggests that people with narcissistic, paranoid, borderline, antisocial, dependent, histrionic, or schizoid personalities will be attracted to terrorist organizations as a result of their personality disorders. He suggests that people with a narcissistic or paranoid personality profile will be over-represented as classic cultist terrorist leaders, while people with borderline, antisocial, dependent, or schizoid personalities are over-represented as followers. An individual with a histrionic personality profile is suggested to be an excellent member to spread the message of the terrorist organization. Miller believes that a terrorist group in different ways meets the needs of such individuals by virtue of their personality disorders. Miller does not present any empirical basis except his own clinical judgment to support the claims in his article.

Along the same line of reasoning, it has been suggested that people who organize, lead, plan, and carry out suicide attacks hold a narcissistic injury (Khalid & Olsson, 2006). A *narcissistic injury* is described by Khalid and Olsson as a psychological scar that occurs in children when caregivers are unable to provide a suitable environment for healthy development. When it comes to leaders and organizers, a narcissistic injury leads to an unconscious reaction formation in the form of a feeling of importance and special abilities when it comes to reasoning and decision making. Under the right circumstances these persons could be more easily recruited to terrorist organizations or other organizations led by charismatic leaders, where they will

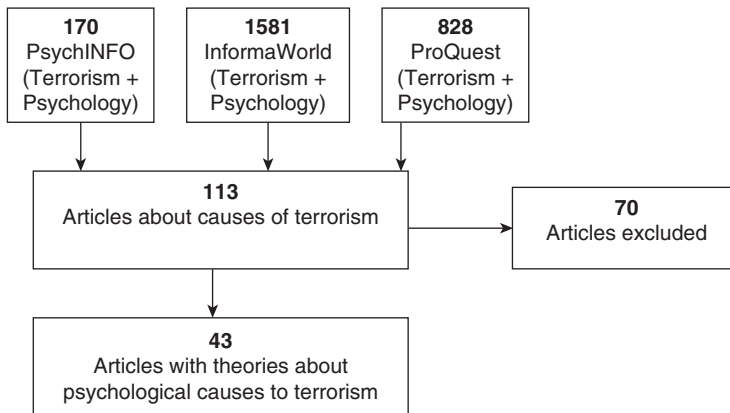


Fig. 7.2 Results from the literature search and selection process.

see themselves as natural leaders (Khalid & Olsson, 2006).

From psychoanalytic theory, Post (2004) suggests that people who are aggressive, action-oriented, and to a greater degree than usual, make use of psychological defense mechanisms, such as alienating and splitting, are disproportionately represented among terrorists. He therefore proposes that the salient feature of the terrorist psyche is projection. *Projection* is described by Post as an infantile defense mechanism that ascribes intolerable inner feelings to a remote object when an individual who has grown up with a damaged self-concept idealizes the good self and separates it from the bad self. The bad self is then projected onto others, and the terrorist creates a form of self-defense against his victims where he in the act of terrorism wants to destroy his own bad self. Victoroff (2005) points out, however, that the research supporting this hypothesis has shortcomings, and that further research is needed to establish its usefulness in explaining terrorism.

TERRORISM AS AN EXPRESSION OF PERSONALITY TRAITS

There are some theorists who believe that terrorists are characterized by a number of personality traits that make them susceptible to participation in terrorism. The interest in personality traits has been fueled by a desire to create “terrorist profiles” or systems that could be used in the early detection of terrorists.

According to Vaisman-Tzachor (2006), it is likely that a person is a terrorist if this person is: between 18 and 25, an illegal or undocumented immigrant, unmarried, a member of certain specific Arab or Muslim organizations, and suffers from pathological narcissism. Vaisman-Tzachor claims that this is a product of scientific analysis of archival data and analysis of existing reports on terrorist acts. Vaisman-Tzachor points out, however, that most terrorists are not willing to participate in psychological studies, and that most of his evidence is derived from biographical material, reports from the media, and terrorist interviews conducted by other professionals, and not from controlled psychological studies.

ABSOLUTIST/APOCALYPTIC THEORY—ABSOLUTE MORAL THINKING

Individual psychological factors have also been emphasized by the psychiatrist Robert J. Lifton (2000) in his account of the Japanese *Aum Shinrikyo* cult and other apocalyptic groups that envisage mass destruction as a way to establish a new world order.

Lifton suggests that an absolute/totalitarian moral thinking helps motivate people to terrorism through its seductive appeal to young adults with weak ego identities. Terrorists want to prevent their followers from exhibiting normal human emotional responses to their use of violence, through processes of denial, mental numbness, or isolation of affect. Lifton’s evidence to support this theory consists of a series of theory-driven interpretations of unstructured interviews with a small number of individuals who may not be representative.

A related perspective is found in the so-called *kamikaze psychology* or the *Samson syndrome*. Canter (2006) draws parallels between the suicide bombing and other forms of suicide and violent crimes. Canter suggests that suicide bombing can be explained by what he calls the “Samson syndrome,” after the biblical example of self-destructive revenge. According to the Bible Samson prayed to God for strength to sacrifice his life to kill Philistines who had mistreated Samson and his people. Samson then got the strength to make the temple he and the Philistines were in collapse, killing both himself and all the Philistines in the temple. According to Canter, the Samson syndrome deals with two central aspects of the suicide bomber cognition. In the first place, this is an expression of a cognitive simplification, in which there is a very strong distinction between the in-group suicide bombers identify with and an out-group of all other non-in-group members. The distinction between in-group and out-group can then be reinforced by characterizing the out-group as less human and more immoral, dangerous, and so on, than the in-group. The second aspect of the Samson syndrome is a distinct belief that the out-group follows a fixed plan that will not be changed, and that denies the in-group’s identity. The only option in order to influence the out-group, therefore, is to carry out suicide attacks (Canter, 2006). This theory is not based on the author’s own empirical investigations of terrorists, but rather on a synthesis of literature and research from other researchers on the topic. A somewhat parallel line of reasoning from Taylor & Quayle (1994) may lend some support to this theory, by suggesting that young people who join a terrorist organization make a fundamental attribution error in terms of attributing evil motives to those they see as oppressors. However, although empirical data are lacking, evidence indicates that terrorism is associated with cognitive inflexibility and a rigid mindset (Victoroff, 2005).

In the search for special characteristics in terrorists, some theories attribute terrorism to specific

innate aspects of temperament, such as “novelty-seeking” (Victoroff, 2005). One hypothesis suggests that “novelty-seeking” may play a role in terrorist involvement (Victoroff, 2005). It could also be the case that the personality trait of novelty-seeking distinguishes those who are more prone to join a terrorist organization, but this has yet to be studied (Victoroff, 2005).

TERRORISTS AS AUTHORITARIAN PERSONALITIES

Lester, Yang, and Lindsay (2004) suggest that the authoritarian personality may be a particular characteristic of Palestinian terrorists. Lester and colleagues relate a number of components of the authoritarian personality to the Palestinian society, such as conventionalism, authoritarian submission, authoritarian aggression, and excessive preoccupation with power. Lester and colleagues believe that Islamic child-rearing practice can facilitate the development of an authoritarian personality, which the authors believe characterizes many terrorists. The basis for this hypothesis is studies that explore the experiences of child-rearing that facilitate the development of an authoritarian personality in children (Levinson & Huffman, 1995). Levinson and Huffman’s studies have shown that Turkish children scored higher on the measure of authoritarian personality than American children. Lester, Yang, and Lindsay (2004) interpret these results as evidence that Islamic child-rearing facilitates the development of an authoritarian personality.

Along the same lines, Kimhi and Even (2004) conducted a content analysis of interviews with imprisoned terrorists, family members, and close friends of terrorists, and terrorists’ wills. By analyzing the behavior patterns of suicide terrorists and the communities they were raised within, the authors described four categories of suicide bombers. These categories are based on the suicide bombers’ main motive and the bombers’ path from recruitment to eventually detonating the bomb. The four categories of suicide bombers are: the religious, the exploited, those taking revenge for suffering, and the socialist/nationalist (Kimhi & Even, 2004). The religious category includes people who have a religious principle motive for terrorist activities, such as martyrdom, *jihad* (holy war), or a place in paradise (Kimhi & Even, 2004). The exploited category includes individuals who are exploited by the leaders of terrorist organizations and recruited for suicide attacks (Kimhi & Even, 2004). The third category is those who seek revenge for suffering,

and individuals in this category have a desire for revenge as their main motive (Kimhi & Even, 2004). The socialist/nationalist category usually has a socialist, nationalist, or political primary subject (Kimhi & Even, 2004).

Koltko-Rivera also addresses motives for terrorism in his theory inspired by Abraham Maslow’s hierarchy of needs. Koltko-Rivera (2006) presents Maslow’s reformulation of his hierarchy of needs with self-transcendence at the top as a relevant model to understand suicide terrorist motives. Koltko-Rivera describes individuals who want to achieve self-transcendence as people who seek to devote themselves to a cause greater than themselves and to experience an epiphany outside of their normal lives. Such a “peak experience” may involve mystical experiences, specific experiences with nature, or aesthetic experiences where the person feels a sense of identity that transcends the personal self. According to Koltko-Rivera, a suicide attack can be viewed as an expression of the negative side of self-transcendence. Terrorism can, therefore, according to Koltko-Rivera, be seen as a result of people devoting themselves to a cause greater than themselves, and experiencing a sense of identity linked to the terrorist organization that goes beyond the personal self. Some terrorists, however, come from what can be characterized as poor or unfortunate circumstances where the basic needs in Maslow’s hierarchy are not met. One could for instance assume that for the majority of the population of Iraq, the need for safety is not met. However, Iraq has been plagued by terrorism. As Maslow originally claimed that higher needs are only met when the lower needs are met, one could question the validity of this theory, as the need for self-transcendence is placed on the top of the hierarchy.

TERRORISM AS VIOLENCE

Several theories see terrorism as violence, and equate terrorism with other forms of violence. Theorists believe that the same psychological factors that lead to violence in general also often lead to terrorism. Such psychological causes can be partly frustration (Friedland, 1992), repression (Schmid, 1983), and humiliation, and a subsequent need for revenge (Juergen Meyer, 2000).

The frustration-aggression theory is one perspective in this area. Friedland’s (1992) frustration-aggression theory suggests that terrorism is the result of frustration over social and personal relationships, and that violence generally is a response to frustration (Victoroff, 2005). The use of this theory to

explain terrorism has been criticized because millions of people live under frustrating circumstances without resorting to violence, and because many terrorists do not belong to the suffering groups they claim to fight for (Victoroff, 2005).

Relative deprivation theory has addressed some of these problems by stating that frustration arises from the personal experience of relative deprivation. The theory emphasizes the connection between human frustration and political violence, and suggests that individual aggression and political violence could be fueled by social, economic, and political circumstances (Lia & Skjølberg, 2004). Theories of relative deprivation suggest that the tension between the individual expectations of satisfaction in contrast to the current socio-political circumstances, in some cases leads to an experience of relative deprivation that constitutes a basis for participation in collective violence (Lia & Skjølberg, 2004). There is no empirical evidence that links the relative deprivational theory directly to terrorism, but there is evidence linking relative deprivation to collective action (Grant & Brown, 1995) and militant socio-political attitudes (Guimond & Dubé-Simard, 1983).

TERRORISM AS AN EXPRESSION OF HATRED

This type of explanation emphasizes hatred as one of the many causes of terrorism, but also as a potential cause of massacre and genocide. Along these lines, the humiliation-revenge theory has also been suggested to fuel terrorist acts. Meyer (2000) has proposed that the humiliation—and the following internal pressure for revenge—is a psychological factor that leads to violence being carried out by terrorists. Several authorities in the terrorism field suggest that humiliation, either by parents in early childhood or of political oppression later in life, can trigger terrorism, but no quantitative research has to this date examined this hypothesis (Victoroff, 2005).

An interesting perspective in this area is Sternberg's (2003) duplex theory of hate, which suggests that hatred is one recurring factor that contributes to most, if not all, massacres, genocide and terrorist attacks. Hate is defined here as *to despise or wish to avoid an object*. According to Sternberg (2003), this theory is only intended to be a partial explanation of phenomena such as massacres, genocide, and terrorism. The duplex theory of hate has three components that make up each corner of a "hate triangle" inspired by Sternberg's (1986) triangular theory of love. The three components in the hate triangle are lack of/avoidance of intimacy, passion of hatred, and commitment to hatred

(Sternberg, 2003). The three components create, in various combinations, seven different types of hatred. Sternberg believes that hatred is related to terrorism, massacres, and genocide through the number of components of hatred that are experienced, and that there is a great risk of violence if all three main components of the hate triangle are present. This theory has so far not been tested scientifically.

Social-Psychological Explanatory Models

Individual-oriented explanatory models of terrorism have dominated the early research on terrorism, but many researchers have agreed that terrorism is not a result of trivial motivations or mental disorders (Silke, 2004). In contrast to the individual theories, the social-psychological theories focus on the circumstances and processes that lead to terrorism.

TERRORISM AS GROUP PSYCHOLOGY

Social-psychological explanatory models involve theories that assume that terrorism is mainly developed on the basis of contextual factors that influence people's behavior in a variety of pro-social and antisocial contexts. Theories outlining group psychological processes or phenomena have also been used to explain terrorism.

Hutchinson (2007) looks at the causes of suicide bombings from two different viewpoints: that of the organizations that organize the attacks, and that of the individuals who are willing to perform them. In the case of the organizations' motivation to carry out suicide attacks, Hutchinson believes that these organizations are most likely to carry out suicide bombings, because these attacks are effective and cheap. Hutchinson describes suicide bombers as victims of their own cultural socialization, and proposes that societal attitudes are important in order to "develop" or "produce" a suicide bomber. More specifically, Hutchinson points out that frustration in the community and support for these types of acts make people more willing to sacrifice their own lives.

Grimland and colleagues (2006) point to the role indoctrination plays in the development of terrorism. The main arenas for indoctrination training are schools, media, parents and friends. Indoctrination through education is a process that takes place over a long time, and the purpose of indoctrination is to convince the person about the importance of the cause, and that s/he is entitled to use destructive means to promote the issue (Grimland et al., 2006). Indoctrination can also be short-term, focused, and operation-oriented. Such cases usually

involve a charismatic political, military, or religious leader, and indoctrination takes place just before an attack (Grimland et al., 2006). The psychological process of “making” a suicide bomber could also be compared to a “production line” where relatively heterogeneous people enter on one side and exit on the other side as suicide bombers after being subjected to indoctrination (Grimland et al., 2006).

SELECTIVE MORAL DISENGAGEMENT

Bandura’s (1990) model of terrorism is founded in his theory of moral self-sanctions. According to Bandura, self-sanctions play a central role in the regulation of inhumane behavior, as they normally help keep behavior in line with internal standards. The selective engagement and disengagement from moral self-sanctions allows one to engage in destructive behavior, such as terrorism (Bandura, 1990). The processes of moral justification, palliative comparison, euphemistic comparison, displacement and diffusion of responsibility, dehumanizing and attribution of blame to the victim contribute to the disengagement of self-sanctions related to harming another human being. This process of selective moral disengagement is seen as a crucial psychological mechanism for the use of violence (Bandura, 1990). Bandura’s theory of terrorism has not been tested empirically in relation to the terrorists, but the role of moral disengagement has been tested in relation to the execution process in the United States (Osofsky, Bandura, & Zimbardo, 2005). The results showed that the closer one was to the execution process, the higher one’s levels of moral, social, and economic justification, denial of personal responsibility, and dehumanizing of the victim (Osofsky et al., 2005). The above-mentioned results may indicate that dehumanizing may be a necessary process for people to be able to justify, and carry out, the act of taking another person’s life, and that the degree of dehumanizing increases with proximity to the execution process.

Another social-psychological theory is the “contagion theory” of terrorism, which explains variations in the terrorists’ determination to carry out terrorist attacks (Lia and Skjølberg, 2004). Several studies have, according to Lia and Skjølberg, demonstrated that there is a clear periodic cycle in the occurrence of terrorist attacks, which may indicate that terrorist groups’ decisions to carry out a terrorist attack are influenced by similar attacks elsewhere, and there is thus a contagion effect. According to Weimann and Brosius (1988), there is accumulating empirical evidence that terrorism has

an infectious effect. In a more psychological explanation, one can explain the “infection” by social-comparison theory, model learning, or by the fact that some people feel that it is legitimate to violate established social norms because others do it.

TERRORISM AS A CULTURAL PHENOMENON

Terrorism can also be understood within a cultural context, where a number of factors in the culture help contribute to terrorism, such as attitudes to terrorism and “martyrdom” (Hafez, 2006) and human rights (Callaway and Harrelson-Stephens, 2006). Culture can also be thought to influence whom terrorism is directed against, according to Weinberg & Eubanks (1987).

The cultural perspective is central to Hafez’s (2006) theory, which is based on his content analysis of materials related to Palestinian suicide bombers, such as wills, statements from terrorist groups, published interviews with family, friends, and acquaintances of terrorists, and public debates about suicide terrorism. Hafez believes that individuals strongly motivated to carry out suicide attacks are religious individuals who equate suicide attacks with martyrdom, and that suicide attacks therefore become a kind of salvation act or religious commitment in the face of perceived persecution and injustice. Hafez further believes that this strong religious belief in the suicide attack that combines symbolic martyrdom narratives with rituals and ceremonies around the suicide attacks further creates a culture of martyrdom. It is this culture of martyrdom, Hafez believes, that leads so many to volunteer for suicide attacks. The model does not however attempt at explaining non-religiously motivated terrorism, or terrorism perpetrated by non-religious individuals.

Callaway and Harrelson-Stephens (2006) also emphasize culture in their theory: sociopolitical theory for the formation and growth of domestic terrorism. This theory argues that states that deny their citizens human and political rights create an environment that can lead to the development of terrorism. Human rights violations, especially denying personal security rights, are suggested as contributing to the formation and evolution of terrorism, especially when violations occur over longer periods of time. Callaway and Harrelson-Stephens (2006) believe that the relationship between the violation of personal security rights and terrorism is non-linear, meaning that if the level of oppression in a society increases, so the likelihood of terrorism increases until a threshold is reached. This is because extremely

oppressive states are considered effective in avoiding political unrest within their borders.

In these cases, terrorism will most likely be performed by individuals from states with an intermediate level of repression (Callaway and Harrelson-Stephens, 2006). Moreover, residents of states with an average standard of living (i.e., intermediate meeting of basic human needs) most likely feel deprived in relation to others and thus experience a sense of injustice that could foster terrorism (Callaway and Harrelson-Stephens, 2006). It is also the case that terrorism is most likely to occur in areas where there is little opportunity for disagreement and political openness (Callaway and Harrelson-Stephens, 2006). Although this theory has not been tested empirically, the authors illustrate it with terrorism in Ireland as an example.

TERRORISM AS A GRADUAL PROCESS

Several researchers have pointed to the importance of a cumulative impact of several psychological factors. For example, terrorism can be thought of as a gradual process, or an outcome of several psychological factors. Such theories may consist of a series of steps, such as in Moghaddam's model "The Staircase to Terrorism" (2005) in which various factors contribute to the various steps, or stages.

In his article in the *American Psychologist* Moghaddam (2005) sees the terrorist act as the last step in a narrowing staircase. "The Staircase to Terrorism" has a ground floor and five higher floors, i.e., a total of six steps, where the behavior at each step is influenced by a specific psychological process (Moghaddam, 2005). The steps are as follows (in ascending order): (1) psychological interpretation of material conditions, (2) perceived opportunities to fight against unfair treatment, (3) displaced aggression, (4) moral obligation to the terrorist organization, (5) solidification of categorical thinking and perception of the organization's legitimacy, and (6) the terrorist act. Moghaddam proposes that as an individual moves up the stairs, s/he will see fewer and fewer alternatives for action, until the final outcome is the destruction of others, him- or herself, or both. Moghaddam is careful to note that his "Staircase" model is not a formal model to be tested against alternatives, but rather a metaphor that has the purpose to provide a general framework for organizing current psychological knowledge about terrorism. His model is, according to himself, thus not based on empirical studies, but rather a systematization of current psychological knowledge about terrorism (Moghaddam, 2005). The empirical basis

for this model has been evaluated (Lygre, Eid, Larsson, & Ranstorp, 2011).

Berko and Erez (2005) also describe terrorism as a result of a social process involving socialization. According to Berko and Erez, research has shown that suicide bombing requires three main elements: (a) highly motivated individuals, (b) access to organizations that use suicide attacks as their modus operandi, and (c) a society that considers suicide bombers as heroes and considers their actions a noble form of resistance. Data in the article by Berko and Erez are taken from in-depth interviews with seven male and female Muslim Palestinians serving prison sentences in Israel for attempted suicide attacks, who were willing to be interviewed (Berko and Erez, 2005). Thus, the preliminary evidence for this model is limited.

Motivations and organizational aspects of Palestinian suicide terrorism have attracted considerable attention. In line with Berko and Erez (2005), Moghaddam (2003) points out that terrorist organizations make it difficult for people to *refrain* from suicide attack. Moghaddam presents a two-phase model to explain the processes and factors behind the development of Palestinian suicide bombers, and the execution of the suicide attacks. The model consists of a motivational phase and an institutional phase. In the motivational phase, there exist different motives for becoming a suicide bomber, which can be linked either to the individual or to the terrorist organization (Moghaddam, 2003). These motifs are merged in the recruitment stage, when organizations identify and mobilize individuals who have expressed their willingness to die. Here two necessary conditions come into play—on one hand, a willingness to kill, either derived from the individual or organization; and on the other hand, the individual's willingness to die (Moghaddam, 2003). It is here, in the recruitment stage, that the motivation phase ends and the institutional phase takes over (Moghaddam, 2003). In the institutional phase, the "voluntary martyr" is under organizational control. The individual is exposed to indoctrination and training that culminate in a suicide attack. The model is not tested empirically, but Moghaddam writes in the article that the model's assumptions are tested by looking carefully at the different motives that lead Palestinians to volunteer for suicide attacks.

Sprinzak (1991) proposes another stage model of terrorism, comprised of three distinct stages. Sprinzak's first premise is that none of the known terrorist groups began their venture by using terrorism, but that most modern terrorists are gradually

radicalized to use terrorism as a means through a delegitimation process. *Delegitimation* is described by Sprinzak as a starting point for radicalization processes, thus linking terrorism to political processes. Sprinzak describes this delegitimation resulting in terrorism as a radicalization process that can be divided into smaller stages of development, and that are open to non-conventional theoretical manipulation. The three ideological behavior stages in this process as Sprinzak (1991) proposes are: "Crisis of Confidence," "Conflict of Legitimacy," and "Crisis of Legitimacy." When it comes to delegitimation, Sprinzak posits three different forms: transformational, extensional, and split. Each of these forms of delegitimation contains some or all of the three ideological behavior stages, "Crisis of Confidence," "Conflict of Legitimacy," and "Crisis of Legitimacy." Sprinzak's theories arise from his own observations of what he calls "terrorist-producing radicalization processes"; i.e., radicalization processes that Sprinzak would consider as leading to terrorism.

Other Explanatory Models

In addition to theories explaining terrorism based on individual or group factors, there are a number of other theories that do not fall into either the individual-oriented or social-psychological category of explanatory models. Examples are models that understand terrorism as a result of learning (Dixon et al., 2003) or as suicide in relation to Durkheim's theorizing about suicide (Pedahzur, Perliger, & Weinberg, 2003).

TERRORISM AS SUICIDE

According to Weinberg and colleagues (2003), Palestinian suicide terrorism could be seen as a fatalistic altruistic suicide. Weinberg and colleagues (2003) use Durkheim's framework for understanding suicide, just as Pedahzur, Perliger, and Weinberg, in an article from 2003 (Pedahzur et al., 2003). Weinberg et al. (2003), suggest that suicide bombing is a combination of altruistic and fatalistic suicide, as Durkheim understands them. *Altruistic suicide* is described as the type of suicide that occurs when social integration is too large, the collective consciousness is too strong, and the individual is forced to take his own life (Weinberg et al., 2003). In this form of suicide, people may find it to be their duty to take their own life. When it comes to *fatalistic* suicide, society's regulation of individuals is too strong, and it destroys the individual's future outlook and passion. This can eventually lead the

individual to see no other alternative but to take his own life (Weinberg et al., 2003). In the case of the altruistic aspect of suicide bombing, the community's support of various terrorist acts can lead potential suicide bombers to feel that he or she sacrifices herself for the good of society (Weinberg et al., 2003). Pedahzur and colleagues (2003) refer to this type of terrorism as the "fatalistic altruistic suicide." This linking of Durkheim's concepts of altruistic and fatalistic suicide to suicide bombing is based on the summary of results from a survey of information from a database at the National Center for Security Studies at the University of Haifa. This database contains information about 819 Palestinian terrorists who took part in terrorist actions from April 1993 to February 2002.

TERRORISM AS LEARNING

Relational frame theory presents a conceptualization of human behavior involved in terrorism from a learning perspective (Dixon et al., 2003). *Relational responding* is described as a type of generalized operant behavior. An example of relational responding is when children learn language through learning relationships between words, objects, and events, where it is often expected that children will try to name things they point to (Dixon et al., 2003). According to this theory, the emergence of language and associated cognitive abilities is dependent on the establishment of an appropriate repertoire of relational responding in the social environment (Dixon et al., 2003). Once reliable patterns of relational responding are contextually controlled by environmental stimuli, such patterns are referred to as "relational frames" (Dixon et al., 2003). Relational responding has proven to be relevant to prejudice, as it already showed in 1958 that one could elicit dislike of specific nationalities in a laboratory setting by directly associating the names of the specific nationalities with unpleasant words (Staats & Staats, 1958).

Dixon and colleagues (2003) explain how they believe one can understand terrorism based on a relational framework perspective by using an example that is based on an 18-year-old man from the Middle East. If this man feels that being in a terrorist organization will improve his life, he will choose to engage in such an organization. If members of the terrorist organization appear to be more satisfied with their lives than the young man is with his own, he will ascribe this to their membership in the terrorist organization and thus wish to participate in it to improve his own life. The benefits of joining a terrorist organization could be the sense of brotherhood

the terrorist organization provides, or the sense of dedicating one's life for a purpose. In some cases, joining a terrorist organization could provide monetary support of the member's family. The important thing in this theory is the recruit's perception of the terrorist organization as a means for improving one's life, and the perceived benefits of joining such an organization can therefore be highly individual. The ongoing work of conceptualizing human behavior involved in terrorism from a relational-framework perspective is currently based on empirical material that relates the "relational frame theory" to other human behavior.

TERRORISM AS ANXIETY BUFFER

According to terror management theory (TMT) people are aware of the fact that they eventually will die, an awareness that creates a potential for paralyzing existential anxiety (terror) (Maxfield et al., 2007). This potentially overwhelming fear, brought forth through the thoughts of one's own death, can be mastered with the help of an anxiety buffer consisting of two components: a cultural worldview and self-esteem (Cohen et al., 2004). These two components act as an anxiety buffer against the existential anxiety aroused by the salience of mortality. Miller and Landau (2005) believe that the motivation for participating in terrorism stems in part from the need to strengthen and defend one's own worldview, and partly from the need to perceive oneself as meeting the standards of one's own worldview. Empirical support for TMT has been achieved in more than 175 published experiments, and these studies have shown that thoughts about one's own death affect a wide range of human activities, such as pro-social behavior, aggression, pursuit of self-esteem, sexual attitudes, risk-taking, and close relationships (Cohen et al., 2004). In relation to terrorism, studies have been conducted based on TMT to see how mortality salience can influence the choice of political leaders, including how such thoughts can get people to have more positive reactions to the people who support their own worldview, and more negative reactions toward people who in some way challenge their worldview (Greenberg et al., 1990; Rosenblatt et al., 1989). Moreover, it is in this context particularly relevant, with studies showing that to be reminded of one's own death increases in-group bias (Arndt et al., 2002) and creates and increases prejudice, nationalism, aggression, and stereotypical thinking (Schimmel et al., 1999). An extensive body of literature has shown that TMT provides similar reactions in

different cultures, including the United States, Germany, Italy, Israel, Iran, Turkey, Japan, Korea, and Australia (Maxfield et al., 2007).

TERRORISM AS A RATIONAL CHOICE

Contrary to TMT, the "rational choice theory" is based on a hypothesis that terrorism is the result of a conscious, rational, and calculated decision to use this type of action as a strategy to reach given socio-political goals, in the belief that this is the solution that will have maximum impact in achieving that group's goals (Crenshaw, 1992). This theory comes from economy, and it attempts to explain how changes in policy between terrorists and governments can change behavior in predictable ways (Victoroff, 2005).

A similarly rational process is the so-called integrated framework for analysis of group risk for terrorism. Post, Ruby, and Shaw presented (in two articles from 2002) a framework designed to account for critical variables that may increase risk for political violence. This framework contains a total of 32 variables that are placed within four main categories: external factors, the key factors that affect the group; group and organizational variables; properties of, processes, and structure of the group; and the properties of the immediate situation (Post, Ruby & Shaw, 2002b). Each of these factors provides a key variable which is divided into factors.

The formation of this framework is the result of a study in which Post, Ruby, and Shaw asked six experts in the field of terrorism and political violence if they, regardless of each other, could make a list of factors they believed increased the risk of terrorism in the following categories: group-specific, environment-specific, and relationship-specific factors. Each of the experts' responses was then combined and factor-analyzed, and the lists were then sent back to each of the experts for evaluation and prioritization. Scientific literature on terrorism was also reviewed to identify indicators and critical variables that could complement the expert lists; these were then combined with the expert lists and factor-analyzed. Because the number of relevant factors is so large, the authors point out that this is a framework that is difficult to use, and the framework has not been tested against specific groups (Post, Ruby, & Shaw, 2002a).

DISCUSSION

Acts of terrorism are often seen as defining criteria of so called "asymmetrical" or fourth-generation warfare. The capacity to conduct asymmetrical

warfare in most cases does not require large military organizations, complex technology, or massive resources. In most cases, such as with suicide bombers, the human element, including motivation and intent, is critical. It could therefore be argued that fourth-generation warfare will have significant implications for the role of military psychologists in shifting their role from traditional treatment and selection of personnel, to operational psychology, where psychological principles and skills will be used to improve a military commander's decision-making in security operations.

Psychological Explanation Models for Terrorism

"No single psychological theory, and no single field of scholarly study can completely explain the motivations of terrorist individuals and groups" (Reich, 1990).

As Reich (1990) points out in the quote above, it is unrealistic to believe that a single psychological theory or one science can explain the phenomenon of terrorism as a whole. Psychological theories will always come up short in explaining terrorism, because they only deal with the psychological part of the phenomenon. But there are also few, if any, theories that address the full picture of the psychological factors that play a role in terrorism.

When it comes to individual-oriented explanatory models for terrorism, prominent researchers seem to agree that theories of terrorist psychopathology and the terrorist personality are of limited use for understanding why terrorism occurs (Horgan, 2005; Silke, 2003). According to Silke (1998), theorists who support the psychopathology model only provide anecdotal evidence to support their claims. In general, one may conclude that research supporting "terrorism as abnormality" has modest or questionable validity (Silke, 1998). Research that supports the idea that terrorists are "normal" in a psychological sense are more numerous and have greater scientific validity (Silke, 1998). Despite the fact that many researchers on terrorism agree that terrorists are not generally characterized by psychopathology, the idea of terrorist psychopathology continues to inspire new theories.

Many of the early developed individual-oriented explanatory models for terrorism have a psychoanalytic basis, such as theories linking terrorism to narcissism, identity theory, and paranoia. Over the past few years, psychoanalytic approaches to terrorism have, however, been criticized (Houghton, 2006). Horgan (2005) believes that such approaches are of

little use in understanding the terrorists' motivation. This is mainly because psychoanalytic approaches emphasize how psychopathology forms a terrorist's personality, despite the fact that there is little evidence that psychopathology is an element of the psychology of terrorist organizations (Horgan, 2005). Horgan believes the methodological basis is poor in the studies that claim to have uncovered a "terrorist personality" (e.g., Vaisman-Tzachor, 2006).

Victoroff (2005) thinks that there are both strengths and weaknesses in individual-oriented approaches to terrorism. A strength of the individual-oriented approaches to terrorism is the recognition that individual developmental factors that start in early childhood are likely to affect adults' behavioral tendencies. Victoroff also points out that individual-oriented theories acknowledge that irrational and unconscious factors can influence people's conscious thinking, and that the hidden psychodynamic forces in groups can absorb individuality. Victoroff therefore says that he considers the properties of the individual as important in relation to terrorism. A significant weakness of the psychodynamic theories is, however, problems related to falsify/test theories (Victoroff, 2005). Victoroff (2005) claim that such theories/hypotheses can not be confirmed by modern methods of scientific study.

The rationale for most social-psychological explanation models of terrorism, such as Bandura's explanatory model (1990), however, is that almost anyone can become a terrorist if they are exposed to the "right" circumstances or factors. The most likely answer is probably somewhere in between the individual-oriented and the social-psychological explanatory models. It is possible that some personality characteristics make one more likely to be exposed to some of the circumstances, or seek such circumstances that the social-psychological explanation models outline as contributory causes of terrorism. A social influence that increases the probability that individuals will become terrorists can happen in society as a whole or in actual terrorist groups. It can therefore be difficult to determine when "the creation of a terrorist" begins. Some social-psychological theories only present single factors or single phenomena that could possibly affect the "creation of a terrorist." The theories do not, however, put all influences into a system of several influences or contributing causes. Engagement in terrorism is probably a process wherein a number of factors work together, and terrorism results from a cumulative impact of several psychological factors. This process takes place at several levels, both individual

and group and community levels. There is reason to believe that psychological factors in this context will be prominent at all levels. The challenge for future research on terrorism is to put these influences in a system, and to examine how the various factors on the different levels are related to and affected by each other. There is a clear need in the field to integrate the already existing theories and models for terrorism psychology into a comprehensive framework in which one can place the various social, group, and individual contributing factors. Such a theory can thus be used to examine how factors within each level of influence interact with each other, and how the different levels and factors affect and interact with each other.

Research on Terrorism

Research on terrorism in general is beset with problems. According to Silke (2004), there are probably few other areas where so much has been written on the basis of so little empirical research. Nearly 80% of the literature in the field is not research-based. The shortage of experienced researchers and the vast public interest in the topic has led to a literature characterized by reports and publications that are often ignorant about previous research, or naïve with regard to their choice of methods and conclusions. Although the volume of literature in the field is great, the quality is generally poor. Studies based on statistical analysis of data are relatively uncommon, and such studies are needed to uncover patterns and relationships in terms of terrorism (Silke, 2004). In brief, the heterogeneity of the terrorism phenomenon makes it doubtful that we can make descriptive, explanatory, and predictive generalizations about the phenomenon in general.

Some of these shortcomings are understandable, and the field poses a number of problems. It is difficult to gain access to the terrorists, it is difficult to assess the phenomenon in a systematic way, and there are a number of definition problems and conceptual problems, as previously mentioned. Terrorists are also rarely available for direct observation, and they do not tend to volunteer for scientific interviews or surveys. As Canter (2006) has argued, those studied are those who have been available and willing, either before they carried out an attack or afterwards. It is quite possible that these people are not representative of the population of terrorists or suicide bombers. When it comes to information collected from these people, this information is influenced by the respondents' own views and the situation they find themselves in when the investigation takes

place. Information from family, friends, and co-conspirators to a terrorist will also most likely be distorted or influenced, especially when it comes to describing a deceased person. In such cases friends, and relatives may come to justify the deceased's choice, and present it as a noble choice, to honor the dead (Canter, 2006).

Changes in the demographics of terrorism also make it difficult to make a unified psychological theory of terrorism. Miller (2006) points out that most of the terrorist groups in the 1960s and 1970s consisted of well-educated, well-traveled, multilingual middle-class men and women; while in the 1980s, 1990s, and today, the prototypical terrorist is a poorly educated, unemployed, male refugee from the Middle East. Hutchinson (2007) points out that terrorism is a multifaceted phenomenon that has structural, facilitative, motivational, formative, and triggering causes, and there are few theories that address all causes. Silke (2004) believes that research on terrorism is active, but that it does not produce meaningful and predictive results. This is because the methodology of the field is characterized by great emphasis on open-source documents. According to Silke, the field is characterized by two main methodologies; analysis of documents (62%) and interviews (22%). Silke believes that this shows that research on terrorism has a tendency to emphasize the weaker and less controlled data-collection methods, and that the methods of terrorism research are currently mainly descriptive and exploratory. The future challenge will therefore be to explain and predict terrorism. This is challenging partly because it is difficult to access the population of terrorists. Many of the articles that are not based on statistical analysis forget to point out the limitations of their findings, and are in many cases in danger of over-generalizing results. We would do well to keep these limitations in mind.

Conclusion

It may seem as if the psychological study of terrorism has developed from looking mainly at individual causes that might lead to terrorism, to viewing terrorism as a process that consists of a number of different stages, where several different psychological factors influence the process at different stages. A number of previous studies have focused only on the influences that exist at the individual level. A unified theory of terrorism should explain why individuals decide to become terrorists, why and how organizations promote terrorism, and why some societies are plagued by terrorism to a greater

extent than others. Moghaddam (2005), Moghadam (2003), and Sprinzak (1991) are examples of this type of model. The processes in such models can start when a child is born within the family and society, or the terrorist group can intensify the process by helping with the psychological factors that are required to “create” a terrorist. This may contribute to a tendency to look at “ways or routes” to terrorism, rather than looking for root causes of terrorism (Horgan, 2008). Because so many people are exposed to conditions that are believed to create fertile ground for terrorism, but relatively few take part in terrorism, it appears that the quest for fundamental reasons is less useful than the search for “roads or routes” to terrorism (Horgan, 2008).

Despite a vast increase in the number of publications on terrorism (Figure 7.1), the psychological study of terrorism is still relatively new, and the field is generally dominated by studies of questionable methodological quality and theories with limited or no empirical basis. In order for the psychological study of terrorism to have an impact on the prevention of terrorism, the field must demand better methodological quality of its investigations, despite the practical limitations. It will also be necessary to establish a common definition of terrorism, to enable comparison of different studies of the phenomenon. Only then can psychology contribute to understanding and preventing terrorism.

Interestingly, given that there are 7 billion people on earth, the actual number of terrorists is very small. However suicide and other forms of violent terrorism are very salient. The power of terrorism lies in the terror it instills in people’s minds. The phenomenon is unlikely to be irradiated or countered by military force. It is impossible to catch every person with the intent on carrying out a terrorist act. Maybe the goal should rather be to prevent people from ever joining terrorist organizations. That is a task not to be executed by military force but rather by human force, spending time talking to people to solve social and political discontent. Social and political discontent will continue to exist, however, but the hope is that it can be resolved or expressed in other ways without resorting to terrorism.

References

Arndt, J., Greenberg, J., Schimel, J., Pyszczynski, T., & Solomon, S. (2002). To belong or not to belong, that is the question: Terror management and identification with gender and ethnicity. *Journal of Personality and Social Psychology*, 83(1), 26–43.

Bandura, A. (1990). The role of selective moral disengagement in terrorism and counterterrorism. In W. Reich (Ed.), *Origins of*

terrorism: Psychologies, ideologies, theologies, states of mind (pp. 161–191). Cambridge: Cambridge University Press.

Berko, A., & Erez, E. (2005). “Ordinary people” and “death work”: Palestinian suicide bombers as victimizers and victims. *Violence and Victims*, 20(6), 603–624.

Callaway, R., & Harrelson-Stephens, J. (2006). Toward a theory of terrorism: Human security as a determinant of terrorism. *Studies in Conflict and Terrorism*, 29(7), 679–702.

Campbell, Donald J., Hannah, Sean T., & Matthews, Michael D. (2010). Leadership in military and other dangerous contexts: Introduction to the special topic issue. *Military Psychology*, 22(1), 1–14.

Canter, D. (2006). The Samson syndrome: Is there a kamikaze psychology? *Twenty-First Century Society Journal of the Academy of Social Sciences*, 1(2), 107–127.

Cohen, F., Solomon, S., Maxfield, M., Pyszczynski, T., & Greenberg, J. (2004). Fatal attraction—The effects of mortality salience on evaluations of charismatic, task-oriented, and relationship-oriented leaders. *Psychological Science*, 15(12), 846–851.

Crenshaw, M. (1992). How terrorists think: What psychology can contribute to understanding terrorism. In L. Howard (Ed.), *Terrorism: Roots, impact, responses*. New York: Praeger.

Crenshaw, M. (1995). *Terrorism in context*. University Park: Pennsylvania University Press.

Dixon, M. R., Dymond, S., Rehfeldt, R. A., Roche, B., & Zlomke, K. R. (2003). Terrorism and the relational frame theory. *Behavior and Social Issues*, 12(2), 129–147.

Ferracuti, F. (1982). A sociopsychiatric interpretation of terrorism. *Annals of the American Academy of Political and Social Science*, 463, 129–140.

Friedland, N. (1992). Becoming a terrorist: Social and individual antecedents. In L. Howard (Ed.), *Terrorism: Roots, impact, responses*. New York: Praeger.

Grant, P. R., & Brown, R. (1995). From ethnocentrism to collective protest: Responses to relative deprivation and threats to social identity. *Social Psychology Quarterly*, 58(3), 195–212.

Greenberg, J., Pyszczynski, T., Solomon, S., et al. (1990). Evidence for Terror Management Theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology*, 58(2), 308–318.

Grimland, M., Apter, A., & Kerckhof, A. (2006). The phenomenon of suicide bombing. A review of psychological and non-psychological factors. *Crisis*, 27(3), 107–118.

Guimond, S., & Dubé-Simard, L. (1983). Relative deprivation theory and the Quebec nationalist movement: The cognition–emotion distinction and the personal–group deprivation distinction. *Journal of Personality and Social Psychology*, 44(3), 226–235.

Hafez, M. M. (2006). Rationality, culture, and structure in the making of suicide bombers: A preliminary theoretical synthesis and illustrative case study. *Studies in Conflict and Terrorism*, 29(2), 165–185.

Hoffman, B. (1998). *Inside terrorism*. New York: Columbia University Press.

Horgan, J. (2005). *The psychology of terrorism*. London: Routledge.

Horgan, J. (2008). From profiles to pathways and roots to routes: Perspectives from psychology on radicalization into terrorism. *The Annals of the American Academy of Political and Social Science*, 618(80), 80–94.

- Houghton, D. P. (2006). Explaining the origins of the Iran hostage crisis: A cognitive perspective. *Terrorism and Political Violence*, 18(2), 259–279.
- Hutchinson, W. (2007). The systemic roots of suicide bombing. *Journal*, 24, 191–200.
- Juergens Meyer, M. (2000). *Terror in the mind of God*. Berkeley: University of California Press.
- Khalid, U., & Olsson, P. (2006). Suicide bombing: A psychodynamic view. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry*, 34(3), 523–530.
- Kimhi, S., & Even, S. (2004). Who are the Palestinian suicide bombers? *Terrorism and Political Violence*, 16(4), 815–840.
- Koltko-Rivera, M. E. (2006). Rediscovering the later version of Maslow's hierarchy of needs: Self-transcendence and opportunities for theory, research, and unification. *Review of General Psychology*, 10(4), 302–317.
- Larsen, R. J., & Buss, D. M. (2002). *Personality psychology. Domains of knowledge about human nature*. New York: McGraw-Hill.
- Lester, D., Yang, B., & Lindsay, M. (2004). Suicide bombers: Are psychological profiles possible? *Studies in Conflict and Terrorism*, 27(4), 283–295.
- Levinson, D. J., & Huffman, P. E. (1955). Traditional family ideology and its relation to personality. *Journal of Personality*, 23, 251–273.
- Lia, B., & Skjølberg, K. (2004). Causes of terrorism: An expanded and updated review of the literature. *Forsvarets Forskningsinstituttets Rapportdatabase (Norwegian Defence Research Establishment)*.
- Lifton, R. J. (2000). *Destroying the world to save it: Aum Shinrikyo and the new global terrorism*. New York: Holt.
- Lygre, R., Eid, J., Larsson, G., & Ranstorp, M. (2011). Terrorism as a process: A critical review of Moghaddam's "Staircase to Terrorism." *Scandinavian Journal of Psychology*, in press.
- Maxfield, M., Pyszczynski, T., Kluck, B., et al. (2007). Age-related differences in response to thoughts of one's own death: Mortality salience and judgements of moral transgressions. *Psychology and Aging*, 22(2), 341–353.
- Miller, C. H., & Landau, M. J. (2005). Communication and terrorism: A terror management theory perspective. *Communication Research Reports*, 22(1), 79–88.
- Miller, L. (2006). The terrorist mind: II. Typologies, psychopathologies, and practical guidelines for investigation. *International Journal of Offender Therapy and Comparative Criminology*, 50(3), 255–268.
- Moghadam, A. (2003). Palestinian suicide terrorism in the second intifada: Motivations and organizational aspects. *Studies in Conflict and Terrorism*, 26, 65–92.
- Moghaddam, F. M. (2005). Psychological processes and "The Staircase to Terrorism." *American Psychologist*, 60(9), 1039–1041.
- Moghaddam, F. M., & Marsella, A. J. (2003). *Understanding terrorism: Psychological roots, consequences and interventions*. Washington, D.C.: American Psychological Association Press.
- Myers, D. G. (2004). *Exploring social psychology, 3rd ed.* New York: McGraw-Hill.
- Olsen, O. K., Eid, J., & Larsson, G. (2010). Exploring the ethical component of military operational leadership. *Military Psychology*, 22, 137–156.
- Osofsky, M. J., Bandura, A., & Zimbardo, P.G. (2005). The role of moral disengagement in the execution process. *Law and Human Behavior*, 29(4), 371–392.
- Pedahzur, A., Perliger, A., & Weinberg, L. (2003). Altruism and fatalism: The characteristics of Palestinian suicide terrorists. *Deviant Behavior*, 24(4), 405–423.
- Post, J. (2004). *Leaders and their followers in a dangerous world: The psychology of political behavior*, Ithaca, NY: Cornell University Press.
- Post, J. (2007). *The mind of the terrorist*. New York: Palgrave Macmillan.
- Post, J., Ruby, K. G., & Shaw, E. D. (2002a). The radical group in context: 1. An integrated framework for the analysis of group risk for terrorism. *Studies in Conflict and Terrorism*, 25(73).
- Post, J., Ruby, K. G., & Shaw, E. D. (2002b). The radical group in context: 2. Identification of critical elements in the analysis of risk for terrorism by radical group type. *Studies in Conflict and Terrorism*, 25, 101–126.
- Reich, W. (1990). *Origins of terrorism: Psychologies, ideologies, theologies, states of mind*. Cambridge, UK: Cambridge University Press.
- Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for terror management theory: I: The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology*, 57(4), 681–690.
- Schimmel, J., Simon, L., Greenberg, J., et al. (1999). Stereotypes and terror management: Evidence that mortality salience enhances stereotypic thinking and preferences. *Journal of Personality and Social Psychology*, 77(5), 905–926.
- Schmid, A. P. (1983). *Political terrorism: A research guide to the concepts, theories, databases and literature*. Amsterdam: North Holland.
- Shafritz, J. M., Gibbons, E. F. J., & Scott, G. E. J. (1991). *Almanac of modern terrorism*. Oxford, UK: Facts on File.
- Silke, A. (1998). Cheshire-cat logic: The recurring theme of terrorist abnormality in psychological research. *Psychology, Crime and Law*, 4(1), 51–69.
- Silke, A. (2001). The devil you know: Continuing problems with research on terrorism. *Terrorism and Political Violence*, 13(4), 1–14.
- Silke, A. (2003). *Terrorists, victims and society: Psychological perspectives on terrorism and its consequences*. Chichester, UK: Wiley.
- Silke, A. (2004). Terrorism, 9/11 and psychology. *Psychologist*, 17(9), 518–521.
- Speckhard, A., & Ahkmedova, K. (2006). The making of a martyr: Chechen suicide terrorism. *Studies in Conflict and Terrorism*, 29(5), 429–492.
- Sprinzak, E. (1991). The process of delegitimation: Towards a linkage theory of political terrorism. *Terrorism and Political Violence*, 3(1), 50–68.
- Staats, A. W., & Staats, C. K. (1958). Attitudes established by classical conditioning. *Journal of Abnormal and Social Psychology*, 57
- Sternberg, R. J. (1986). A triangular theory of love. *Psychological Review*, 93, 119–135.
- Sternberg, R., J. (2003). A duplex theory of hate: Development and application to terrorism, massacres, and genocide. *Review of General Psychology*, 7(3), 299–328.
- Taylor, M., & Quayle, E. (1994). *Terrorist lives*. London: Brassey's.
- Vaisman-Tzachor, R. (2006). Psychological profiles of terrorists. *Forensic Examiner*, 15(2), 6–17.

- Victoroff, J. (2005). The mind of the terrorist. A review and critique of psychological approaches. *Journal of Conflict Resolution*, 49(1), 3–42.
- Weimann, G., & Brosius, H. (1988). The predictability of international terrorism: A time-series analysis. *Terrorism*, 11(6), 491–502.
- Weinberg, L. & Eubank, W. L. (1987). Italian women terrorists. *Terrorism: An International Journal*, 9, 241–262.
- Weinberg, Pedahzur, A., & Canetti-Nisim, D. (2003). The social and religious characteristics of suicide bombers and their victims. *Terrorism and Political Violence*, 15(3), 139–153.

Crime on the Battlefield

Military Fate or Individual Choice?

Neal A. Puckett and Marcelyn Atwood

Abstract

The current Department of Defense global missions focused on combating terrorism would benefit from the discipline of military psychology to influence and inform the development of standard operating procedures, the management of flexible rules of engagement, and the treatment of individuals in the military justice system. Military procedures are increasingly disconnected from today's combat conditions, requiring a high level of individual situational analysis. These military procedures, the Uniform Code of Military Justice, and good order and discipline processes are increasingly in conflict with, rather than supportive of, the individual choices made when facing imminent danger. Rules of engagement, standard operating procedures, and the Uniform Code of Military Justice must rapidly adapt to the new terrorist-warfare psychological pressures that challenge good order and discipline, command responsibility, and unit cohesion. Military psychology must constantly inform, with concrete factors, the military's modification of rules of engagement, standard operating procedures, and military justice laws, policies, and procedures to be more responsive to a changing battlefield environment.

Keywords: Military justice system, rules of engagement, Uniform Code of Military Justice, War on Terror, good order and discipline, command responsibilities

Role of Military Justice

The military justice system is the primary disciplinary and law enforcement tool for commanders. The sources of military jurisdiction include the United States Constitution and international law; a component of which is the Law of War (Manual for Courts-Martial, United States, 2008). Military jurisdiction is exercised by the United States government and used to regulate its military establishment. Specifically, the legislative branch defines military law under the Uniform Code of Military Justice, in Title 10 of United States Code (U.S.C.). Congress annually passes legislation, signed by the President, directing all changes to the Uniform Code of Military Justice. The President also issues procedural guidelines by an executive order, commonly referred to as The Manual for Courts-Martial. Courts that are authorized to administer military jurisdiction include military courts-martial with a military

judge, members, prosecution, and defense; military commissions and provost courts, such as trials of war criminals (like those conducted in Tokyo, Nuremberg, and Guantanamo Bay); courts of inquiry for the investigation of any matter referred to such a court by a competent authority; and authorized commanders who administer non-judicial punishment proceedings (known as Article 15 proceedings).

Military law consists of the statutes governing the military establishment and regulations issued thereunder, the constitutional powers of the President and regulations issued thereunder, and the inherent authority of military commanders. Military law includes jurisdiction exercised by courts-martial and the jurisdiction exercised by commanders with respect to non-judicial punishment. The purpose of military law is to promote justice, to assist in

maintaining good order and discipline in the Armed Forces, to promote efficiency and effectiveness in the military establishment, and thereby to strengthen the national security of the United States. (Preamble, Manual for Courts-Martial, 2008)

Military law and the justice system supporting it are aimed at promoting justice, good order, and discipline, and efficient and effective military operations in accordance with Title 10 U.S.C. and the Manual for Courts-Martial rules and regulations. Within the military justice system, the psychological analysis of the act or event, the environment, the individual, and the command climate¹ is all in retrospect and is aimed at proving or disproving the motive or intent of the individual action or inaction.

The military organization applies its organization and structure to train and equip individuals to be part of a team (or unit) aimed at completing a mission or a portion of a mission. There is rarely any action that an individual is trained for that does not require that individual to act as part of a team. The commanders rely on this preparation of individuals to function as a part of a team, acting as one unit to meet the challenges on the battlefield and conduct themselves both as an individual and as a member of a team according to the current rules of engagement and within the standard operating procedures.

Military members are liable for their actions on the battlefield. The centuries-old laws of war² today proscribe unlawful behavior by military members on the battlefield. Modern adaptations of the law of war have found their way into the Uniform Code of Military Justice, comprehensively codified after World War II, requiring adherence to traditional principles of the laws of war under the rubric of the military concept of good order and discipline. Thus active-duty military members are held liable for their actions all day, every day, anywhere on the globe.

By the time military justice is involved, the battlefield event has happened. All the individual and unit training, unit-cohesion development and team building, transmission of the commander's intent and philosophy, understanding and knowledge of the current standard operating procedures and rules of engagement, and the establishment of the small unit leadership nonverbal cues have either been solidified or were missing from the preparation of the individual and the team to meet the battlefield challenges. If the team, or the individual within a team, fails, the military justice system, whether fairly or not, is designed to deliver justice only to a singular individual and not to the team. This is not

to say that multiple members of a team cannot be charged with crimes for the same event. The severity of the charges and the levels of responsibilities for members of the team will vary as the investigation documents facts and military prosecutors draft criminal charges formally accusing the responsible individual(s).

Military justice practitioners, both prosecution and defense, focus on the intent of the individual to either prove or disprove whether there was any legal justification or excuse for the alleged action in order to determine whether it was authorized by military orders or rules or was an individual choice in contravention of established rules. In the broad sense, military attorneys are attempting to identify how moral reasoning and behavior are influenced by the military social structure and system, not to mention the battlefield environment (Bandura, 1991). A psychologist is a routinely employed expert for both prosecution and defense, to analyze the military member for psychological disorders that may or may not explain the actions considered aberrant. These expert analyses and diagnoses of military members can either help or hinder the military member's defense.

When charges are filed against a service member, the prosecution will paint a picture of full individual responsibility, while the defense may shift the focus to outside influences on the individual that precipitated the action or offense. The middle ground between these two positions most often defines the type and severity of punishment for violations of specific statutes, the rules of engagement, or standard operating procedures as enforced by the Uniform Code of Military Justice.

Both sides in a military justice case, prosecution and defense, use their knowledge and understanding of the law, the art of persuasive communication, oration, psychodrama, and psychology to construct arguments that favor their theories. These theories, based on the evidence, are used to explain the actions of an accused military member and convince a military judge or court-martial panel members (a jury) of the guilt or innocence of the accused. The military attorney's success rate is dependent primarily on the facts of the case. Secondly, an attorney's success depends on his or her comprehensive study of the law, as well as personal communication skills, education in human psychological principles, understanding of the military organization and operations, and ability to maintain currency in legal rulings such as appellate court rulings, as well as Uniform Code of Military Justice and Manual for Courts-Martial changes.

Changes in War Affecting the Military Justice System

Michael Walzer's *Just War Theory* (2000) identifies two components: *Jus ad bellum* asks what are the conditions for a morally justified decision to go to war; and secondly, *jus in bello*, or what may and may not be done in the course of waging war. Primoratz (2002) theorizes that the two prongs of Walzer's just war theory are mutually independent. The military justice system does not have authority to review or pass judgment on the presidential and congressional decision to go to war (*jus ad bellum*). The paramount principle in *jus in bello* is that only legitimate targets such as enemy soldiers and a very carefully and narrowly defined set of civilians (those directing the military, for example) may be deliberately attacked.

The application of this definition has worked well for conventional warfare where two opposing forces face each other on the battlefield and are readily identified as combatants on the basis of uniforms, weapon systems, or unit arrangement on the battlefield. However, in today's environment, where enemy combatants are dressed like and commingle with the civilian population, the application of *jus in bello* becomes staggeringly impossible. On the modern-day battlefield, discussions regarding the applicability of just war theory have been rendered practically irrelevant, because of the asymmetrical nature of the conflict and the virtual absence of state sponsorship of one of the combatant forces. It is nearly impossible to readily identify the legitimate opponent on the battlefield.

The Uniform Code of Military Justice was designed for and applies to individual service members' responsibilities and behaviors. It enforces the just war concept of *jus in bello* as one of its basic military legal assumptions, in line with Walzer's statement "when soldiers violate the rules of war, superior orders are no defense . . . atrocities he commits are his own . . ." (2000, p. 29). Yet the defense attorney's ability to show a jury "reasonable doubt" as to the accused military member's intent is often based on the influences of the environment (i.e., military socialization, principles of command, rules of engagement, small-unit leadership, standard operating procedures, etc.) and the individual's psychological proclivities. The defense attorney's goal is to disprove the allegations or lessen the full impact and severity of punishment for an individual's actions. Remember, the military justice system is designed to, and can only, administer justice to individuals—not to the President for a decision to declare war, not to a military unit, not to a faulty

strategy or incorrect or incomplete rules of engagement, nor to the failure of the elusive command climate.

Our military members today face the difficult task of identifying unlawful combatants of the Al-Qaeda or Taliban terrorist organization instead of the identifiable, organized, and uniformed enemy soldiers of past wars. The terrorist, who has no obligation to safeguard the noncombatant citizens, is more readily hidden among them. The ability to identify this hidden terrorist is significantly reduced, as the terrorist does not design tactics, techniques, and procedures that ensure the safety of a nation's citizens, as would two nation states committed to following the law of war.

It falls to our individual military members to then recognize that they must not only protect themselves and their military unit, but also protect the true citizens of the host nation. In the seconds wherein a decision to use force must be made, either the rules of engagement must have considered the psychological components of choosing which person is the combatant (when they are dressed similarly to civilians and disguising their actions like noncombatants), or the military training must provide our military members with the skills to recognize nuanced differences, identify the threat, and selectively apply force. The ideal circumstance would be that our combat units both have the understanding of culture and psychology informing the rules of engagement and standard operating procedures and their members be given the training to recognize the enemy in disguise: the civilian imposter.

The current system of changing the rules of engagement is based on study of battlefield combat, analysis of lessons learned, and application of revised tactics, techniques, and procedures. The question is whether or not the appropriate considerations for the host culture plus an understanding of both our broad military culture and each military member's individual subculture and psychological underpinnings inform the current rules of engagement.

From the military-justice point of view, this current war on terror has spawned courts-martial cases that portray the results of a change in combat and the lagging adaptation of the rules of engagement and standard operating procedures that thus fail to "arm" the military members with all of the weapons they need to prosecute the war on terror. The result is often an increasingly complex courtroom litigation that examines difficult moral dilemmas facing the individual and units on the battlefield. The military justice system will continue to prosecute

military members when they violate the Uniform Code of Military Justice, thus fulfilling its role in promoting justice, assisting in maintaining the Armed Forces' good order and discipline, and increasing the military's efficiency and effectiveness. But at what point must military psychologists take an active role in research and academic thought to support the rules of engagement development cycle and influence the organizing, training, and equipping of our military forces?

The military justice system is rich with complex case studies of military members facing tough moral dilemmas on the battlefield. The psychological analysis of the cases in terms of the moral conflict between the environment and the individual is needed to bolster training and leadership as well as inform the military justice system *when* the laws of war are broken. It's not that soldiers are evil or immoral. Crime on today's battlefield can be explained in large part by Bandura's (1991) social cognitive theory and Zimbardo's (2007) "Lucifer effect." Military training and socialization ensure cohesive military units. The bonds among military unit members are legendary. Soldiers do not fight for abstractions but for one another. Furthermore, because killing does not come easily, enemies are dehumanized (Stouffer et al., 1949). Euphemistic labeling (Bandura, 1991) is used for enemies and killing. That is, they don't kill people but "waste" krauts, gooks, and towelheads or hajjis. While cohesion, dehumanization, and displacement of responsibility facilitate combat effectiveness, these social-psychological phenomena in conjunction with the stress and other situational correlates of war complicate counterinsurgency operations.

An analysis of a sampling of recent military justice cases involving actual clients suggests the need for considering social and cultural psychology in the development of rules of engagement and the real-time changes necessary in the military's mission of organizing, training, and equipping. We would argue that the closer the rules of engagement and the training of our military units and individuals come to providing a real-time improvement in battlefield tactics, techniques, and procedures, the fewer military justice cases arising from battlefield uncertainties will reach the courtroom. This means devising battlefield training mainly for observation triggers (signs, language, hostile intent, and pre-hostile actions) based on the psychological and cultural differences of an enemy civilian imposter that will enable a military member to stop a suicide bomber or preempt an ambush or the firing of

weapons. Furthermore, training observation triggers for counterinsurgency missions should counter the triggers and situations that lead to moral disengagement.

Military Justice on the Battlefield

The battlefield military justice process begins with an incident that may be in violation of good order and discipline or a violation of the tactics, techniques, and procedures; the rules of engagement and the standard operating procedures; or an action classified as a crime as defined in the Uniform Code of Military Justice. These actions are brought to the attention of the commander, who then orders an investigation. If an investigation indicates some individual culpability according to one of the previously described rules or laws, individuals in charge are then held accountable, even for collective actions, since there is no mechanism to hold the organization, the unit, or the team accountable. Unlike Zimbardo's (2007) summation that those in power who are responsible for the situation mitigate the responsibility of the individual, the Uniform Code of Military Justice spans all facets of responsibilities for an act, ensuring that the individual as well as the commander share the responsibility if the facts are proven to meet the legal definitions.

For example, individuals can be found to be responsible for some misdeed, and consistent with military culture and traditions, their commanders may also be considered responsible, whether or not the misdeed was within their direct control. Military culture dictates that the senior member on scene or in charge is responsible for unit actions and the actions of lower-ranked individuals. This cultural dynamic of senior-member responsibility is a concept that can raise reasonable doubt about the intent of an individual, who may believe he is following the formal or informal guidance of the commander. This military duty and responsibility imposed on the senior military leaders at all levels of the military is intended to provide leadership that counters "groupthink."

Janis postulated that groupthink occurs when a group makes faulty decisions, because group pressures lead to a deterioration of "mental efficiency, reality testing, and moral judgment" (1972, p. 9). The commander has been selected for his leadership skills and has received additional leadership training to keep the unit focused on the mission, direct the operation of the unit within the guidelines of the rules of engagement and standard operating procedures, and enforce good order and discipline, including using the military justice system if necessary. This hands-on

direction and accountability for the good order and discipline combats groupthink, unless the commander abandons his duties.

It is culturally understood by all that promotion into a command assignment means an unquestioning assumption of responsibility for the team or unit. Unit cohesiveness, built through educating, training, and working together as a unit focused on a task or mission, creates a reasonable expectation of good behavior by every member of the team. This expectation of good behavior is tested in difficult, challenging, and sometimes live-fire training exercises, partly to enable the commander to know how to control and influence the unit in high-risk situations. Risky shift theorizes that in a group context, greater risks are chosen due to a diffusion of responsibility, where emotional bonds decrease anxiety and risk is perceived as shared (Wallach, Kogan, & Bem, 1964). In other words, under this theory, military members in a unit may be inclined to take greater risks due to the perception that there is strength in numbers. However, it is also the role of the commander to preserve assets and keep all the military members safe by recognizing and controlling the level of risk. Failure to prevent a unit from assuming highly risky behaviors is almost always an additional charge levied against the senior on-scene member or commander, alleging that he is therefore also responsible for war crimes or other criminal acts committed by his troops on the battlefield. A universal principle of military command is that a commander is responsible for everything his unit does or fails to do.

Using our current military organization and military justice systems designed with just war in mind, expecting commanders to command units and individuals in significantly more uncertain combat and life-threatening environments may be demanding something that is beyond their personal capabilities. The question is whether or not the increase in military justice cases being prosecuted in the theater of operations is a result of the asymmetrical nature of clearly identified combatants facing an invisible enemy within a civilian population.

If the environment is now more dangerous without clear delineation of the enemy, compounded by their propensity to ignore laws of war, then one could reasonably expect a higher level of individual and unit frustration on the battlefield. Trained to fight according to the laws of war, to always complete the mission and bring everyone home safely, military units are thus in greater danger of finding ways to accomplish the mission by any means and ignoring the laws of war. The larger question is whether or not

expecting a greater level of control by the senior on-scene commander is reasonable and does not place undue mental stress on him or the unit. Execution of command relies on the skills of the individual and its success is based on the personality, charisma, and the reputation of the commander. Well-liked, well-respected, and competent leaders generally achieve greater control over the unit. However, leaders who bend the team or unit to their direction knowing the difficult environment they will soon face may not be well-liked, but will succeed in the mission, safely returning everyone and doing so without any pending military justice cases.

The changing face of warfare and its accompanying psychological impacts on our military members is testing the design and content of the rules of engagement along with the effectiveness of our military justice system that has guided American commanders on and off the battlefield for over 60 years. The changes in the art of war from traditional nation-state military force versus nation-state military force to a nation state versus terrorists or “citizen imposters” warfare, where the enemy hides among the noncombatant national civilian population, striking without warning and then melting away into the landscape, is diminishing the U.S. military’s effectiveness and increasing the military justice burden in finding fault with individual actions.

This change in the nature of modern warfare has done more to disconnect the military structures supporting the execution of operations and the impact on military members than any change in laws or the adaptation of politically correct social policies. As a result, the question to be asked today is, how can the military psychology discipline inform the development and adaptation of the military organizational structure, its procedures and processes, and the military justice system’s treatment of individuals accused of war crimes?

War and Crime

Military training and field exercises coupled with command and control organizational structures provide the majority of the preparation for combat. The unknown piece of any military operation is the execution of the mission consistent with the rules of engagement and without triggering misconduct as defined in the Uniform Code of Military Justice. The assumption in military training and the commander’s oversight is that during military training and through exposure to daily, exceptional senior leadership, our military members absorb a high standard of ethics guiding their behavior on the

battlefield—behavior that follows a strict rule of law. Labeled in psychology as “deindividuation,” or loss of the individual into the group identity (Festinger, Pepitone, & Newcomb, 1952), this ability to choose to act within the rules of engagement under all levels of stress is required to effectively pursue *jus in bello* on the battlefield. It is, therefore, the loss of a portion of our individual identity to the “right” group identity that is so critical to ensuring compliance as nation-state warriors acting within the rules of engagement and the laws of war.

The commander believes the members of his military unit will execute the mission per the rules of engagement and within the guidelines of the law of war. Military operations are carefully designed, exercised to perfection, and executed with senior noncommissioned and commissioned leaders overseeing all aspects of the operation. Yet successful execution of a plan is ultimately dependent upon the individual; that each military member within a team is doing his specific task from beginning to end. Familiarity with heightened life-or-death risk may lower the ability of the individual to resist acting outside the rules of engagement, as he perceives a lower risk due to that familiarity (Batson, 1991). But failure of any one individual during a combat mission, though trained to perform under the control of leaders who are cautioned to closely supervise and prevent that failure, may not be avoidable, especially in today’s combat environment. If the military training and exercise programs are the best in the world, our military abides by the laws of war, and all operations are based on strategic plans developed by the most brilliant military and senior civilian leadership, why is there still crime on the battlefield? Is it truly only the responsibility of the chain of command when things go wrong?

Based on our currently designed systems, we first look to the individual and the commander as being culpable. Perhaps we need a new effort of analysis and research on battlefield crimes to clearly define the environment and its psychological impacts on our military members and unit behavior. Such a research effort may reveal a better means of structuring military justice and achieving accountability on the battlefield without what seems to be a lopsided emphasis on the individual, and (in several recent military justice cases), on the junior military members involved in the incident.

Crime on the Battlefield

There are two large categories of possible issues leading to crime on the battlefield. First, the individual

fails at the imperative of separating his personal beliefs from his military task. Some of this failure may be due to physical or mental limitations; belief in their loyalties and duties as leaders; exposure to an environment beyond their comprehension; or in other cases because their military training and pressure to support the unit could not compensate for a personal proclivity to cruelty or other psychological issues inherent within themselves.

Secondly, teamwork in a military environment, where you live or die with the members of your team or unit, can influence action of an individual who would not normally have acted in a criminal way. In this case, the risky shift or group-polarization phenomenon (Myers & Arenson, 1972) does apply to individuals or groups of individuals if the command control is faulty and their training or perceptions of their safety are overcome. Ultimate success on the battlefield is directly related to having complete faith that the military member next to you will do his job, no matter what the environment. Teamwork is required to accomplish the mission, and in some cases, an informal leader in the group can influence others to choose either good or bad actions they would not normally take.

What is a war crime? War crimes are difficult to define. In today’s instant information and access world, the “acceptable” behavior of a military member changes over time and follows the civilian leadership and the American social compass. For example, actions on the battlefield can be labeled war crimes before the commander is allowed to work through the process of nonjudicial or judicial evaluation. The “on-demand” embedded media ensures that most aspects of military operations are viewed as they happen, most often out of context with the operations defined by the Department of Defense and the Combatant Commander and the political goals set by the Administration. Most modern-day battlefield crimes involve the unlawful use of force by military members. Injury and death are expected. Sometimes these injuries and deaths are unintentional, yet criminal. Sometimes they are intentional yet not criminal. The most devastating effect on the honor and integrity of the military is when deaths are both intentional and criminal.

Case Studies

Case Study 1: Individual Actions of an Army Battalion Commander

In August 2003 in Iraq, well after the successful invasion and toppling of the Iraqi regime under Saddam

Hussein, an Army lieutenant colonel in command of a battalion was informed of some intelligence that pointed to a plot to assassinate him and his soldiers during one of their weekly convoys to meet with local community leaders. An Iraqi policeman was identified as a prime suspect with knowledge of the plot. He was picked up by the battalion's soldiers and placed in a room for interrogation. After many hours of ineffective interrogation by a young, female interrogator, the battalion commander decided that time had run out and the information on the details of the plot had to be obtained to prevent an imminent attack on his men and himself. He took over the interrogation personally with the assistance of some his soldiers.

The battalion commander arrived at the detention facility and calmly told the detainee that he was either going to talk and tell them what he knew or he would be shot. The detainee smiled, saying, "I love you," clearly with complete disrespect for his captors. One of the commander's soldiers then struck the detainee in the face with his fist. After some additional questioning with no results, the commander then had the detainee escorted outside the building. While his men forced the detainee's head near the sand in a weapons clearing barrel⁸, the commander placed his left hand on the detainee's head and placed his loaded 9mm Beretta pistol nearby, aimed away from the detainee's head. The battalion commander gave the detainee one more chance to confess and after a brief countdown, fired the pistol harmlessly into the sand, simulating summary execution.

The detainee promptly began to invoke Allah and confess his involvement in the plot, giving the names and locations of the other suspects. The information was used to arrest others involved. It was a real-life "Jack Bauer" moment in the war. The lieutenant colonel, having successfully foiled the plot on his soldier's lives, reported directly to his immediate superior by giving a full description of his actions and their results. His superior advised against using those tactics in the future but did not immediately report the incident to the commanding general of the division. The incident was revealed during a subsequent, unrelated investigation and charges were brought against the lieutenant colonel for assault with a deadly weapon and communicating a threat. The lieutenant colonel was charged with war crimes in violation of the Geneva Convention.

In this situation, neither the Geneva Convention, nor Army Regulations, nor the rules of engagement, nor the Uniform Code of Military Justice permitted the tactics used by the Army lieutenant colonel during the interrogation of the detainee. He was a twenty-two-year

veteran of the Army and was in command of an artillery battalion. He had a bachelor's and two master's degrees and was destined for future promotions in the Army. So why did he knowingly violate the law in the course of his otherwise successful tour of duty in Iraq? What was the psychological explanation for his intentionally criminal acts he knew would end his career, if not also his freedom, if he was convicted under the Uniform Code of Military Justice and placed in jail? Was this lieutenant colonel's moral compass oriented to predispose him to sacrifice his career and freedom for his unit?

Case Study 2: Individual Actions of an Army Company Commander

In an eerily similar but completely unrelated case, an Army captain, in command of an airborne infantry company, also in a combat situation but this time in 2008 in Afghanistan, personally conducted an unlawful interrogation of some detainees. These detainees were Afghan workers hired by the Army to support the unit at a forward operating base near the Pakistani border. Army intelligence discovered through reliable sources that several of the Afghan workers had been passing U.S. troop movement information to known Taliban and Al-Qaeda fighters. This exposed troop-movement information resulted in several wounded soldiers in the battalion and the death of two more soldiers.

Once the informants were identified, Army headquarters advised the captain to detain them. The rules of engagement at the time required all nationals to be held only for 96 hours and then either be released due to lack of evidence or turned over to the Afghan Army. After numerous requests to his higher headquarters to evacuate the detainees for further questioning, the strictly enforced 96-hour limit on holding detainees was almost up. The captain was permitted to turn the detainees over to Afghan security forces, but only if he could turn over evidence to justify their continued detention and interrogation. The only evidence he had was through sensitive intelligence sources and methods that could not be handed over to the Afghan Army.

The captain set out to obtain confessions from the detainees, for without unclassified confessions, he would have to release these confirmed spies into the countryside to continue to work against his men and further endanger their lives. While his senior enlisted soldier conducted a rather physically intimidating interrogation of the main suspects, the captain took some of the lesser players outside. After walking around to the side of the building, the captain fired his weapon into the ground, with the intent of causing the main suspects inside the

building to imagine that the other detainees were being summarily executed. The senior enlisted soldier then used that ruse to frighten the detainees into giving them useful information. The detainees were subsequently examined by a physician's assistant and deemed unharmed and removed to another base.

An investigation ensued that resulted in charges against the captain and all of the soldiers who took part in those detentions and interrogations, even though the soldiers were merely acting on the captain's orders. The captain was charged with a war crime—a violation of the Geneva Convention on the treatment of prisoners of war. Why did the captain knowingly violate the law in the course of his tour of duty in Afghanistan? What were the psychological explanations for his intentionally criminal acts he knew would end his career, if not also his freedom, if he was convicted of the charges against him?

Each military judicial proceeding and court-martial is unique regarding facts, military environment, evidence, and most importantly, the individual's thoughts and reactions at the moment of the violation. In this case, the lieutenant colonel and the captain made choices based on what they thought was their moral obligation to their men and their moral duty as Army commanders. These two cases are so significant for the concept of command responsibility that they are now case studies in ethics at West Point. The lieutenant colonel's and the captain's actions clearly violated the rules of engagement and the Uniform Code of Military Justice. At issue was whether or not the rules of engagement processes supported the current combat environment, and whether the Uniform Code of Military Justice was aligned with the expectations of the integrity and ethics required of our military leaders under battlefield conditions where insurgents target U.S. forces covertly and illegally.

Case Study 3: Group Actions on the Battlefield, Hamdania, Iraq

During the summer of 2006, a battalion of the 1st Marine Division, headquartered at Camp Pendleton, California, was deployed to Al Anbar Province, Iraq, to conduct combat operations in support of Operation Iraqi Freedom. This was over three years into the war. Seven Marines and one sailor assigned to Kilo Company decided to capture or kill an Iraqi they believed to be a known insurgent responsible for past attacks on the Marines. They planned and conducted a raid one night into the village where the insurgent lived, but he was not home and could not be immediately located.

They went into a nearby home and seized a different man, whom they also suspected was at least an insurgent sympathizer. They took the man to a nearby hole in the ground, required him to get into the hole with a shovel, and then shot him to death with their rifles. The shovel was meant to cause others to believe they had come upon him while he was in the process of planting an improvised explosive device. Were that true, that would have satisfied the rules of engagement for positive identification of a hostile act or hostile intent, authorizing the use of deadly force to protect coalition force members or Iraqi civilians. A killing based on indication of a hostile act or intent would have been a lawful use of deadly force in accordance with the rules of engagement. A criminal investigation ensued, and the "Pendleton 8" confessed to their various roles in the murder.

Why did these well-trained and disciplined Marines decide to conspire to murder an unarmed and non-hostile Iraqi civilian? How were they able to rationalize this act of brutality? Do rules designed to prevent these acts seem less important to Marines in a combat environment? Did they believe the rules did not apply to the specific circumstances of their "mission" that night? What were the psychological factors that led some or all of the team to commit such a crime?

These young men grew up in American families. They attended American schools and churches and went on dates and to ball games. They played American sports. They were all bright enough to pass the tests required to join the armed forces. They all had clean or nearly clean criminal records. They were indoctrinated to strictly follow orders at Marine boot camp. They underwent specialized infantry weapons and tactics training. They trained as a unit before deploying to Iraq, all under the watchful eyes of commissioned and noncommissioned officers. All of these things in their backgrounds would have predicted no deviation from the tenets of good order and discipline in the armed forces. So why did they conspire to commit murder?

There are no simple answers, but there are some observations worth considering. Their unit cohesion and training failed under the pressure of an informal charismatic leader, thus making risky shift more probable. They were not in America. They were in a strange land with strange people, any of one whom conceivably had the means to kill them without warning. The combat environment provided a "no-win" scenario, since their training was specifically focused on an identifiable enemy under the laws of war. Some of the Marines were on their second or third tour. There is also a prevailing attitude among

service members that what happens on deployment, stays on deployment, a sense that the “normal” rules simply are not fully applicable. Clearly, this was a case of comfort with a level of risk they would not take under more traditional combat circumstances.

The Office of the Surgeon General’s “U.S. Army Mental Health Advisory Team IV Operation Iraqi Freedom 05–07” report based on surveys taken in 2006 in the wake of another war crimes investigation of 24 civilian deaths at Haditha, Iraq, revealed an overall negative attitude among Marines toward the Iraqi people in general. One reason cited was that these people whom Marines were helping to rebuild their government and their lives were participating in or allowing violence against the very American soldiers and Marines who were helping them. Frustration builds up over time as combat operations continue without any noticeable improvement in the security environment. Marines are trained to kill the “enemy.” But in Iraq, one cannot always identify the enemy who can hide among the civilian population, because the enemy is indistinguishable from it. They become civilian imposters.

Post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI) have become frequently diagnosed conditions resulting from exposure to repeated incidents of violence or concussions resulting from improvised explosive device explosions, respectively (Department of Veterans Affairs, 2009). TBI results from injury to the brain caused by a knock in the head through direct contact with something solid or through proximity to an explosion, such as an improvised explosive device, which creates overpressure trauma to the head. The Department of Defense Deployment Health Center defines TBI as “a blow or jolt to the head or a penetrating head injury that disrupts the function of the brain” (www.pdhealth.mil). Doctors are able to detect neurological impairment and link it directly to measurable losses in cognitive function. The study of the impact of PTSD and TBI on individuals and on those returning for their third, fourth, or fifth tours is not vetted well enough to inform changes to military training, battlefield rules of engagement, or military justice sentencing procedures.

Several of the Marines accused of murder at Hamdania were diagnosed with PTSD, and one was diagnosed with TBI. Another observation is that the brotherhood bonds existing among military members in combat can influence choices. It is well known that those who face death together are likely to

develop lifelong, deep friendships that produce strong loyalties. These types of loyalties can cause people to act in concert to do things they would never normally do on their own, nor agree to do for or with anyone else.

The most senior on-scene actor of the “Pendleton 8” was a sergeant who was an informal, charismatic leader. Leadership through respect and/or fear can influence how subordinates will act or react in combat. Some of the Marines just went along with what was happening because opposing it never seemed like a choice they could make in the presence of this particular leader.

Many in the retired and former military community have dismissed the “Pendleton 8” actions as part and parcel of the combat experience. These observers believe that because the victim was a known acquaintance of the insurgent the Marines originally sought, he was a legitimate target for the use of military force, and thus it was a justifiable homicide. War is hell. People die. You are either on our side or on the insurgents’ side. These commentators, though mistaken about the law, continue to hold the “Pendleton 8” up as victims of selective and improper use of government prosecutorial authority. Worse, some of the “Pendleton 8” in particular the sergeant who led the raid, have expressed no remorse and continue to believe their actions were a lawful combat engagement that eliminated the threat of another insurgent from the battlefield. So why did he knowingly violate the law in the course of his tour of duty in Iraq? What was the psychological explanation for his intentionally criminal acts he knew would end his career, if not also his freedom, if he was convicted under the Uniform Code of Military Justice and placed in jail?

As of this writing, another case with disturbingly similar facts has arisen in an Army Stryker Brigade unit based at Joint Base Lewis–McChord near Tacoma, Washington. The informal charismatic leader of one subordinate unit devised “scenarios” wherein he would plant evidence of hostile acts or hostile intent of innocent Afghans so that he could execute them. He would sever a finger or ear from each victim to keep as a souvenir, and is known to have used credible threats of violence and even death to ensure the cooperation of his subordinates. He is believed to have carried out these murders three times in Afghanistan and as many as four times during a previous tour in Iraq. The case remains under investigation, and several soldiers are facing pending premeditated murder charges.

Case Study 4: Group Dynamics, Abu Ghraib

During the fall of 2003, digital photos and videos surfaced depicting soldiers abusing and humiliating detainees in the now infamous prison at Abu Ghraib, Iraq. It was later learned that the prison had already achieved infamy under the regime of Saddam Hussein, for it was in this same facility that political prisoners were tortured and executed by Saddam's henchmen long before the U.S. invasion in the spring of 2003.

Over the course of several evenings, enlisted soldiers charged with guarding the high-value detainees undergoing daily interrogation decided to photograph themselves while stacking and posing Iraqis in a degrading manner. No one knows why the photos were made, but they resembled the "I was there" type of photos taken during every conflict since cameras were invented and made available to the average soldier during wartime. "Look at what I did during the war," the photos seemed to say. All of us who paid any attention to that episode of Operation Iraqi Freedom remember the images of the young female soldier in her undershirt and desert camouflage uniform trousers pointing at a naked detainee while a cigarette dangled from her lips. We also can never forget the image of the hooded detainee posed standing on a chair with arms outstretched and wires attached to his fingertips. A lengthy investigation resulted in Senate hearings and Uniform Code of Military Justice charges for nearly all soldiers and officers involved. Some of the soldiers were professional corrections officers in their civilian jobs. All were Army reservists assigned to a military police brigade activated for the purpose of operating the 17 military prisons throughout Iraq.

The abuse visited upon those detainees was clearly illegal under the Geneva Convention Protocols, Army regulations, and the Uniform Code of Military Justice. Although a few of the soldiers tried to raise obedience to orders as a defense, there was never any evidence produced that any such orders were given or intended. Some say the abuse at Abu Ghraib was simply a case of the night shift running amok. Officers were not present to supervise, and thus prevent, the abuses that were inflicted on the prisoners. This may have been a case of one charismatic soldier's predilections and his influence on the rest of the team, coupled with the lack of supervision in an environment of control over other human beings. So why did they knowingly violate the law in the course of their tours of duty in Iraq? What was the psychological explanation for their intentionally criminal acts they knew would end their careers, if not

also their freedom, if they were convicted under the Uniform Code of Military Justice and placed in jail?

Case Study 5: Conflict from the Rules of Engagement, Haditha Iraq

Early in the morning of November 19, 2005, in Haditha, the 1st Squad, 3rd Platoon, Kilo Company, 3rd Battalion, 1st Marines, was sent out on a routine resupply mission. The predawn four-vehicle convoy had left the traffic control point after a resupply mission and crew change for the Iraqi National Guard. The four-vehicle convoy, with twelve Marines and six Iraqi National Guardsmen, was halfway through the approximately 25-minute ride back to Firm Base Sparta; formerly a school administration building. The route back involved driving north on River Road; west on Route Chestnut, a paved four-lane road with a concrete lifted median; then north on Route Leopard; east on Haditha Road; and into the entry control point into the U.S. Multi-National Coalition-Forces' Firm Base Sparta parking lot.

Heavy Mobilized Multipurpose Wheeled Vehicles (HMMWV) 1 and 2 turned left on Route Chestnut, speeding back up to their 30–40 miles an hour pace and maintaining approximately 75–100 meters separation between them. HMMWV 3 turned onto Chestnut and moved to the left traffic side of the median, traveling up the wrong side of the road. Vehicle 4 remained on the right side of the road as it turned left onto Chestnut. At 0716 a loud explosion rocked the entire convoy, centered immediately under the driver's seat of HMMWV 4. The explosion was heard and felt three kilometers away in the Command Operations Center at Firm Base Sparta, and was immediately followed by live chatter on the radio coordinating actions.

Clear skies suddenly turned brown, black, and gray as shrapnel from HMMWV 4 came plummeting down around the convoy, falling from hundreds of feet in the air. The air smelled of burnt oil, fuel, rubber, and smoke. The explosion compressed the air enough to momentarily hold the doors shut on the closest vehicle. Smoke and dust clouds commingled with raining debris around the convoy. The assistant driver in HMMWV 3 immediately radioed "IED" (improvised explosive device) and requested the Quick Reaction Force reinforcements and casualty evacuation.

The improvised explosive device shredded the front engine and cab off of HMMWV 4, and the cargo box was thrown to the south side of the roadway. The cab was gone; the windshield was blown 42 meters to the north, and the cab roof was blown 30 meters to the west.

The driver's-side door was thrown into the gully, and the engine was 20 meters away on the north side of the Route Chestnut. The only thing that was left was the rear axle and the Highback box (an armored box with bench seats) located five meters slightly northwest of the crater. The explosion left a crater eight feet wide by three feet deep.

The driver landed 100 meters from the crater in the middle of the right side of Chestnut, missing his legs and his left arm. He was dead when the first Marine from HMMWV 3 arrived. The gunner, riding in the back of the HMMWV 4, was thrown into the middle of the road. He was injured, his weapon ripped from his grip and his flak jacket in tatters. He was limping but still assumed a defensive position against incoming small-arms fire. The assistant driver of HMMWV 4 was riding in the passenger seat and was severely injured. He was found unconscious and pinned under the remainder of the wreckage. It took two Marines ten minutes to extract him. First on the scene, the convoy medic had jumped from HMMWV 3, dodging bullets and immediately began trying to stabilize the injured.

Just prior to the improvised explosive device detonation, the HMMWV 1 gunner saw a white car approaching from the opposite direction, driving slowly down the left side of Route Chestnut. As it approached the gunner waved it off the road. Standard procedure requires all civilian traffic to slow, pull off the road, place the flashers on, and wait for instructions. Immediately following the improvised explosive device explosion, the convoy pulled to a stop in defensive positions. The white car had pulled off, but not in an expedited manner—and moved to a position off the road with its flashers on between the first and second HMMWVs.

Immediately following the blast, small-arms fire began from the north and south of the road. The five military-aged males in the white car got out of the vehicle and began to move away from the car, without instruction. A Marine had dismounted from HMMWV 2 and shouted in Arabic for them to stop. They did not comply. Two Marines responded by opening fire. Five Iraqi military-aged males were killed.

The rest of the Marines were assisting the wounded or were deployed on either side of the road in the prone or kneeling position holding security outward; defending against incoming small-arms fire. The Quick Reaction Force arrived with a Marine officer in charge. He was briefed on the complex attack (a combined improvised explosive device and small-arms fire) and the dead and injured Marines. The task at hand was to secure the area until the threat was neutralized. The officer sent

fire teams into the areas north and south of the road to secure the area and clear houses.

A fire team entered House #1 to the south and from the direction of the enemy small-arms fire. They used fragmentation grenades and weapons to clear the rooms. A Marine saw a figure fleeing to the next house. The fire team entered House #2, again using fragmentation grenades and weapons to clear the house. As a result of the house-clearing actions, fifteen men, women, and children died. The Marines established an observation post and maintained watch; hearing firing and explosions throughout the morning. They observed a military-aged man running on top of the ridge behind House #1. They fired. They then spotted military-aged men watching the observation post in and around a house (#3) on the north side of the road. The fire team moved to House #3; finding no military-aged men, they questioned the women, who indicated the military-aged men had moved to the next house. House #4 was entered and five military-aged men in the possession of weapons were shot and killed.

The first Explosive Ordnance Disposal (EOD) team sent to analyze the improvised explosive device was ambushed on their way to Route Chestnut. After their delayed arrival, the Explosive Ordnance Demolition team analyzed the Route Chestnut complex attack and determined the improvised explosive device was a single propane tank filled with 30 to 50 pounds of propellant/explosives that had been buried for some period of time. It was detonated with a firing system hooked to a telephone wire that was activated by an insurgent, rather than the HMMWV tripping the IED. This was the first attack of five on U.S. forces from 0716 to 1210 on the morning of November 19, 2006.

The subsequent investigations at both the Army and Navy headquarters level determined that the rules of engagement and the predeployment training given to the 1st Squad, 3rd Platoon, Kilo Company, 3rd Battalion, 1st Marines was inadequate to assist them in their response to the improvised explosive device and small-arms fire they received in a heavy residential area of Haditha in 2005. The lessons learned were applied to modify the tactics, techniques, and procedures, rules of engagement and unit training across both the Marine Corps and the Army.

Of the eight Marines charged with Uniform Code of Military Justice war crimes, seven have been either dismissed or found not guilty, and one, as of this writing was still awaiting his trial scheduled to begin on January 4, 2012.

Summary

No matter the rationale for war crimes by the individuals or teams, both individual predilections and group dynamics are influenced by the politically correct environment military members find themselves in today; this environment simply does not allow for the horrors of war. This, coupled with our organizational structures and procedures that cannot change quickly enough to counter or account for the current warfare tactics by our enemies and take into account the psychological pressure on the military member, places the burden of choices between criminal and non-criminal actions on the individual's or team's ability to overcome under duress. The organization cannot be charged with crimes or prosecuted by a court-martial. Command climate can be a contributing factor, which may or may not lead to a resolution of some or all of the criminal charges. But organizational control lies with individual commanders, and if they do not execute the rules of engagement properly, they, too, can be held liable.

This requirement of our individual military members to behave ethically at all times and in accordance with all laws, rules, and regulations, is a part of our American military heritage. However, military battlefield actions based on the law of war still assume that armies face each other and allows for a freer application of the rules of engagement. The idea of two armies, both trained in the art of war and military discipline and openly opposing each other on the battlefield, somehow mitigates the horror of war. Giving one's life in this case seems almost civilly accepted as a consequence of choosing that profession. The war on terror, where military members are patrolling neighborhoods waiting for the blast from an improvised explosive device, places them in the position of determining friend or foe in the split second it takes to raise their weapons. Not knowing the enemy places every military member in an increasingly dangerous dilemma of assuming every citizen in the country is against them. Civilians and the terrorists who hide among them are more difficult to distinguish, thus making any action questionable under the "self-defense" or "identification of hostile act or hostile intent" rules of engagement.

Much work needs to be done to define the impact of warfare between a nation state and these "citizen imposters" that is fought in a third non-combatant nation-state environment. Applications of the just war theory must be modified and recommendations made to change both the content of the rules and the means of prosecuting war, as well as

the tools to hold wrongdoers accountable. What would follow is the modification of training and education, better design of rules of engagement and standard operating procedures, and adaptation of their designs in real time to real social and psychological dynamics on the battlefield.

The military justice system is beginning to accept the medical findings of PTSD and TBI as mitigating factors in the sentencing of individuals for Uniform Code of Military Justice violations, yet much more could be done by the medical community to inform the military's legal community. Military psychologists can assist the commanders and the military justice system to define what is a military necessity versus an individual choice, by more specifically defining the impact of asymmetrical warfare on the psychological motivations for human behavior. Indeed, we must extend the analysis of the psychological knowledge base from World War II (Stouffer et al., 1949) to the new type of war we are fighting today. Only then can military commanders better define and refine their training in rules of engagement based on a better understanding of the new battlefield environment's effect on their troops. Only then can the application of any psychological motivations for human behavior in this new combat environment be used in the military justice system.

Notes

1 "Command Climate" is a way of describing the unit culture that results in individual or group behavior that may or may not be the model of, or represent, good order and discipline and proper military conduct or bearing. The Navy Inspector General defines command climate as "the sum of various programs, processes and conditions. Some areas which affect Command Climate are coworker relationships, awards/recognition, meaningful work, working conditions, training and education opportunities, the grievance system, office equipment and furnishings, command environment, overall communication, and the central cohesive element of leadership." Navy Inspector General, Navy Yard, Washington DC website. Retrieved August 30, 2010, from <http://www.ig.navy.mil/Divisions/Inspections/Inspections%20%28CC%29.htm>

2 The American Articles of War and Articles for the Government of the Navy, the precursor for the Uniform Code of Military Justice, predate the Constitution and the Declaration of Independence and were based on the 1774 British Articles of War. The Article of War revision congressional hearings between 1912 and 1920 resulted in an approved Articles of War on June 4, 1920. Further review over the years resulted in President Truman's signing the first Uniform Code of Military Justice into public law (P.L. 81-506) on May 5, 1950. The code superseded the Articles of War, the Articles for the Government of the Navy, and the Disciplinary Laws of the Coast Guard. The 1950 major revision of the then-existing military criminal law was meant to unify, consolidate, and revise the existing statutes of the day.

It provided substantial guarantees of an open and fair process, a complete set of defined criminal laws, and punishment for conduct that affects good order and discipline in the military.

3 A “weapons clearing barrel” is a 55-gallon barrel filled with sand where weapons are aimed and triggers pulled to ensure the gun is not loaded.

References

- Bandura, A. (1991). Social cognitive theory of moral thought and action. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (vol. 1, pp. 45–103). Hillsdale, NJ: Erlbaum.
- Batson, C. D. (1991). *The altruism question: Towards a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Chambers II, John Whiteclay. (2000). Rules of engagement. *The Oxford Companion to American Military History*. Oxford University Press. Retrieved from *Encyclopedia.com* (Sept. 27, 2009): <http://www.encyclopedia.com/doc/1O126-RulesofEngagement.html>.
- Department of Defense Deployment Health Center website; Retrieved September 2010, from <http://www.pdhealth.mil/TBI.asp>.
- Department of Veterans Affairs, Health Services Research & Development Services. (2009). Evidence-based Synthesis Program, “The Assessment and Treatment of Individuals with a History of Traumatic Brain Injury and Post-Traumatic Stress Disorder: A Systematic Review of the Evidence.” See <http://www.ptsd.va.gov/professional/index.asp>, and the National Center for PTSD website, www.ptsd.va.gov (accessed Sept. 27, 2009).
- Festinger, L., Pepitone, A., & Newcomb T. (1952). Some consequences of deindividuation in a group. *Journal of Abnormal and Social Psychology*, 47(2), 382–389.
- Janis, I. (1972). *Victims of groupthink*. Boston: Houghton Mifflin.
- Janis, I. (Ed.). (1982). *Groupthink: Psychological studies of policy decisions and fiascos*, 2d ed. Boston: Houghton Mifflin. Groupthink quote retrieved from http://www.psyc.org/about/pubs_resources/groupthinkoverview.htm.
- Manual for Courts-Martial, United States. (2008). Available at <http://www.jag.navy.mil/documents/mcm2008.pdf>.
- Myers, D. G., & Arenson, S. J. (1972) Enhancement of dominant risk tendencies in group discussion. *Psychological Science*, 6, 10–19.
- Naval Inspector General, Washington Naval Yard DC website. Retrieved August 30, 2010, from <http://www.ig.navy.mil/Divisions/Inspections/Inspections%28CC%29.htm>.
- Primoratz, I. (2002). Michael Walzer’s just war theory: Some issues of responsibility. *Ethical Theory and Moral Practice*, 5(2), 221–243.
- Stouffer, S. A., Lumsdaine, A. A., Lumsdaine, M. H., et al. (1949). *The American soldier: Combat and its aftermath*, vol. 2. Princeton, NJ: Princeton University Press.
- U.S. Army Medical Department, Office of the Surgeon General (2006). Multinational Force-Iraq and Office of the Surgeon General, United States Army Medical Command, “Mental Health Advisory Team IV, Operation Iraqi Freedom 05–07, Final Report,” November 17, 2006. Retrieved from http://www.armymedicine.army.mil/reports/mhat/mhat_iv/mhat-iv.cfm.
- Wallach, M. A., Kogan, N., & Bem, D. J. (1964). Diffusion of responsibility and level of risk taking in groups. *Journal of Abnormal and Social Psychology*, 68(3), 263–274.
- Walzer, M. (2000). *Just and unjust wars: A moral argument with historical illustrations*, 3d ed. New York: Basic Books.
- Zimbardo, P. (2007). *The Lucifer effect: Understanding how good people turn evil*. New York: Random House.

What Do Commanders Really Want to Know?

U.S. Army Human Terrain System Lessons Learned from Iraq and Afghanistan

Montgomery McFate, Britt Damon, and Robert Holliday

Abstract

This chapter communicates research findings regarding what types of sociocultural information have operational relevance for military commanders in Iraq and Afghanistan. The findings in this chapter are the result of more than three years of experience with the Army's Human Terrain System (HTS), an experimental program to provide sociocultural knowledge to military units in two theaters of war. We review selected sociocultural knowledge requirements as articulated within a variety of U.S. military publications, including conceptual frameworks, handbooks, and military doctrine. We then describe the HTS research process to determine military sociocultural knowledge requirements, discuss command-directed and team-initiated research, and the concept of operational relevance. What commanders want and need to know is remarkably consistent between theaters and over time: the prime categories of knowledge are social structure; the political system (both formal and informal); the economic system (both formal and informal); and interests and grievances (particularly pertaining to security, intra- and extra-group conflict, and the administration of justice).

Keywords: U.S. Army, Human Terrain System, social science

Since the beginnings of the conflicts in Iraq and Afghanistan, attention in both military and policy-making circles has been focused on the importance of cultural knowledge. In 2004, for example, Representative Ike Skelton (D-MO) noted that:

In simple terms, if we had better understood the Iraqi culture and mindset, our war plans would have been even better than they were, the plan for the postwar period and all of its challenges would have been far better, and we might have been better prepared for the "long slog." (Skelton, quoted in Erwin, 2004)

As Skelton's observations indicate, the lack of attention paid to the culture and society of the area of operations had strategic consequences that were recognized only after the fact.

The following year, the Department of Defense officially acknowledged its deficiencies in this

domain: as noted in the *Department of Defense Language Transformation Roadmap*, "Language skill and regional expertise have not been regarded as warfighting skills, and are not sufficiently incorporated into operational or contingency planning. . . . Language skill and regional expertise are not valued as Defense core competencies yet they are as important as critical weapon systems" (2005, p. 3). Later that same year, the Department of Defense took a significant step toward rectifying that deficiency when it promulgated DOD Directive 3000.05, *Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations*. Directive 3000.05 mandates that the Commanders of the Geographic Combatant Commands include information "on key ethnic, cultural, religious, tribal, economic and political relationships . . ." as a component of their intelligence campaign planning (2005).

In 2006, the importance of sociocultural knowledge was noted in doctrine: Joint Publication 3-0, *Joint Operations*, observed:

Language skills and regional knowledge are crucial “warfighting skills” that are integral to joint operations. . . . Lessons learned from OIF [Operation Iraqi Freedom] and OEF [Operation Enduring Freedom] prove that this force-multiplying capability can save lives and is integral to successful mission accomplishment. Consequently, commanders will integrate foreign language and regional expertise capabilities in contingency, security cooperation, and supporting plans; and provide for them in support of daily operations and activities. (2006, p. III-15)

In early 2006, the Joint IED Task Force (now known as the Joint Improvised Explosive Device Organization [JIEDDO]) approved the funding to create the Human Terrain System in order to meet the U.S. military’s requirement for sociocultural knowledge. (JIEDDO’s mission is to “focus [lead, advocate, coordinate] all Department of Defense actions in support of the Combatant Commanders’ and their respective Joint task forces’ efforts to defeat IEDs as weapons of strategic influence” [Department of Defense Directive 2000.19E, *Joint Improvised Explosive Device Defeat Organization*, 2006]). By 2009, it was possible to speak of a consensus within the Department of Defense that “culture mattered.” As General David Petraeus noted, “The most important component—decisive element—is the human terrain” (quoted in Carpenter, 2009).

The increased focus on the sociocultural aspects of a population since 2004 has been beneficial to the military’s strategic and operational capabilities. However, most of the conceptual models, taxonomies, and lists produced by the Department of Defense and its subsidiaries designed to capture or organize this information have generally been produced with limited reference to the lived experience of commanders on the ground who actually use this information in day-to-day planning and execution of operations. That is to say, these methods of conceptualizing and organizing sociocultural information have mainly taken place in a vacuum. In addition, many of the sociocultural conceptual models, taxonomies, and lists (including military doctrine) produced by the Department of Defense and its subsidiaries do not reflect much understanding of basic social science concepts.

To our knowledge, no individuals or agencies have thus far engaged in an empirical study to

identify and validate what it is that commanders actually want or need to know about the sociocultural environment in their area of operations in order to build a model on the basis of their requirements. The typical process for creating sociocultural models begins at a level well above maneuver elements, such as battalion or brigade level. At higher echelons, such as divisions or corps, commanders and researchers often have limited visibility on the societies they intend to study. While unit commanders may be consulted once a model is created, the process of deriving information requirements from the lowest possible level of the command structure for aggregation into a coherent at the top is rarely undertaken.

The lack of focus on what unit commanders want to know raises broader concerns: how can the Army teach courses on “culture” at the Command and General Staff College or provide training through multi-million dollar simulations at the Joint Training Counter IED Center without understanding what is important and what is irrelevant to commanders on the ground? How can the defense intelligence community design data architectures to organize sociocultural data without identifying first what the priorities for the downrange military consumer are? Unfortunately, the tail wags the dog far too often in the military-industrial-contractor complex, and systems designed at the joint level rarely aid in the company fight.

This chapter communicates research findings regarding what commanders need to know about the people who inhabit their areas of operations. In other words, what sociocultural information actually has operational relevance for military commanders at brigade level in Iraq and Afghanistan? The findings in this chapter are the result of over three years of experience with the Army’s Human Terrain System, an experimental program to provide sociocultural knowledge to military units in two theaters of war. Acknowledging that our data sets are incomplete, that the data were collected for an entirely different purpose, and that the data are not representative of all commands or areas of operation, we nevertheless present our findings in the hope that this information may prove useful for the development of future conceptual models with more salience to the downrange user.

Department of Defense Sociocultural Knowledge Requirements

Operational sociocultural knowledge requirements have been articulated within a variety of U.S.

military publications, including conceptual frameworks, handbooks, and most commonly, in military doctrine. We review a representative selection of these sources below, paying attention primarily to the content (or “what”) of the conceptual model, rather than to issues with practical implementation (or “how”) of the model.

Political, Military, Economic, Social, Information, Infrastructure (PMESII)

Identifying what the operational military needs to know about the local population in their area of operations generally should begin with a conceptual model, or framework, of social organization. In other words, the components of a society and their relationship to each other must be identified and organized in a manner that is logical, systematic, and universal to the greatest degree possible. Conceptual models are important because they determine the types of questions that can be asked, the types of data that will be collected, the types of analysis that can be generated, and the categories of information that can be transferred from unit to unit via information systems.

The conceptual model known as PMESII (political, military, economic, social, information, infrastructure) has been the most widely utilized conceptual model of society by the U.S. military. PMESII was developed during a 2000 war game conducted by the U.S. Joint Forces Command (JFCOM) as a means of enabling kinetic targeting of tangible nodes in a network. PMESII was an analytic sub-component of a concept known as Operational Net Assessment (ONA), which is meant to provide a holistic view of the environment in which military forces will be operating. When a commander identifies a priority within his geographic Area of Responsibility (AOR), analysts at the Standing Joint Task Force Headquarters (SJTFHQ) evaluate the adversary’s political, military, economic, social, infrastructure, and information (PMESII) systems (JFCOM Joint Warfighting Center, 2004).

PMESII has recently been incorporated into Joint doctrine. Joint Publication 3-0, *Joint Operations*, issued in September of 2006, notes that a “systems perspective of the operational environment strives to provide an understanding of inter-related systems (e.g., political, military, economic, social, information, infrastructure, and others) relevant to a specific joint operation . . . without regard to geographic boundaries” (2006, p. II-21).

As a conceptual model of society, PMESII is very simple, providing only a very broad schema of the

major elements of a society. When it is used as a simple mnemonic by the military (often for planning), it highlights sociocultural considerations that might otherwise be overlooked. However, PMESII was designed not just as a mnemonic but also as an analytical process. When used for analysis as intended, PMESII can be seen to have a number of flaws.

First, the PMESII model is focused on formal systems, whether economic, military, or political. Under the “political subsystems” category, analysts must evaluate the central government, the local government, regional and international actors, and “political interest groups.” The model does not account for the predominant type of political system in weak or collapsed states, which is often based on informal political arrangements, such as tribes, patron–client relationships, and elite networks. Second, PMESII is inconsistent with the social science literature. According to the model’s designers, institutions refer to “how a government provides for the people” (PMESII Systems Considerations, 2005). In the social science literature, institutions are defined social structures with both purpose and permanence that determine and enforce rules governing cooperative human behavior. However, institutions (the family, the church, the school) may have no connection whatsoever to a government. Third, in the PMESII model only tangible entities can be considered as nodes in the system. As one SJTFHQ analyst explained, “Ramadan can’t be considered as a node, since you can’t take action on Ramadan, only people who practice Ramadan” (2006, personal communication). “Cultural resources,” for example, pertain only to physical materials such as monuments, mosques, or museums. Within the model, there is no way to evaluate the content of belief systems, which are treated as links between nodes or target coordinated action towards those concepts. Thus, one of the most significant features of human life—culture—is entirely absent from PMESII. The absence of culture limits planners’ abilities to evaluate or influence local perceptions, the population’s interests, civilian grievances towards the government, or conflicts between groups—tasks that the military must perform in Afghanistan and Iraq. Fourth, PMESII’s conceptualization of society is flawed. The S in PMESII is derived from the theories of Talcott Parsons, an American neo-functionalist sociologist who worked during the 1950s and 1960s (PMESII Systems Considerations, 2005). Within the PMESII construct, a social system is “an interdependent

network of social institutions, statuses and roles that support, acculturate and enable individuals, and that provide participatory opportunities to achieve personal expectations and life-goals” (PMESII Systems Considerations, 2005). However, as anyone who has lived in or studied failed states knows, a society may do none of these things and still continue to exist. Self-actualization of the individual cannot accurately be said to be a social system’s function in a failed state, where the social system may actually disable or destroy the individual. Finally, PMESII assumes that nodes and links can be determined with certainty and that the effect of one’s actions on enemy nodes can be “precisely calibrated to produce desired effects,” in the words of one critic of effects-based operations (Vego, 2006). In fact, human systems are complex, difficult to predict, and not governed by deterministic rules. Even after 200 years of research on human society, most social scientists would hesitate to claim a complete understanding of cause-and-effect relationships in the human domain.

Joint Doctrine

Joint doctrine emphasizes military capabilities assessments and course-of-action estimates, rather than in-depth sociocultural knowledge. The primary focus of most of joint doctrine is the adversary’s activity and intent. As Joint Publication 2-0, *Joint Intelligence*, states:

The most important role of intelligence in military operations is to assist commanders and their staffs in understanding and visualizing relevant aspects of the operational environment. This includes determining adversary capabilities and will, identifying adversary critical links, key nodes, HVTs [high value targets] and COGs [centers of gravity], and discerning adversary probable intentions and likely COAs [courses of action]. (2007, p. I-26)

Sociocultural knowledge of the adversary or of the local population is generally not considered. The primary purpose of intelligence is to provide “the commander with a threat assessment based on an analysis of the full range of adversary capabilities and a prediction of the adversary’s likely intention (Joint Publication 2-0, *Joint Intelligence*, 2007, p. I-1).

Where requirements for sociocultural knowledge are articulated in joint doctrine, these requirements are general rather than specific. For example, Joint Publication 2-0, *Joint Intelligence*, notes: “Intelligence develops knowledge of the operational environment

in relation to the JFC’s [joint force commander’s] questions concerning . . . cultural characteristics, medical conditions, population, and leadership” (2007, p. I-24). According to Joint Publication 2-0, *Joint Intelligence*, sociocultural information is primarily relevant during the shaping phase of the six-phase joint campaign model (i.e., shaping, deterrence, seizing the initiative, dominance, stabilization, and enabling civil authority):

Intelligence support, particularly human factors analysis, is essential to maximize the effectiveness of civil-military operations (CMO). An analysis and assessment of the civil dimension in targeted countries that identifies civil society key influences, individuals, organizations, structures, and areas must be performed as early as possible to determine what Intelligence Support to Planning, Executing, and Assessing Joint Operations civil engagement actions may serve as effective points of influence. (2007, p. IV-13)

During five other phases of the joint campaign model, however, sociocultural information about the operational environment appears to have little, if any, importance. For example, in the stabilization phase, “intelligence collection and analysis should transition from supporting combat operations to focus on actual or potential threats to the joint force (e.g., insurgent groups, criminal elements, terrorist cells)” (2007, IV-17). This lack of focus on the population by joint intelligence doctrine is revealed as a drawback by the military experience in Iraq and Afghanistan, where technically, U.S. forces have been in the stabilization phase since 2003, and where detailed information about the population has proven critical to mission success.

In Joint Publication 2-01, *Joint and National Intelligence Support to Military Operations*, intelligence products are broken into five categories: indications and warning, current intelligence, general military intelligence, targeting, and scientific and technical intelligence. The category of general military intelligence includes “political, economic and social aspects of countries in a Joint Operations Area.” The emphasis, however, is on military capabilities assessments and course of action estimates (2004, p. III-40), rather than on in-depth sociocultural knowledge. As Lieutenant Commander John P. Coles noted, “The direction to provide ‘cultural characteristics’ will get the commander some demographic overlays showing data like tribal locations and a geographic chart showing a region’s religious breakdown by percentage” (2005).

The main focus of Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment* is on the adversary's capabilities and intent:

The primary purpose of Joint intelligence preparation of the operational environment (JIPOE) is to support joint operation planning, execution, and assessment by identifying, analyzing, and assessing the adversary's COGs, critical vulnerabilities, capabilities, decisive points, limitations, intentions, COAs, and reactions to friendly operations based on a holistic view of the operational environment. JIPOE analysis assists the JFC and joint force staff to visualize and understand the full range of adversary capabilities and intentions. (2009, p. XX-ii)

However, the 2009 revision of Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, indicates a new focus on sociocultural information. Significant changes include the incorporation of a systems perspective using PMESII construct (2009, p. I-3), an emphasis on obtaining a "holistic view" (2009, p. I-2), a recognition that analysis of "nontraditional 'adversaries' presents a far greater challenge than the analysis of the more conventional 'force-on-force' adversary normally associated with major operations and campaigns" (2009, p. I-20), and the use of case studies to illustrate principles of intelligence during irregular warfare.

While Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, contains references to "the populace," "the people" and "the population" throughout, the most significant change is Chapter IV, Special Considerations. This chapter incorporates the sociocultural elements of FM 3-24, *Counterinsurgency*, wholesale and notes that:

JFCs, subordinate commanders, and their staffs must understand the cultural landscape in which they operate in order to make sound decisions concerning force protection and the deployment of forces. JIPOE products must describe the impact of ethnic groups and religions, to include their associated leadership, the locations of places of worship and cultural/historical significance, languages being spoken, population density, age, living conditions, allocation of wealth, and means of income. (2009, p. IV-2)

Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, also defines "sociocultural factors" as "the social, cultural, and behavioral factors characterizing the relationships and activities of the population of a

specific region or operational environment" (2009, p. GL-9).

Despite the significant progress made in Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, towards the incorporation of sociocultural factors, the overall lack of a coherent sociocultural framework in joint doctrine reflects the focus of the U.S. intelligence community: the current systems and processes within the intelligence community are not designed to provide sociocultural information, despite the Joint requirements. In the words of Lieutenant Commander Coles:

The national intelligence structure supporting the Department of Defense (DOD) may be able to provide some baseline intelligence assessments from a strategic level, but neither it nor the Combatant Commander's Joint Intelligence Center are geared to provide in-depth operational intelligence support to many of the potential areas—areas for MOOTW [military operations other than war] for example—where we are likely to find our joint forces operating. The military theater augmentation teams and Joint Intelligence Support Elements (JISE) do not include, per doctrine, cultural experts. If the JFC is lucky, regional embassy teams, national intelligence support teams or allies can provide some insight. Essentially, operations doctrine in JP 3-07 levies significant cultural intelligence requirements on joint intelligence that joint intelligence doctrine does not adequately mirror or fulfill. (Coles, 2005)

Army Civil Affairs Doctrine

Civil affairs detachments are the most heavily involved with the civilian population, and inevitably bear the burden in stability and reconstruction operations. Thus, their understanding of the local society and culture is critical to their ability to complete their mission effectively. Yet the foundational Civil Affairs Field Manual, Field Manual 3-05.40, *Civil Affairs Operations* (2006) offers only cursory guidance in how to approach, evaluate, and reconstruct a society.

FM 3-05.40 instructs military commanders to evaluate civil considerations within an area of operations using the mnemonic ASCOPE. The letters stand for: Areas, Structures, Capabilities, Organizations, People, and Events. *Areas* are key localities or aspects of the terrain within a commander's battlespace not normally thought of as militarily significant, such as trade routes. *Structures* might include power plants and dams, as well as

mosques and schools. *Civil capabilities* may include what a population needs to sustain governance and economy, such as public administration, public safety, emergency services, and food and agriculture systems. It may also include capabilities the populace needs help with, such as public works and utilities, public health, economics, and commerce. *Events* may refer to both military and civilian events, such as harvest seasons, elections, riots and evacuations, and combat operations, including indirect fires, deployments and redeployments, and payday. The term *people*, as defined within ASCOPE, includes civilians or nonmilitary personnel encountered in an Area of Operations (AO).

In Field Manual 3-05.40, *Civil Affairs Operations*, *O* stands for Organizations: “organized groups that may or may not be affiliated with government agencies,” such as religious groups, fraternal organizations, patriotic or service organizations, and community watch groups, or nongovernmental organizations (NGOs). The field manuals note that organizations fulfill a number of functions, including keeping the populace informed of ongoing and future activities, influencing civilians’ actions, and forming the nucleus of self-help programs, interim-governing bodies, civil defense efforts, and other activities (2006, paragraphs 4-13 and 4-14). Organizations, however, are just one element of a social structure that military commanders are likely to encounter during stability operations. Other types of social groups with potentially greater importance in many weak states include elite networks, tribal groups, criminal gangs, and caste structures. None of these groups are considered in the field manual.

The 2003 version of Field Manual 3-05.401, *Civil Affairs Tactics, Techniques, and Procedures*, which addresses the tactics, techniques, and procedures (TTPs) most directly concerned with the intersection of the U.S. military and a local population, treated civilians as a hindrance to the main event—combat operations. The manual advised analysts to “use historical precedents, informed judgment, as well as their imaginations to determine the most likely reasons civilians may be encountered” (2003, para. 3-30). In irregular warfare, one plausible reason that civilians might be encountered is that they are local residents. The 2003 version of FM 3-05.401 noted (with no sense of irony) that during Operation Desert Storm, “SF [Special Forces] soldiers, while occupying a hide site that was dug into the open desert floor during the hours of darkness, were compromised at daybreak

by a Bedouin child tending goats” (2003, para. 3-30). Whereas in major combat operations civilians on the battlefield are a rarity, in counterinsurgency operations their presence should be assumed.

The revised 2007 version of Field Manual 3-05.401, *Civil Affairs Tactics, Techniques, and Procedures*, offers an improved approach to understanding the society in the area of operations, clearly influenced by the military experience in Iraq and Afghanistan over the past few years. The manual recommends that planners evaluate the environment by performing an ASCOPE analysis of each of the PMESII factors. The result, for example, for the *E* in PMESII would be:

- Where are the key and decisive areas of economic activity?
- Where are the key and decisive structures (infrastructures) associated with economic activity?
- What are the key and decisive economic capabilities that must be engaged and restored (for example, banking)?
- What are the key and decisive economic organizations?
- What are the key and decisive economic people?
- What are the key and decisive economic events? (2007, para. 3-35).

Planners requiring more in-depth analysis are advised to apply the 14 “POLMIL” factors (of which only two are actually related to the *political system* or the *military*). These factors include history, natural environment, cultural environment, political systems, political economy, role of the military, ideology, religion, foreign influence, leadership, regional perspectives, national interests, ethnicity, and media. The manual demonstrates a real appreciation for approaching these categories from the perspective of the population. For example:

It is more important to the CMO planner to understand how a populace perceives its history than to be an expert in the factual historical record—perception is reality. Also, there may be a significant contradiction between the population’s internal or “insider” view of the historical events and the external, foreign, or factual one. (2007, para. 3-37)

Despite these substantial improvements, Field Manual 3-05.401, *Civil Affairs Tactics, Techniques, and Procedures*, lacks certain categories (e.g., social structure); disaggregates other categories (e.g., “religion,” which should arguably be subsumed under “culture”); and creates duplicate categories

(e.g., “political economy”). The most serious concern here is the lack of a broad concept of social structure, which would enable consideration of a variety of social identity groups, such as tribes, elite networks, and caste systems, rather than just ethnic groups.

It is important to note that because ASCOPE is part of Civil Affairs doctrine, it has also been used as a component of the top-level entities in multiple databases that serve soldiers. The result is that the flaws present in the ontology serve as limiting factors on the analysis that can be conducted in any unit where data collection is information-technology-dependent.

Counterinsurgency Field Manual

Field Manual 3-24, *Counterinsurgency*, identifies understanding of the local population as a critical component of successful counterinsurgency (COIN) operations: “Successful conduct of COIN operations depends on thoroughly understanding the society and culture within which they are being conducted” (2006, p. 1-124). The specific sociocultural components to be considered when analyzing the local population are set out in Chapter 3, *Intelligence in Counterinsurgency*. These concepts are nested in the doctrinal mnemonic METT-TC (mission, enemy, terrain and weather, troops and support available, time available, civil considerations) of mission-relevant information (2006, chapter 3, p. 19 and Glossary). Civil considerations are further broken down in Chapter 3 into six characteristics, expressed in the memory aid ASCOPE: areas, structures, capabilities, organizations, people, and events. In order to evaluate the people, the following six sociocultural factors are established for analysis: society, social structure, culture, language, power and authority, and interests. Like the use of PMESII in conjunction with ASCOPE, the sociocultural factors are nested in doctrinal concepts. The use of another ontology as a mnemonic to direct collection and analysis has its virtues. Like any other pre-generated ontology, however, there is no guarantee that it will provide relevant information to commanders. Information requirements must be further refined on the ground, and will depend on the unique characteristics of the area of operation and the population who reside there.

Tactical Conflict Assessment and Planning Framework

The *Tactical Conflict Assessment and Planning Framework* (TCAPF) was developed by U.S. Agency

for International Development (USAID) for use by the military and other interagency partners to increase the effectiveness of stability operations (U.S. Army, 2008, D-34). The model is designed “to assist commanders and their staffs to identify the causes of instability, develop activities to diminish or mitigate them, and evaluate the effectiveness of the activities in fostering stability at the tactical level (provincial or local)” (U.S. Army, 2008, D-34).

The Interagency Conflict Assessment Framework (ICAF) complements TCAPF, which is intended to be used at the tactical level to create local stabilization plans at the strategic and operational level. Data generated using the TCAPF can in theory be aggregated up into the ICAF, which can be used “to assess conflict situations systemically and collaboratively; it supports USG [U.S. government] interagency planning for conflict prevention, mitigation, and stabilization” (U.S. Army, 2008, D-3). Unlike the previously mentioned “data-first” taxonomies for collection, TCAPF offers a series of qualitative questions to aid commanders in understanding their area of operations. While the emphasis on qualitative reporting complicates automation of report aggregation, it allows for collection of information on broader spectrum of societies, given the lack of bias towards any particular social structure.

In the TCAPF model, companies are responsible for collecting the data, which is compiled by a “debriefers” and entered into the TCAPF Worksheet. For units using the TCAPF model, soldiers who are walking patrols ask the population four standardized questions:

- Has the population of the village changed in the last twelve months?
- What are the greatest problems facing the village?
- Who is trusted to resolve problems?
- What should be done first to help the village?

According to the TCAPF model, the first question is important because “people usually move when deprived of security or social well-being. The sudden arrival of dislocated civilians can produce a destabilizing effect if the operational area lacks sufficient capacity to absorb them or if there is local opposition to their presence” (U.S. Army, 2008, D-50). The second question allows the local populace “to identify their own problem areas, thus avoiding mistaken assumptions by the intervening forces” (U.S. Army, 2008, D-51). The third

question helps “identify individuals or institutions most trusted to resolve local issues” and “provides an indication of the level of support for the host-nation government, a key component of stability” (U.S. Army, 2008, D-52) The final question encourages “the local populace to prioritize their problems helps to affirm ownership. Their responses form the basis for local projects and programs” (U.S. Army, 2008, D-53).

After the information is collected, it is combined with input from other staff sections and other sources of information (e.g., nongovernmental organizations) and compiled in a graphical display. The next phase, design, involves the production of a tactical stability matrix for each of the causes of instability. After identifying the causes of instability and sources of resiliency, a program of activities can be designed to address them (see U.S. Army, 2008, D-57, D-58, D-59).

There are many issues associated with the implementation of the TCAPF model in theater, including the validity and reliability of data collected by soldiers from the population, the verifiability of data once collected, the reliance on overworked battalion and brigade staff members for analysis of data, and so on. However, the focus of this cursory review is on the content of the model rather than its implementation. To that end, it should be noted that while TCAPF potentially has great utility for the military, the model is not a general, all-purpose tool, but rather is specifically targeted for improving stability operations, to include “identifying and reducing the causes of instability and reestablishing or building community and state capacity to diminish, manage, or prevent them from recurring in the future” (U.S. Army, 2008, D-1). It cannot be easily transferred to other types of operations that the military might perform that might require different types of sociocultural data.

As currently designed and executed, TCAPF can illuminate existing problems and provide some general insight into the populations’ preferred solution set, but it will not reveal conflicts, cleavages, and differences of opinion between the general population and minority groups (e.g., “Why do the Kuchis think the lack of water is a problem but the Hazaras do not?”). The TCAPF model will also not reveal why particular issues are considered problems (e.g., “How do the Pashtuns define physical security differently than the Uzbeks?”), nor what the unintended consequences of solving problems might be (e.g., building a well may create a new resource for people to fight about).

Army Culture and Foreign Language Strategy

In December 2009, the Army published its *Army Culture and Foreign Language Strategy*, which notes that recent conflicts “have highlighted critical gaps in the Army capability to influence and operate effectively within different cultures for extended periods of time. Battlefield lessons learned have demonstrated that language proficiency and understanding of foreign culture are vital enablers for full spectrum operations” (p. ii). The document identifies three critical gaps: “leaders and soldiers have a limited understanding of how culture considerations influence the planning and execution of operations”; “there is insufficient foreign language capability across the Army, which limits the effectiveness of both units and individual leaders and soldiers”; and “there is no significant development of a bench of future leaders who have an increased understanding of cultures and foreign languages around the world” (U.S. Army, 2009, p. ii).

The *Army Culture and Foreign Language Strategy* is primarily focused on the “how” of implementation rather than the “what” of content. The document establishes a goal of creating a “baseline of culture and foreign language capabilities for all leaders and soldiers to support the accomplishment of unit missions” (U.S. Army, 2009, p. 1). The document then goes on to identify culture and foreign language ability as one of five critical competencies (including application of combat power [military art and science], governance, economic and infrastructure development, and negotiation and mediation), sets out career development and pre-deployment paths, distinguishes between cross-cultural competence (“culture-general” knowledge, skill, attributes that all leaders and soldiers require) and regional competence (“culture-specific” knowledge, skills, and attributes that pertain to a given country or region) and establishes training goals by cohort and for pre-deployment preparation.

Although it is the purported focus of the document, “culture” is very broadly defined, and some of the characteristics of culture are only cursorily discussed. The *Army Culture and Foreign Language Strategy* defines “culture” as “the set of distinctive features of a society or group, including but not limited to values, beliefs, and norms, that ties together members of that society or group and that drives action and behavior” (2009, p. 7).

The actual knowledge requirements are set out in Annex 2 to Appendix C. Organized by cohort and also by training stage, these requirements

include both knowledge and skills. The document establishes a knowledge requirement for “regional competence” as follows (2009, p. 34):

- Major historical events of a specific region or country to include its legends and myths
- Current and projected political structure and major political organizations/figures of a specific region or country
- The cultures of a specific region or country to include its linguistic and religious aspects
- Sociological considerations of a specific region or country to include demographic considerations
- Economic and financial systems of a specific region or country
- The other operational environment variables that pertain to a specific region or country
- Application of PMESII or other analytical tools (e.g., DIME) to a specific region or country

Although the document is *prima facie* concerned with culture defined as a “set of distinctive features of a society or group, including but not limited to values, beliefs, and norms, that ties together members of that society or group and that drives action and behavior,” the list of required knowledge for regional competence goes well beyond “culture” to encompass politics, economics, and geography. Politics, economics, and geography are generally considered in the social science literature to be elements of the larger category of “society” rather than sub-elements of “culture.” The authors of the document are using the word “culture” (which has gained power as a totem in military circles) when it appears that they mean to refer to the greater, more inclusive category of “society.” The document also includes “legends and myths” as a type of “historical event” rather than as non-factual interpretations of quasi-historical events. The document also confuses demography, which is the statistical study of populations, with “sociological considerations,” which presumably refers to more broadly to the general features of a population.

While the educational goals established in the document are laudable, the development of content deserves further attention.

U.S. Army Human Terrain System Sociocultural Knowledge Requirements

Project Origins

The HTS research project to identify what commanders want to know had two parents. First, the project was a by-product of the U.S. Army’s Human

Terrain System’s 2009–2010 year-long curriculum redesign process. HTS is a proof-of-concept program that provides supported units at the brigade, division, and corps levels with primary- and secondary-source sociocultural information about the host country population in support of nonlethal planning, nonlethal operations, and effects analysis. As of spring of 2010, HTS had 27 teams deployed in Afghanistan and Iraq composed of social scientists, military personnel, and native fluency interpreters.

The 16-week training program to produce these teams was initially designed in 2006 on the basis of an educated guess about what the supported military units wanted to know about the sociocultural environment in their area of operations, and what sort of training the teams would need to enable them to conduct research in semi-permissive or hostile environments and present their findings in a way that could be easily understood and utilized by the military. Subsequently, the training curriculum grew organically as a result of feedback from team members who identified shortfalls in particular areas (e.g., the need to provide better training on micro-economics, the need for better training on statistical analysis, more interviewing, less focus on post-structuralism, etc.).

The goal of the curriculum redesign was, in part, to evaluate the training as it was being delivered and rectify it with emergent requirements from both Afghanistan and Iraq. One aspect of this process was the identification and eventual definition of “core concepts,” the categories of sociocultural information about local populations most commonly used by Human Terrain Teams (HTTs). Identification of these concepts would allow HTS to improve the training delivered to deploying teams and secondarily would help the program build the underlying architecture of the MAP-HT toolkit, a relational database that contains analytical and geospatial tools currently being developed by Central Command (CENTCOM).

The second “parent” of this project was Lieutenant General William Caldwell who received a briefing on HTS in April 2009 and asked the authors, “How do you know what commanders want to know?” Lieutenant General Caldwell had a legitimate reason for asking this particular question and a pressing need for an answer: as the commander of the U.S. Army’s Combined Arms Center, Caldwell was responsible for most of the Army specialty schools (Air Defense, Field Artillery, etc.), the institutional knowledge base of the Army (Battle Command Knowledge System, Center for Army Lessons

Learned, etc.), and a variety of Army training centers (National Simulation Center, Army Training Support Center, etc.). Perhaps most critically, Lieutenant General Caldwell was also responsible for leadership development in the form of the Command and General Staff College (CGSC), which educates the vast majority of young field-grade officers in land warfare to prepare them for future Army assignments. Understanding how to best meet this requirement and provide something relevant to the students at CGSC (most of whom would follow their year at Fort Leavenworth with another combat tour) was at the forefront of his question.

Command Directed and Team Initiated Research

Within HTS, what a commander *wants* to know is referred to as “command directed research.” Command directed research is research that is initiated by the commander or staff of the supported unit and that clearly articulates a research question that can be answered by the team. Command directed research can be either explicit (“Why are there so many weightlifting gyms in Baghdad these days?” “What is the best approach to poppy eradication in this province in Afghanistan?”) or implicit. Whereas explicit command-directed research has a clearly articulated research question and narrow scope, implicit command-directed research generally has a vaguely defined research question (if one is articulated at all) and a broad scope. Implicit requirements can be gleaned or deduced from a variety of sources, including brigade working groups, unit lines of operation, commanders’ critical information requirements, commanders’ host nation information requirements, future plans, subordinate unit reporting, etc. For example, a team in Iraq was asked by the staff to research the following question, considered critical to their “security” line of operation: “Where are we likely to have instability that will cause the U.S. to commit forces?” No specific research objectives were stated, but the team identified the implicit research requirements as identification of potential inequitable distribution of economic resources along sectarian lines, means of potential political reconciliation among different sects, level of confidence in the Iraq Security Forces (ISF), identification of employment opportunities for displaced Sons of Iraq (SOI), and so forth.

Based on our experience working by, with, and for the military, we realized that what commanders

want to know is not necessarily what they *need* to know. What a commander wants to know typically reflects an educated guess about the additional information required before a course of action can be identified and selected for implementation. His request will naturally be based on his subjective understanding of the immediate situation. However, what the commander says he wants to know may reflect only a partial understanding of the situation; may be based on unfounded assumptions about the society in the area of operations; may involve cultural “mirror imaging”; or may reflect a host of other issues inherent in a quest to understand a foreign society. Another difficulty with relying solely on the supported unit to identify what they want to know is that military personnel generally do not have the requisite social science training to enable them to clearly articulate their research requirements in language that has meaning to social scientists. This provides ample opportunity for miscommunication of research objectives between the military and social scientists working for them.

While it is tempting to let the supported unit identify and prioritize the teams’ research, this approach by itself would not enable exploration of the issues that are frequently present in human social life, but often overlooked. For example, what about social phenomena that might only be visible to individuals trained in the social sciences? What about other issues that might only be apparent to someone who practices the local religion or grew up in a city in the area of operations? Sometimes the issues that are not talked about at staff meetings are the most salient. Every team is therefore encouraged to respond to the supported unit’s requests for command-directed research, but also to initiate their own research. The research that teams initiate should be squarely focused, not on what the commander wants to know, but on what he needs to know. Assessment of what a commander needs to know requires an evaluation of the unit’s missions and objectives (e.g.: Is the unit planning an operation? Are they trying to mitigate the effects of an operation already conducted? Is this proposed research related to an economic development project?). Assessment also requires evaluation of the supported unit’s knowledge gap (e.g., the delta between what is known and what needs to be known to accomplish the objective).

Whether it is short-term or long-term, team-initiated research generally follows the same process of assessment and evaluation. On one team in Iraq, for example, the social scientist began by examining

the brigade's lines of operations, and then conducted preliminary exploratory research on the ground:

If I knew there was an economic issue or something concerned the interaction of SOI [Sons of Iraq] with IA [Iraqi Army], or local politics, I'd try to hook in with Scouts or Cav at the battalion or company level. . . . I'd look at their organic plan for dealing with AO. From this, I have a threshold of understanding of the place, and would compare their description with what I saw myself. . . . I synthesize what Iraqis see, what [the] company commander sees, and then formulate basic questions. If our intent is to provide input that brigade isn't tracking, you've got to keep an open mind. People tell you what's on their mind. I talked to lots of Iraqis about wild pigs, for example. There's no discussion about that at the brigade level, but on the street that's all people [are] talking about. They wanted the Coalition Forces to stage a hunt. The platoon that shot and barbecued one of the pigs are heroes to the local community. I try to be the voice [for] the Iraqi population and also the voice for the company. I can connect the isolated incidents into a pattern across the AO (2009, personal communication).

As this reflection on research from a social scientist in Iraq indicates, team-initiated research is often an inductive process. That is, the team must spend time listening to the brigade staff members in order to understand their mission and their priorities. But the team must also spend time listening to the population about what issues have salience for them. In this case, wild pigs were a very serious issue for the local community, interfering with the ability of local people to keep kitchen gardens and farmers to grow crops. Even more important, however, was that wild pigs posed a security threat to small children and domestic animals, which they will attack for territorial reasons. The impact of wild pigs on local security might not have been an issue that the brigade staff *wanted* to know. However, it was certainly something that they *needed* to know.

Operationally Relevant

The other requirement concerning research performed for military units in a theater of war is that the research must be operationally relevant. In other words, it must address the question: "So what?" When a commander or staff member asks an HTT to conduct research, the team can fairly assume that there is a purpose motivating the request. Whether perfectly transparent or completely opaque to the team, the purpose of the research will almost

certainly be related to the mission and objectives of the supported unit. In other words, the commander's interest in learning about the culture and society of the local population is driven by mission imperatives, not because he is interested in knowledge for its own sake. If he asks for a briefing on property inheritance in *sharia* law or on the social structure of nomadic herders in Afghanistan, it is not because he is interested in law or pastoralism as a fascinating social phenomenon. The military, as a customer of social science knowledge, wants to apply whatever they learn to solve problems in a timely, practical manner. Knowledge that cannot be applied may be very interesting to a commander and his staff on a personal level, but is essentially useless in the context of the mission. Margaret Mead, writing about the political implications of cultural research, describes why operationally relevant research is necessary. To paraphrase, research of this sort is done in order to facilitate "some specific plan or policy" to include making predictions about the success of those plans and policies (Mead and Metraux, 2000, p. 441). This remains true with HTTs whose primary function is to inform military decision-makers of potential implications regarding operational plans and policies and how they interact with civilians in the battlespace.

When a team initiates a research project to provide a commander with what he needs to know, the research must be operationally relevant. For example, while it may be very interesting to know that Arab women henna their hands as part of the marriage ritual, it is unlikely that a research project on this topic would be operationally relevant. On the other hand, a research project on the Arab wedding ritual of celebratory gunfire might be extremely operationally relevant since mistaking non-directed weapons fired to signify happiness for directed weapons fired to signify hostile intent might result in both military and civilian casualties.

Team-initiated research is inherently an inductive processes and differs substantially from the standard intelligence collection model. When a research plan is based on qualitative interviews with the local populace, collated information from subordinate units, or attempts to confirm an untested hypothesis, the assurance of relevance inherent in the deductive intelligence collection model longer applies. As a result, the scope of a team's research increases exponentially. However, research consumes resources. When operating in an active combat zone, those resources not only include time and money, but also potentially involve the lives of

soldiers or of the researchers themselves. Operational relevance focuses collection efforts by directly linking research to the stated mission articulated by the commander or a higher echelon and the operational context in which it takes place.

The Data

Given the operational tempo and mission imperatives of fighting a war in two theaters, direct polling of commanders about their sociocultural knowledge requirements is simply not possible. Therefore, we used a deductive process and two different data sets to determine military sociocultural knowledge requirements. Collecting the data presented here was only possible because HTTs were embedded in units under the direction of an experienced team leader and social scientist. Because this process was field oriented and data driven, it allowed us to build an ontology based on reality as experienced in the field rather than merely testing the assumptions of an existing ontology.

Since both data sets discussed below do not differentiate between command- and team-initiated research, they reflect both what commanders *want* and what they *need* to know. Also, the two data sets include information that was both collected by teams and produced by a CONUS-based research center. Therefore, no inferences should be made as to the most appropriate collection mechanism for any generalized category derived from the data.

Data Set 1

The first set of data included team products and requests for research (RFRs) sent by teams downrange to HTS's Research Reachback Center (RRC). The RRC is an HTS element that provides comprehensive, multidisciplinary, and timely research and analysis to support deployed teams in theater. Divided into two different shops serving Afghanistan and Iraq and located respectively at Fort Leavenworth, Kansas, and Newport News, Virginia, they produce secondary source research in response to requests for research from teams downrange. In fiscal year 2008, the RRC produced over 1,000 RFRs of varying length and complexity.

Since the only elements with authority to task the RRC are HTTs, the requests for research received over time provide an excellent window on the type of work performed by teams downrange. We asked the RRC to provide an index of products that had been requested by teams since the first team deployed to Forward Operating Base Salerno in February

of 2007. We also stipulated that the indexes be coded for both Afghanistan and Iraq (see Table 9.1).

The data set also included projects reported by teams. In February of 2009, HTS began redeveloping a series of handbooks in order to capture current information about what research methods are being used in the field and how that should inform training and assessments of HTS teams. We used a disproportionate quota sampling to survey team members and augmented that by interviewing key informants who had direct access and knowledge of particular cultural domains (e.g., a team project or how a method was employed). The interviews were especially valuable because they provided an opportunity for team members to describe the research process for a project and what impact it had had on the supported unit's operations. This process also included capturing reports, analytical outputs, and raw data from projects conducted by the teams.

During the survey, team members were asked to free-list projects that their team had conducted. They then had to tie the project conducted to methods of collection and analysis used and to outputs or products. The resulting list of team projects then became part of our first data set, used to identify what commanders need to know in Iraq and Afghanistan. A recognized limitation of this research was the inability to specifically assess the quality of the methods and techniques utilized by deployed teams. However, this did show us the types of projects being conducted and the subject matter being examined. This portion of the first data set gave us a better understanding of the information requirements during current operations.

By combining the teams' requests for research with the data that teams self-reported, we had a fairly complete picture of the projects the teams were undertaking. We assumed that teams were generally conducting research on topics that had either been explicitly requested by the supported unit or that were implied by the supported unit's lines of operations or other objectives. In essence, we assumed that teams were requesting research from the RRC that was in some way operationally relevant. In addition to the RRC indexes, we also wanted to evaluate products created by teams. Although HTS has a team product log, we found that for our purposes it did not have enough detail as part of the tagging system to enable us to use it for this project. However, we were able to use the results of a survey on research methods, including follow-up interviews, of about ten teams in Afghanistan and Iraq conducted originally as

Table 9.1 Example segment of the RFR log for Afghanistan

RFR Number	Year	Country	Requestor	Network	RFR Topic	Main Tag	Detailed Tag
RRC-AF1-07-0052	2007	Afghan	AF1	NIPR	Influence of Elders	Social	Social
RRC-AF1-07-0053	2007	Afghan	AF1	NIPR	Paktya Provincial Summary	Area Assessment	Area Assessment
RRC-AF1R-07-0001	2007	Afghan	AF1	SIPR	Data Search on Gomal Dist in Paktika and Kharoti Tribe	Social	Social—Tribe
RRC-AF1R-07-0002	2007	Afghan	AF1	NIPR	Data Search on Gomal Dist in Paktika and Kharoti Tribe	Social	Social—Tribe
RRC-AF1R-07-0003	2007	Afghan	AF1	NIPR	Interim Product on #001	Social	Social—Tribe
RRC-AF1R-07-0004	2007	Afghan	AF1	SIPR	Final Product on Kharoti/Gomal	Area Assessment	Area Assessment
RRC-AF1R-07-0005	2007	Afghan	AF1	SIPR	Requested 12-hr. turnaround	Area Assessment	Area Assessment
RRC-AF1R-07-0006	2007	Afghan	AF1	NIPR	Economic Profile and Situation in the Zurmat and Jaji Districts of Paktya Province.	Area Assessment	Area Assessment
RRC-AF1R-07-0007	2007	Afghan	AF1	NIPR	19 AUG Afghanistan Independence Day	Culture	Cultural
RRC-AF1R-07-0008	2007	Afghan	AF1	NIPR	What Is Ramadan, Iftar and Eid in Afghanistan Culture	Religion	Religion
RRC-AF1R-07-0009	2007	Afghan	AF1	NIPR	Ramadan, Impacts of Conducting Operations and Appropriate Gifts	Religion	Religion
RRC-AF1R-07-0010	2007	Afghan	AF1	NIPR	Commerce Historical Trade Routes in Paktya Province	History	History
RRC-AF1R-07-0011	2007	Afghan	AF1	NIPR	Northern Half of Paktika and Zurmat District	Area Assessment	Area Assessment

background for the proposed revision of the HTS Social Science Handbook.

With the assistance of a working group of previously deployed team leaders, social scientists, military personnel, and external subject-matter experts, we engaged in a pile-sorting exercise to identify, organize, and refine the topics. Since some of the RFRs were worded quite vaguely, we verified their content with members of the RRC, many of whom have been working for HTS since 2007 and remembered individual research projects. After identifying the specific topics of the RFRs, we grouped them ontologically so that we could see the relationships between the concepts more clearly. Next, we organized the pile-sorting results along an X/Y matrix (see Table 9.2). The x-axis represents the RRC ontology developed several years prior to this research and is based on a pile-sort of coded RRC reports, Human Relations Area Files (HRAF) categories, and State Department sectors. The y-axis represents coding as determined by the focus group of personnel who were conducting the pile sorts for this portion of the research.

This allowed us to see the relationships and overlap between the categories. We were then able to extract the concepts and create a very basic list of what commanders want to know. (See Table 9.3.)

The major categories that emerged with salience for both theaters were as follows:

Social structure is roughly defined as the “relations between groups of persons within a system of groups” (Evans-Pritchard, 1940, p. 262). Social structure, then, refers to the various modes through which people organize themselves (e.g., tribal, kin-based, geographical, ideological, etc.) and how these social groups create and reproduce social identity, inform decision making, and influence leadership structures. Given the variability and contextual dependence of social structures, information on them must be collected at the lowest possible levels, tied to the context in which it was collected, and reviewed for changes over time. The modes of social organization within Iraq and Afghanistan are unique and cannot be evaluated as if they were the same. This became especially apparent when military commanders tried to apply tribal models developed in Iraq to the very different environment in Afghanistan.

Political system includes both formal and informal systems. Team projects in both Iraq and Afghanistan commonly involved identifying and describing local political leadership; for instance, in Afghanistan, projects generally looked at village and district representatives and their social networks.

Teams also made significant efforts to understand how the formal political systems functioned, and in particular what changes had occurred as a result of the social upheavals caused by armed conflict. Many teams also focused on researching the real versus perceived impact the government has on its constituents at all levels in the society.

Economic system includes both formal and informal activities. Often, researching this entailed inquiries into agricultural practices specific to a geographical region, including primary crops. Teams also researched commodity pricing and traffic studies, including price and quantity of goods being sold in a specific market or a network of markets. Black-market activities such as supply and resale of illicit goods (such as poppy production in Afghanistan) were another common topic.

Interests/Grievances includes economic, political, social, religious, and legal interests and grievances. Overall, this was one of the most difficult categories to identify and define. In some cases, the grievance was held against the state, while in other cases it was held against another social group. However, in all cases a group’s interests and grievances had the potential to catalyze action when the means were available.

All of the above categories of social life must be seen as part of an integrated system which affect each other, and provide alternate paths for mobilization and change within a society.

Many of these topics inspired heated discussion within the group. For example, should black-market activities and smuggling be considered a type of “crime” or should they be considered part of the informal economy? If we define black-market activities and smuggling as “crimes,” are we imposing our normative, Western values on societies that might have a very different definition of the meaning of “crime”? In the end, we recognized that the ontology that we were designing was intended for ease of use by the military and therefore that the organization of categories that were most familiar to the end user should predominate. The consensus of the group was that debates regarding interpretation and meaning should occur in a context more conducive to open-ended expression. Thus, we agreed to treat black-market activities and smuggling as “crime” for the purposes of curriculum redesign. (In later refinements to the model, however, a category of “green SigActs,” was introduced, which made this particular debate moot. Unlike “red SigActs” which in the military lexicon include insurgent-on-Coalition and Coalition-on-insurgent

Table 9.2 Iraq team RFRs sorted and counted by subject (x) and type (y)

IZ RFRs Type\Subject	Region/ Geography	Demographics	Infrastructure	Politics/ Power	Security/ Justice	Education	Health	History	Religion	Social Organization/ Identity	General/ material Culture	Economy	Total
Key Leaders	56	1	2	58	44	2	0	5	12	2	0	24	206
Political/ Administrative Structures	50	1	2	51	4	2	1	45	1	1	1	23	182
Tribes	54	1	0	55	13	0	0	52	1	5	0	0	181
Conflicts (including history, AO)	4	2	2	7	7	1	0	5	4	3	0	26	61
Reconstruction/ Rehabilitation	3	1	4	2	5	2	3	3	1	0	0	3	27
Black Market/ Smuggling	4	1	2	2	4	0	0	2	0	2	2	1	20
Social Roles (gender, ethnicity)	6	7	3	4	3	2	1	4	5	5	0	2	42
Traditions/Practices	5	5	0	1	2	2	3	10	38	8	0	2	76
Archives/Public Records/Disputes	2	1	2	0	0	0	0	2	1	0	2	1	11
Programs (NGO, UN, success, impact, best practices)	5	1	5	5	3	1	3	2	1	3	0	20	49
Health Care Systems	3	2	3	0	1	3	3	2	1	2	0	0	20

Educational System (delivery, occupational training)	2	1	0	2	4	1	0	1	0	1	0	20	32
Agricultural Practices/Crops/ Infrastructure	27	10	26	23	29	23	2	25	2	3	1	23	194
Sports/Youth Activities	1	1	1	1	2	0	0	1	0	1	0	2	10
Public Opinion/ Perceptions	3	0	3	1	0	0	0	2	2	4	0	10	25
Communications	3	2	4	1	3	0	0	4	0	1	3	5	26
Refugees/Displaced Persons	2	1	0	0	1	0	0	0	0	1	0	0	5
Safety/Threats/ Events	5	4	3	6	7	0	0	4	6	5	1	0	41
Crime/Social Deviance/Abuse	6	6	6	6	8	2	1	5	5	5	0	3	53
Area Assessments	74	68	69	67	70	66	67	70	70	66	0	69	756
Total	315	116	137	292	210	100	84	244	150	118	10	234	

Table 9.3 What commanders want to know—more or less

Physical and Cultural Geography (territory, settlement patterns, etc.)	Culture <ul style="list-style-type: none"> • Belief systems • Religion • Narratives/myths (cultural) • Traditions • Material culture (apparel, housing) • Social roles and statuses • Social norms and sanctions (etiquette, marriage, sex, etc.) • Communication (language and non-verbal) • Recreation/leisure (sports, entertainment) • Health/well-being (local perceptions and understanding) • Education (social learning, enculturation)
Political System (formal and informal)	
Power <ul style="list-style-type: none"> • Coercion • Economic • Social capital (trust) • Authority (patronage networks) 	
Legal System (formal and informal) <ul style="list-style-type: none"> • Property rights • Conflict resolution • Criminal behavior (e.g. economic “crimes” such as smuggling) 	
Capability/Capacity Building <ul style="list-style-type: none"> • Infrastructure • Education • Medical/health • Policing • Media • Essential services • Sewer • Water 	
Economic System <ul style="list-style-type: none"> • Production (agriculture, factories) • Distribution (movement of people, goods, services) • Consumption (household economy, commodities pricing) 	Social Organization/Social Structure <ul style="list-style-type: none"> • Religious groups • Tribal system • Family household • Ethnic groups • Socio-economic classes • Informal networks • Gender groups • Trade/economic groups • Militia/armed groups • Regional/local community • National identity groups • Refugees/IDPs
Key Leaders/Leadership	
Scale/Types of Conflict (war raiding and feuds)	
Security/Safety	

acts, “green SigActs” include insurgent-on-civilian acts, civilian-on-civilian acts, and Coalition-on-civilian acts,)

Now that we had a rough cut on a list of concepts that had proven relevant over the course of three years in both Iraq and Afghanistan, we performed a count to see which concepts appeared most frequently by source. We looked at team project totals,

RFR totals, and ontology totals. (See Figures 9.1 and 9.2.)

The pile sort of RFRs and team projects grouped according to the ontology we had developed earlier revealed that certain categories had salience in both Iraq and Afghanistan. For example, geography, politics, security issue, history, and social structure (including that of tribes and ethnic groups) were

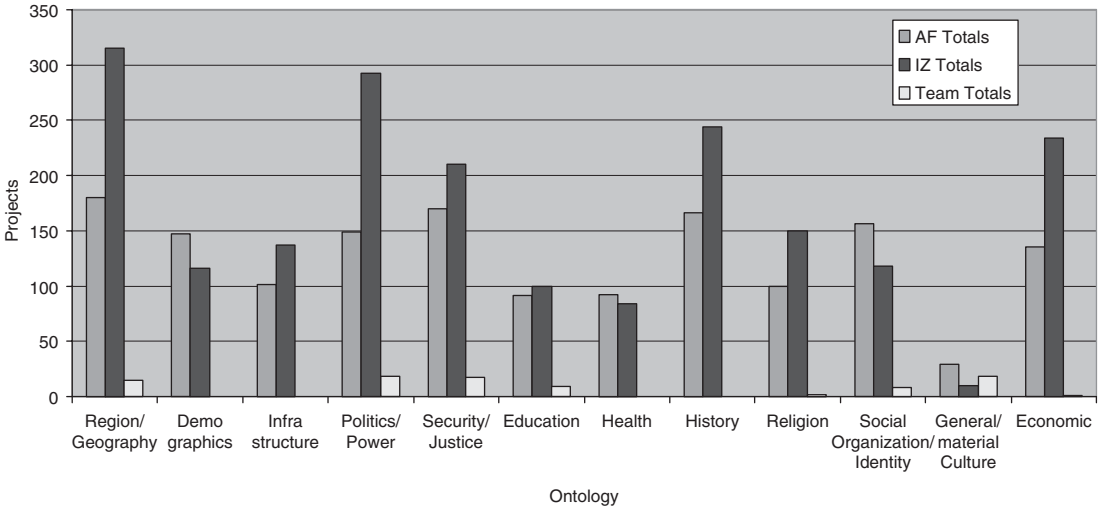


Fig. 9.1 Ontology pile sort totals.

common categories for research topics in both theaters. Similarly, education, health, and culture were less common topics for RFRs. The totals for team research projects (e.g., the research projects carried out by teams on the ground in country) indicated the importance of the concepts of geography, politics, security, and social organization in a

manner consistent with the RFRs. However, teams appeared to be conducting in-theater research on education and culture at the request of units, despite the fact that this trend was not reflected in the RFRs. Our conclusion here was simply that information on culture and education was available in theater and could be answered without an RFR.

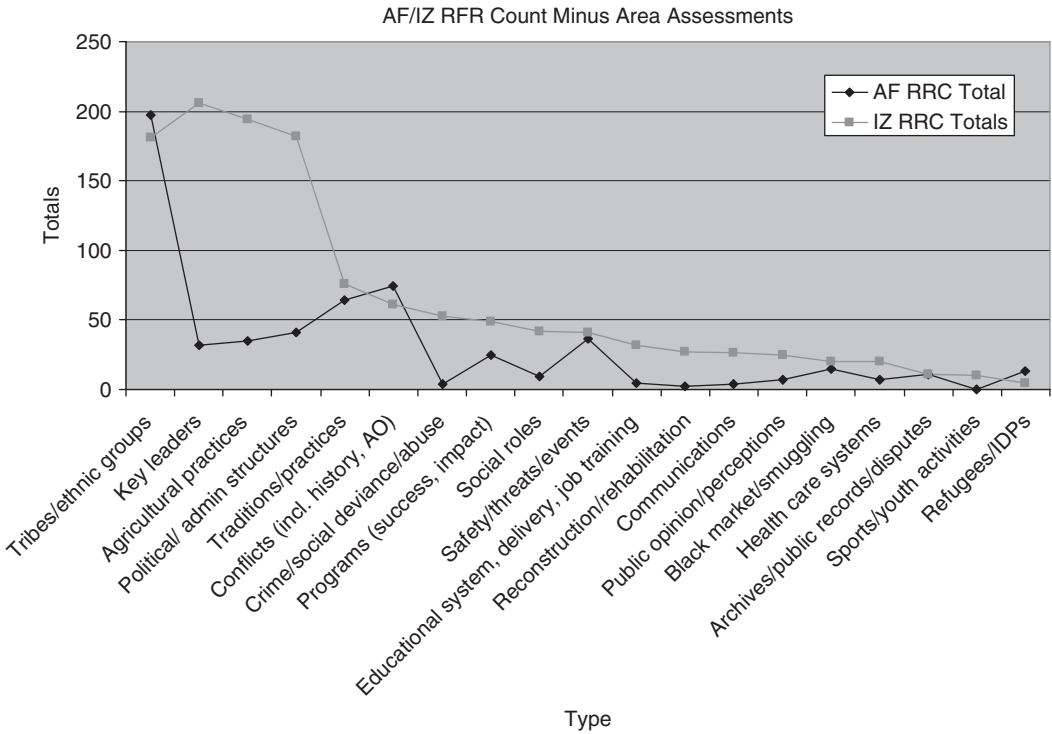


Fig. 9.2. Afghanistan/Iraq RFR count minus area assessments.

The Afghanistan and Iraq RFR counts indicated that in both theaters, *tribes* and *ethnic groups* were critical topics for supported military units. In the ontology, tribes and ethnic groups would both be captured under *social structure*, which emerged as one of the key concepts for HTS. Other concepts that had salience for both theaters included *security*, *political/administrative structures*, *agriculture*, and *key leaders*. Surprisingly, Iraq teams requested research much more commonly on key leaders, agriculture, and politics than did the Afghanistan teams. While these concepts were well represented as a percentage of requests from that theater, in raw numbers they appeared to be less critical in Afghanistan than in Iraq. Our interpretation of this apparent anomaly was simply that much of the research on these particular topics was being carried out by teams in theater, rather than appearing as RFRs. The reason for this pattern might have been that less secondary source material exists about the society of Afghanistan than that of Iraq, and thus the research could only be conducted on the ground. Another reason for this pattern might be that research on key leaders, agriculture, and politics involved short research timelines: if a unit requests input from the team within 24 hours, there is generally not enough time to execute the RFR cycle.

Data Set 2

The second data set that was examined to determine what commanders want to know included products produced by HTTs as reported to the HTS Program Development Team (PDT) in May and June of 2009. The PDT is a multifunctional research and management group consisting of social scientists, program senior staff, and military members. The PDT reporting process was not mandated by the Army, but was initiated by the HTS program manager as a means to better understand emerging practices, evolving requirements, and “lessons learned.” Given that HTS is a new, experimental program, the reporting process is a means to gather information about HTT performance and activities on the ground in Iraq and Afghanistan and use that information to improve recruiting, training, logistics, and so on. Secondly, the reporting process was intended to assess how effectively the program has met supported unit requirements, and to identify needed improvements. The PDT’s official mission is to:

manage organizational transformation through project evaluation and the development of change requirements to ensure HTS remains relevant and

continues to meet the needs of a rapidly changing environment; and to expand the understanding of HTS through engagement with external entities to facilitate the institutionalization of the HTS concept.

During its 2009 visit to Iraq, the PDT utilized a combination of instruments to conduct its lessons-learned review. Members of both the supported-unit staff and the HTT were asked to fill out surveys that covered a variety of topics, including training, logistics, work products, task flow, and so forth. A pair of PDT members interviewed each member of selected teams currently in theater, for at least two hours. A pair of PDT members interviewed available members of the supported-unit staff. These interviews were often much shorter, given the high operating tempo of the supported units and the limited time available to staff for optional interviews.

Although there were over 27 teams in Iraq in May and June, 2009, the PDT was only able to visit six teams due to logistical, manpower, and operational constraints. The PDT asked the teams to report the projects they had completed or were currently working on for the supported unit, rather than having the team provide a complete catalogue of work done since the team’s inception. (Some teams have been on the ground in Iraq since 2007 and are backfilled by individual replacements, while other teams are newly arrived. Thus, it should be noted that the project reporting is incomplete and does not reflect the total work done by the team over time.)

Projects conducted by teams in Iraq included the following:

- Conducting pre- and post-election surveys regarding evaluation of procedural fairness in support of the Iraqi elections in 2008.
- Providing assistance to an engineering platoon with a road-repair project to facilitate population movement to Najaf and Karbala, and identifying local community concerns associated with the construction.
- Researching the consequences to local communities of moving internally displaced people out of a federal housing unit (in conjunction with U.S. Agency for International Development).
- Facilitating a relationship with a Sons of Iraq (SOI) leader, leading to the recovery of a large weapons cache.
- Surveying local community perceptions of the SOI, using both SOI members and the general population as respondents.

- Assessing the local business climate, including factory production, retail and distribution networks.
- Organizing a conference on agriculture with local tribal leaders and division staff to examine how Iraqis envision the future of agriculture and how Iraqi Security Forces and Coalition forces can help.
- Conducting surveys and qualitative interviews on women’s access to and understanding of health care issues, including maternal health.

As indicated above, these projects include both qualitative and quantitative research in addition to facilitation of contacts with key community leaders, conference organizing, and “operational” activities (such as assistance with a road-repair project).

Working from this list, the projects were grouped according to general categories, and then a frequency count was performed. (See Figure 9.3.)

As the frequency count of the Iraq team project as reported to the PDT indicates, social structure, political system, the interests and grievances of the population and economics are the most commonly completed projects undertaken by teams in Iraq. These results are consistent with the Iraq RFR counts, if tribes and ethnic groups are grouped within the social structure category and if agriculture is grouped within the economic category. The topic of key leaders appears to be a more commonly requested topic for background research by the RRC than as a project topic for teams in Iraq.

Conclusions

What commanders want to know is remarkably consistent between theaters and over time: the prime categories of knowledge are social structure;

the political system (both formal and informal); the economic system (both formal and informal); and interests/grievances (particularly pertaining to security, intra- and extra-group conflict, and administration of justice). These categories emerge from the analysis of RFRs and self-reported team projects and reflect both command-initiated and team-initiated research, and can be assumed to represent sociocultural knowledge that has operational relevance to military commanders on the ground.

Interestingly, “culture” in the broad anthropological sense (for example, as defined in *Army Culture and Foreign Language Strategy* as “the set of distinctive features of a society or group, including but not limited to values, beliefs, and norms, that ties together members of that society or group and that drives action and behavior”) has less salience than might have been anticipated. Despite the frequent use of the term in doctrine and by policymakers in Washington, D.C., “culture” appears to be less relevant than social structure, political and economic systems, and the grievances of the population in the context of the conflicts in Iraq and Afghanistan.

The categories presented here can be used to direct research assets to facilitate more efficient collection of sociocultural information. The danger, however, is that these categories may become yet another ontology that locks military units into a highly structured, decontextualized model of society, which then drives information-collection in the field. Collecting information merely to fill in the boxes on a worksheet so that data can be aggregated and sent up the chain in neat categories will not provide the contextual, dynamic sociocultural understanding that commanders seek. The concepts presented above must be combined with an inductive collection and analysis process that begins with

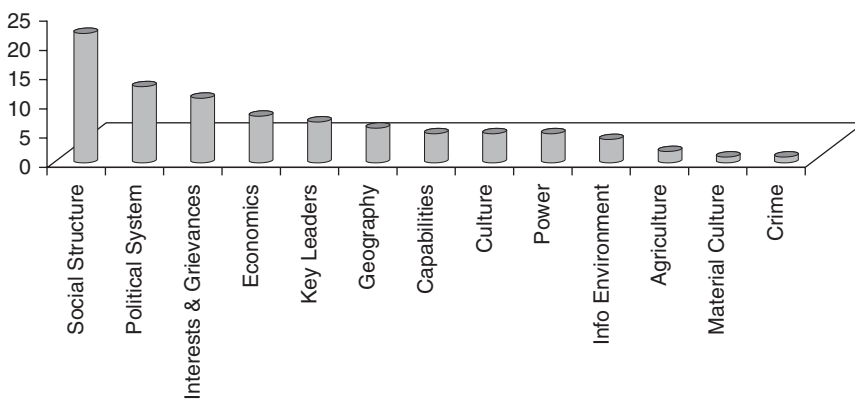


Fig. 9.3 Frequency count of team projects.

questions rather than categories. As Major General Michael T. Flynn, Matt Pottinger, and Paul D. Batchelor note in their paper “Fixing Intel: A Blueprint for Making Intelligence Relevant in Afghanistan”:

Emphasis on force protection missions by spy planes and other non-HUMINT [human intelligence] platforms should be balanced with collection and analysis of population-centric information. Is that desert road we’re thinking of paving really the most heavily trafficked route? Which mosques and bazaars are attracting the most people from week to week? Is that local contractor actually implementing the irrigation project we paid him to implement? These are the kinds of questions, more than questions about the enemy, that are going unanswered, and which military and civilian decision-makers in the field need help answering. (2010, p. 3)

Commanders need contextualized information and they need to collect it efficiently. Understanding what commanders want and need to know about the population facilitates this efficiency by identifying what is relevant and what is salient. A commander may then utilize his resources (such as HTTs) in a systematic way to inductively address gaps in knowledge that cannot be identified within his existing operational frame. When this happens, relevant information can change a commander’s fundamental understanding of the battlespace and the mission. With the civilian populace as the center of gravity for counterinsurgency operations, a decision-maker cannot consistently create informed plans or policy until they have a mechanism to collect what they do not already know, and what they don’t know they need to know.

Future Directions

We are left with a list of questions that must be answered in the future:

- What does an information-management system that is capable of recording unstructured data and assembling it into a localized ontological or taxonomic structure look like, and how can it be integrated into current military operations?
- What methods can be used to instruct company and team-level collectors in the absence of an HTT to ensure valid and reliable data collection without reference to preformatted information requirements and forms?
- What contextual variables or tags are the most important to tie to qualitative information to

ensure higher-level analysts have the necessary context to interpret information?

- What organizational changes must be made to create analytical shops in the command structure to handle the aggregation of qualitative sociocultural data that cannot be automated?
- What top-level components should be present in a data model designed to handle sociocultural data and empower both a “data first” (as opposed to a “taxonomy-first”) reporting process without over-tasking subordinate units?
- How do command relationships affect the potential output of sociocultural collectors and analysts? What changes in current Army doctrine should be made to empower them, and to whom should those analysts be attached or assigned?
- How do the command relationships and non-lethal engagement strategies in the Army and State Department affect the creation and development of formal and informal political, military, and social structures in the host nation?
- How can the use of semantic networks and other higher-end linguistic computer systems aid in the aggregation of dissimilar unstructured data to reduce the analytical load?
- What would a model for combat operations that covers the entire spectrum of conflict and phases of operation look like? Can such a model be used to more effectively integrate operations in a joint environment and ease the transition between general war and stability operations?

References

- Carpenter, T. (2009). Petraeus speaks at K[ansas]-State: Army official talks about the tasks of a modern soldier. *Topeka Capital-Journal*, April 28. Retrieved from http://cjonline.com/news/2009-04-27/petraeus_speaks_at_k_state.
- Coles, J. P. (2005). *Cultural intelligence and joint intelligence doctrine*. Retrieved from www.au.af.mil/au/awc/awcgate/ndu/jfsc_cultural_intelligence.pdf
- Erwin, S. I. (June 2004). U.S. military training fails to grasp foreign cultures, says Rep. Skelton. *National Defense Magazine*. Retrieved from www.nationaldefensemagazine.org/issues/2004/Jun/U.S._Military.htm.
- Evans-Pritchard, E. E. (1940). *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford: Clarendon Press.
- Flynn, Michael T., Pottinger, Matt, and Batchelor, Paul D. (2010). *Fixing intel: A blueprint for making intelligence relevant in Afghanistan*. Washington, D.C.: CSIS.
- Human Terrain Team member (2009). Personal communication.
- Mead, Margaret, and Metraux, Rhoda. (2000). *The study of contemporary Western cultures. Vol. I: The study of culture at a distance*. Oxford: Berghahn Books.

- Joint Forces Command, PMESII Systems Considerations (2005). PowerPoint briefing, v. 3.
- U.S. Agency for International Development Office of Military Affairs (2008). *Tactical Conflict Assessment and Planning Framework (TCAPF)* PowerPoint Presentation.
- U.S. Army (2003). Field Manual 3-05.401, *Civil Affairs Tactics, Techniques, and Procedures*. Retrieved from <http://www.globalsecurity.org/military/library/policy/army/fm/3-05-401/index.html>.
- U.S. Army (2006). Field Manual 3-24, *Counterinsurgency*. Retrieved from www.usgcoin.org/library/doctrine/COIN-FM3-24.pdf.
- U.S. Army (2006). Field Manual 3-05.40, *Civil Affairs Operations*. Retrieved from <http://fas.org/irp/doddir/army/fm3-05-40.pdf>.
- U.S. Army (2003). Field Manual 3-05.401, *Civil Affairs Tactics, Techniques, and Procedures*. Retrieved from biotech.law.lsu.edu/cases/nat-sec/fm3-05-401.pdf
- U.S. Army (2008). Field Manual 3-07, *Stability Operations*. Retrieved from usacac.army.mil/cac2/repository/FM307/FM3-07.pdf
- U.S. Department of Defense (2005). *Defense Language Transformation Roadmap*. Retrieved from http://www.uscg.mil/hr/cgi/downloads/DOD_roadmap.pdf.
- U.S. Department of Defense (2005). Directive 3000.05, *Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations*. Retrieved from www.fas.org/irp/doddir/dod/d3000_05.pdf.
- U.S. Department of Defense (2006), Directive 2000.19E, *Joint Improvised Explosive Device Defeat Organization (JIEDDO)*. Retrieved from https://www.jieddo.dod.mil/.../20060214_DoD_Directive_JIEDDO.pdf.
- U.S. Joint Chiefs of Staff (2009). Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment*. Retrieved from http://www.dtic.mil/doctrine/new_pubs/jp2_01_3.pdf
- U.S. Joint Chiefs of Staff (2007). Joint Publication 2-0, *Joint Intelligence*. Retrieved from http://www.dtic.mil/doctrine/new_pubs/jp2_0.pdf.
- U.S. Joint Chiefs of Staff (2006). Joint Pub 3-0, *Joint Operations*. Retrieved from www.dtic.mil/doctrine/jel/new_pubs/jp3_0.pdf.
- U.S. Joint Chiefs of Staff (2004). Joint Publication 2-01, *Joint and National Intelligence Support to Military Operations*. Retrieved from http://www.bits.de/NRANEU/others/jp-doctrine/jp2_01.pdf.
- U.S. Joint Forces Command Joint Warfighting Center (2004). *Doctrinal Implications of Operational Net Assessment (ONA)*, February 24, 2004. Retrieved from www.dtic.mil/doctrine/education/jwfc_pam4.pdf.
- U.S. Joint Forces Command Standing Joint Task Force Headquarters analyst (2006). Personal communication.
- Vego, M. N. (2006). Effects-based operations: A critique. *Joint Forces Quarterly*, issue 41, pp. 51-67. Retrieved from http://www.dtic.mil/doctrine/jel/jfq_pubs/issue41.htm

An International Perspective on Military Psychology

Jarle Eid, Francois Lescreve, and Gerry Larsson

Abstract

Modern military operations require interoperability and coalition efforts to succeed. The significance of human factors in future military operations signals a greater need for international collaboration and exchange in military psychology. A brief overview of the development of military psychology in three European countries reveals many striking similarities despite different historical trajectories and national priorities. Following from these national perspectives, a greater emphasis on international collaboration emerges. This chapter presents an overview of current forums for international dialogue and exchange in military psychology. Although this survey is not exhaustive, seven major venues for international exchange in military psychology are identified. In the final section the results from a web-based survey on military psychology with 314 respondents are presented. The survey reveals that the International Military Testing Association and the American Psychological Association–Division 19 are the best-known forums for military psychology. Most respondents disagree with the statement that military psychology is heavily dependent on national conditions and consider international collaborative work to be important to helping them be effective in their job. In contrast, many respondents have few or no international interactions, probably due to budget constraints or a lack of recognition of the need by their supervisors.

Keywords: Military psychology, international, Belgium, Norway, Sweden, APA Division 19, EDA-ESM04, ERGOMAS, HFM, IAMPS, IMTA, ISMS

Modern military operations are more often than not conducted by coalitions and alliances. Since 1990, there has been a significant increase in the number of military operations requiring nations to contribute forces as part of a multinational alliance or coalition. Thus, the United Nations and the North Atlantic Treaty Organization (NATO) have emphasized that future military systems will need to interoperate with one another more effectively. Achieving and sustaining interoperability among diverse national military systems is not easily attainable and depends on technological, logistical, and human factors. Military psychology may play an important role in identifying those differences in the organizational and national cultures of contributing countries that could impact the operational effectiveness

of a multinational force. Military psychology could also play an important part in providing a better understanding of intercultural and cross-country differences that influence multinational military collaboration. Febbraro, McKee, and Riedel (2008) have suggested that cross-cultural differences in organizational factors, leadership and command, teamwork, predispositional and psychosocial factors, communication and information technology, and societal factors are crucial to the interoperability issue. In preparing for future military operations, military psychologists could contribute to interoperability by instilling greater cultural sensitivity and awareness through pre-deployment programs and on-scene consultation and training of coalition personnel. It is therefore our belief that international

collaboration and exchange in military psychology is not only an issue for the individual military psychologist, but equally important for national security, force protection, and ultimately the effectiveness of interoperability and the effectiveness of coalition forces. Furthermore, recent history shows that UN and NATO operations are often conducted in areas that are culturally distant from the involved forces in terms of language, customs, values, and religion. Military psychology, along with cultural anthropology, has a responsibility in helping the forces to better understand the opponent and the local population and to help the local population better understand and accept the presence and mission of the coalition forces.

Military Psychology in Sweden, Belgium, and Norway

Military Psychology in Sweden

Sweden has not been at war since 1809. Due to its neutral position, it also avoided fighting in the two world wars of the last century. This neutrality had a strong impact on the Swedish armed forces and the emerging branch of military psychology. From that chosen political position followed a necessity to be one's own master. This had two major implications. One was the buildup of a vast military industry; high-tech aircraft, for instance. The second was a full-scale use of the conscription system, which was compulsory for all men. If fully mobilized, Sweden, with a total population of about 8 million during the decades following the Second World War, could have fielded a force of about 800,000 men.

The fall of the Berlin Wall in 1989 and the new post-Cold War era have resulted in fundamental changes in the Swedish armed forces. Sweden is still formally not a member of a military alliance such as NATO, although nowadays there is a close collaboration. Being a member of the European Union, Sweden has the same rights and obligations as the other member countries and participates in European Union defense activities. For decades, Sweden has been one of the most active countries taking part in peace enforcement and peacekeeping operations headed by the UN. The military industry has become multinational. The numbers of the Swedish armed forces have been drastically reduced. Since 2010, it has been an all-voluntary force that, fully mobilized, would consist of about 30,000 well-trained and equipped soldiers ready to take part in multinational operations and another 30,000 being prepared to defend the homeland.

MILITARY PSYCHOLOGY—A BIT OF HISTORY

The start of military psychology in Sweden was very much focused on the development of psychological screening instruments to be used in selection. The Swedish armed forces needed systems that could be used on a large scale to get the right man in the right place. Intelligence testing began in the 1940s. A hallmark in that development was the establishment of the Military Psychological Institute in 1955.

With the Military Psychological Institute as the organizational base, two different branches of military psychology began to develop. One dealt with *selection* (and it still is important). In addition to intelligence tests, psychologists were employed to evaluate leadership capacity and mental stability in all conscripts. Soon, tests were developed to be used in the selection of military officers at successively higher levels. Psychologists also began to play a more active role in field units. The field work has not expanded very much, however, although losses and severe stress reactions among soldiers and officers in international operations characterized by irregular warfare may change this picture quickly.

The second major branch of military psychology that developed from the Military Psychological Institute in the 1960s was *human factors*. Here, two different approaches can be identified. One has been more practical and hands-on; namely, psychologists taking part in boards of accident investigations, particularly in the Swedish Air Force. The second approach has been strongly related to applied research in a variety of ergonomic issues. The design of display screens in aircrafts is an example, drawing on knowledge from perception psychology.

APPLIED RESEARCH, WITH AN EMPHASIS ON “APPLIED”

In 1974, the Military Psychological Institute was incorporated into the Swedish National Defense Research Institute, and formed the Department of Behavioural Sciences. At that time the National Defense Research Institute was a huge organization by Nordic standards, with some 1,500 employees. Within the new department, psychology was integrated with educational science and sociology.

In a narrow sense, this new organizational setting could be said to be the cause of “the death” of military psychology in Sweden. In a broader sense it was much the contrary, however. The increased focus on research also meant that psychologists took on new tasks. Military leadership began to attract an interest and psychological aspects of stress and risk came

to the fore. Advising on selection still was a major role. Thus, the tasks expanded and the institute's identity changed. The role of being a military psychologist gradually changed to that of being a defense researcher.

In 1994, the Department of Behavioral Sciences was lifted out of the National Defense Research Institute and incorporated as the Department of Leadership in the Swedish National Defense College. The change had two major implications. First, being part of a college, it was natural that education became part of the everyday agenda. Second, now the civilian crisis-management domain also became an eligible arena. This meant doing research on and education for civilian authorities involved in the societal handling of a variety of potential crises.

In 2008, a new organizational change took place. The Swedish National Defense College was moved from the Ministry of Defense to the Ministry of Education. Formally this means that it is now equivalent with other Swedish universities and colleges. The change has meant that increased attention must be paid to a challenging act of balance. Two masters need to be served now. On one hand, the Swedish armed forces and the civilian crisis-management system still want practically useful research results. On the other hand, the academic evaluation system now counts; that is, the number of peer-reviewed publications, citations, and so forth.

Within the field of psychology, the organizational change has been accompanied by a change in the educational profile of the employees. Earlier, until about the mid-1990s, virtually everybody was a registered psychologist, several with clinical training. Now the picture has changed. The new generation of employees has psychology as their main subject and they do take their doctorates in psychology. However, they are not registered psychologists and do not identify with the label "military psychologist." So where does the profession stand today and where does it appear to be heading?

MILITARY PSYCHOLOGY IN SWEDEN— CURRENT AND FUTURE TRENDS

Although military psychology as a concept and source of identification appears to be long forgotten in Sweden, psychology plays an important role in several military areas and as a basis of personnel recruitment. In the foreseeable future, three orientations can be predicted to play a major part. The first and smallest in terms of numbers is the group who continue to work in the human factors tradition

along the two lines presented above. The second involves practical work with selection and psychological support. Both these orientations will mainly be carried out by registered psychologists.

The third present and future direction is the one that is hosted by the Swedish National Defense College. As noted above, this research and education serves the military system as well as the civilian crisis-management system. On the military side, the main focus is psychological aspects of international operations. Examples of research areas are recruitment and selection, irregular warfare, direct and indirect leadership under stress, risk perception and risk communication, and psychological support. Most of the research is interdisciplinary. In addition to educational science and sociology, a closer relationship with researchers from the military sciences and political science is now emerging.

So, to sum up, in Sweden, military psychology rose, changed considerably, and is now alive and well under different labels. Perhaps someday the pendulum will swing again, meaning that psychology in the defense system will be more purely psychological once more. Or is this just nostalgic thinking from three authors who started their careers as military psychologists?

Military Psychology in Belgium

In the early 1980s, there were fewer than ten psychologists working for the Belgian armed forces. Nowadays, there are approximately eighty of them employed by the Belgian defense. This is a remarkable evolution, especially if one considers that the overall numbers of the Armed Forces shrank from roughly $\pm 100,000$ to $\pm 40,000$ in the same period. In this section, we will try to identify the main causes for that evolution and indicate in what new areas psychologists work. Finally, we will address some issues concerning the management of psychologists within the Belgian defense.

In the 1980s and long before that, the role of psychologists in the Belgian military was confined to three specific areas: selection, therapy, and education. The largest group dealt with selection, not so much as practitioners but as researchers and developers. The military's techniques for test-development and validation required specific knowledge that only psychologists could provide. So selection was a niche where psychologists were relatively unchallenged in their position¹. Clinical diagnosis and psychotherapy have been around for many years. The traditional populations to be helped by the clinical psychologists included conscripts and

service members who suffered from psychological problems that were quite similar to those encountered in the overall society. A few psychologists were employed for education at the Royal Military Academy. They were mainly there to teach general psychology and leadership principles.

Since the 1980s, several factors have contributed to the growth of the number of psychologists employed by the Belgian military. These mostly relate to operations abroad. The first factor is a regrettable story. It started when the media published pictures showing Belgian paratroopers misbehaving during the UN operation "Restore Hope" in Somalia, in 1993. The most disturbing picture showed two soldiers holding a young boy over a fire. That led to an internal inquiry, and amongst other things, it was decided to introduce personality assessment for soldier-applicants and to upgrade the level of selection interviewers from noncommissioned officers to officers. Later, partially under the influence of a new legal rule in one of the Belgian regions, it was decided that these selection officers should be psychologists.

A second factor is a consequence of the increased number of deployments since the 1990s. Progressively, the need arose to provide adequate psychological support to the deployed troops and their families at home. Since chaplains, who historically had a similar role, were no longer available in sufficient numbers, commander of the Army decided to create "Counselors in Mental Readiness" for that purpose. In the beginning, these were regular officers who got limited training. Over time, however, the concept of provision of psychological support spread in the civilian society. Nowadays, whenever something terrible happens (a railroad accident, the collapsing of a building, or the killing of babies in a nursery by a madman, as recent examples in Belgium), public opinion and the press demand that the victims get immediate psychological support. Authorities who fail to provide that kind of assistance would be criticized. In the civilian world, the provision of psychological support is typically seen as a job for psychologists. That evolution probably helped the Director General Human Resources decide that the Counselors in Mental Readiness had to be psychologists, too. The clinical side of psychology within the Medical Service of the Belgian Defense also took part in that evolution. A center for crisis psychology was created in order to provide immediate response when something happened in Belgium or abroad, and the second- or third-line therapeutic services grew to

cope with the increased numbers of post-traumatic stress disorder.

A third factor also results from the type of operations the Belgian military have been conducting during the last decades. Most, if not all, operations were conducted in regions with a culture quite different from that known to the Belgian soldiers. In addition, a number of operations were conducted in areas where the local population could not be considered "friendly." For the success of such operations, it is key to understand the local population and improve communication with them. For that purpose, the old concept of "PsyOps" (psychological operations) was reviewed and developed into the newer concept of "Information Operations." And although the "Psy" no longer appears in the name, it is quite obvious that psychologists have a background well-suited to being effective in information operations. So in Belgium, these positions were created for psychologists.

In conclusion, over the course of the last thirty years, the traditional roles of psychologists in the Belgian military have been extended with additional ones, causing a significant increase of their numbers. That this happened during a severe reduction of overall numbers in the military illustrates the increased importance of psychology for the modern military.

This, alas, does not mean that psychologists in the Belgian military live glorious days. Traditional specialist trades in the military such as medical doctors, dentists, pharmacists, or veterinarians always had a special legal statute granting those specific privileges (including financial rewards, career development opportunities, and promotions). Psychologists (or other specialists such as IT-specialists or jurists) have no special statute yet. This means that in terms of career development and promotion, the military psychologists are considered regular career officers. In former times, personnel managers stated it clearly: "If you want to be promoted as a senior officer, you have to leave psychology!" The reason was quite simple: to be promoted to major, a military psychologist had to take a one-year higher staff course and be examined in his branch (Infantry, Armor, Artillery, or whatever branch he was assigned to) in competition with regular officers belonging to that branch and having the appropriate experience. Needless to say, this proved disastrous for specialists, and many psychologists never made it. More recently, psychologists can get the chance to partially replace the staff course by a master-after-master university course. That helps, but unfortunately this is

not a granted right, and many psychologists never get approval to follow that path. As a result of the current system, the highest-ranking military psychologist in Belgium is a lieutenant-colonel, whereas the highest-ranking medical doctor is a major general! This lack of perceived procedural—and hence distributive—justice tends to accentuate the retention problem with young military psychologists.

Military Psychology in Norway

The roots of military psychology in Norway can be traced back to the Second World War, when Norway was occupied by German forces from April 9, 1940, to May 8, 1945. During these five exceptional years, the Norwegian king and prime minister established an exile government in London with close links to the neutral neighboring country of Sweden as well as transatlantic connections to Britain and the United States and Canada (Hansen, 2006).

During the exile years, the Norwegian military command was heavily influenced by British and American procedures and methods for selection of soldiers. A medical commission established by the Norwegian military command in London described a framework for new classification procedures where more emphasis would be put on measuring intelligence and personality profiles of the new Army recruits, which they recommended should be introduced in Norway after the war. Interestingly, a parallel process took place overseas in the air force training base of “Little Norway” in Canada. Here the Norwegian Air Force command was influenced by American procedures and started to translate and apply Canadian test batteries to select Norwegian aviators.

After the war, the new psychological testing and assessment unit was established in 1946, under the stewardship of the first Norwegian chief psychologist, who was an air force aviator during the war. In the 1950s, a joint psychological service was established in Oslo, independent of the medical command. Later some military psychologists also were employed directly by the army, air force, and navy. Since Norway had a conscription service, the need for screening, classification, and selection was evident. About 30,000 men were drafted every year and had to undergo psychological testing and selection as part of their medical selection. The selection tests included algebra, word comprehension, English, technical and practical reasoning, and general ability. For instance, the J. C. Raven “Progressive Matrices” were used for many years to assess general mental abilities. In the late 1970s and 1980s, the

military psychologists collaborated with academic institutions such as the Department of Psychology at the University of Oslo, in order to translate and validate new test methods and test protocols. The “Defense Mechanism Test” was evaluated as a possible new test for pilot selection, and a Norwegian version of the Minnesota Multiphasic Personality Inventory was tested on military recruits.

ASSESSMENT, SELECTION, LEADERSHIP TRAINING, AND CLINICAL PSYCHOLOGY

In addition to testing and selection of personnel, the military psychologists were assigned new tasks in the 1970s when more emphasis was placed on military leadership, training, and officer selection. The military psychologists were soon called upon to assist in developing and assessing new training methods to develop interpersonal skills, leadership, and greater self-awareness in military leaders. This led to the development of the so called A, B, and C training seminars—each lasting about one week. The A-seminar was the most basic training, intended for junior officers or enlisted personnel with limited but still important leadership functions. During the highly intensive A-seminar, the main focus was on instruction, education, and training principles. The A-seminar also presented practical lessons and opportunities to get feedback on one’s own instruction and teaching from fellow students. After completing the A-seminar, some officers were then selected to attend the B-seminar. This was also an intensive one-week experience where participants were faced with a number of practical group exercises and feedback sessions. Compared to the A-seminar, the B-seminar gave the participants a very personal and immediate sense of group processes, conflict, and challenges associated with the leadership of group processes. In the early 1970s, these seminars gained wide recognition as an innovative and cost-effective new approach to leadership training that also was applied to civilian settings. The C-seminar was run on an as-needed basis only to educate instructors and trainers for the B-seminars. In the C-seminar, the focus was on the individual, life story, and personal development areas.

In the late 1990s the central military psychology office was downsized and restructured. The leadership training programs were then reorganized and transferred to the service academies. Currently there are officers or civilian staff with background in military psychology at all Norwegian service academies and at the Norwegian Staff College. In addition to teaching psychology and leadership topics to new

officers, they also observe and participate in leadership training exercises.

Clinical and counseling psychology has been an important part of military psychology in Norway since the beginning. In an all-conscription system, medical selection and psychological evaluations were highly important. In addition, the military psychologists provided brief interventions and psychological support to conscripts and officers who were in need of brief psychotherapy. Today, the clinical psychologists are uniformed, and although they are not deployed with units abroad, many have frequent site visits and personnel evaluations of Norwegian forces in international missions. The clinical psychologists are organized in five regional medical support units associated with the Navy, Air Force, and Army, dispersed at different locations in Norway.

MILITARY PSYCHOLOGY IN NORWAY— CURRENT AND FUTURE TRENDS

Following from an increased Norwegian military commitment to UN and NATO requirements outside Norway, the selection, health service, and support for veterans and active-duty military personnel and their families have been high-priority issues leading to a more than 50% increase in the number of military psychologists in Norway. To sustain professional skills, many of them also have adjunct clinical positions in the civilian health care system or research positions at universities or district colleges outside the military. A notable issue is that a small but significant number of Norwegian active-duty officers over the last decade have been allowed to obtain doctoral degrees in psychology and education. These officers are attracted to the service academies or the Staff College or senior positions in the Department of Defense, providing more emphasis on and recognition of building an evidence-based practice in clinical support, training, and development issues (for an overview, see Johnsen & Eid, 2006). In line with the developments in Sweden and Belgium, military psychology in Norway has also changed considerably over the last two decades. In the future years we expect that international collaboration and exchange of research, selection, and testing, as well as evidence-based clinical procedures will be even more important than before in military psychology.

International Forums for Military Psychology

Military psychology tends to play a minor role in general, international psychological societies and conferences. Typically, its contributions are integrated in

broader themes such as health psychology, industrial and organizational psychology, and so forth. This has led to the establishment of a number of defense sector-specific arenas for collaboration and exchange in military psychology over the last five decades. In the following sections we present some of the most significant venues for professional dialogue and exchange, such as the International Applied Military Psychology Symposium (IAMPS); the American Psychological Association, Division 19 (Society for Military Psychology); the European Research Group on Military and Society (ERGOMAS); the International Military Testing Association (IMTA); the recently established International Society of Military Sciences (ISMS); NATO's Human Factors and Medicine Panel (HFM); and the European Defense Agency's Human Factors platform (EDA-ESM04). All these organizations will be described in the following sections from a military-psychological perspective.

The International Applied Military Psychology Symposium—IAMPS

In the summer of 1957, a two-day seminar in military psychology attracted about 200 psychologists from 15 European countries, the Near East, Canada, and the United States to meet at the Palais des Academies, Brussels. Of the 16 papers distributed at the seminar, four were from the United Kingdom, three from the United States, two from France, and one each from Belgium, Finland, Italy, Netherlands, Norway, Spain, and Sweden (Geldard, 1957). In the following years, it proved difficult to establish a permanent open international forum for exchange and collaboration in military psychology. It was not until 1963 that the International Applied Military Psychology Symposium (IAMPS) was launched by an initiative by the U.S. Office of Naval Research in London. Although loosely organized and highly dependent on individual initiative, this organization proved highly successful and is currently still running on an annual basis. Thus in 2013 the IAMPS meeting may celebrate its fiftieth anniversary.

In the early years, IAMPS took the form of a relatively informal forum for professional exchange among a relatively small group of participants. For instance, the eleventh IAMPS symposium took place at the Office of Naval Research (ONR) in London in May 1975 with 23 participants from 12 countries (Belgium, Canada, Denmark, Finland, France, Great Britain, Israel, Italy, Netherlands, Sweden, the United States, and the Federal Republic of Germany). From the proceedings, it appears that

the meeting was unstructured inasmuch as few formal papers were presented; however, discussions covered areas related to differences among countries in topics such as intake and retention, leadership, and training issues (Lester, 1975).

In the early 1960s and 1970s, the IAMPS forum evolved into an important annual forum for information exchange among European and North American military psychologists. Ten years after the London meeting, the Twenty-first International Applied Military Psychology Symposium was held from June 17 through 21, 1985, hosted in Paris by the French armed forces. It was attended by military psychologists from 19 countries, which was the largest number of countries in attendance to date. The symposium was now more formalized and contained presentations on research on selection and utilization of personnel, basic measurement problems, personal and social aspects of military training and performance, coping with stress, panic, and collective behavior (Snow, 1985). After the end of the Cold War, the scope of attending countries was widened (see Table 10.1). IAMPS was also conducted in new countries like Croatia, the Czech Republic, Russia, and even Kyrgyzstan. The Thirty-sixth IAMPS meeting in Croatia in September 2000 was attended by delegates from 23 countries, and the following IAMPS meeting in Prague in 2001 attracted approximately 85 participants representing 20 countries.

From the early years, the main focus of IAMPS has been to enable a dialogue among international military psychologists to share the latest applied research

advances as well as information on organization-specific procedures and to lay the groundwork for collaboration. Over the years the IAMPS forum has evolved into a more structured form wherein empirical research, case reports, and various applications of psychology in the military domain are presented. Although some IAMPS meetings focus on specific topics (the 2010 IAMPS meeting [Malta] focused on military leadership and the 2011 IAMPS [Vienna] focused on retention issues), a wide range of topics is typically covered. Recurring topics include personnel selection and classification, manpower planning, leadership, stress, training, simulation, and human factors. For information about the next upcoming IAMPS meeting(s), the website <http://www.iamps.org/> contains useful information.

The American Psychological Association, Division 19

Division 19—Society for Military Psychology encourages research and the application of psychological research to military problems. Although the Society for Military Psychology is a division of the American Psychological Association, international military psychologists who share an interest in psychological issues pertaining to military personnel and their families are most welcome to join the Society. Since this chapter's authors represent European countries, this brief introduction to Division 19 should be seen as an outsider's view of the society. The roughly 600 members of Division 19 are about equally divided between clinical and research psychologists. The society includes among its members clinical and counseling psychologists, experimental psychologists, human factors engineers, industrial psychologists, and social psychologists. The Division presents four annual awards at the APA convention, including the Yerkes Award for contributions to military psychology by a non-psychologist, plus two student awards, one of which is a travel award. Members receive the journal *Military Psychology* and the newsletter *The Military Psychologist*, published twice a year. Information about Division 19—Society for Military Psychology, including information about membership, can be found at www.apadivision19.org.

The European Research Group on Military and Society (ERGOMAS) and the International Society of Military Sciences (ISMS)

The European Research Group on Military and Society began its activity in 1980, much as a

Table 10.1 An overview of IAMPS meetings after the millennium

2000	Split, Croatia	2007	Bishkek, Kyrgyzstan
2001	Prague, Czech Republic	2008	Saint Petersburg, Russia
2002	Amsterdam, Netherlands	2009	Riga, Latvia
2003	Brussels, Belgium	2010	Sliema, Malta
2004	Oslo, Norway	2011	Vienna, Austria
2005	Washington, D.C., USA	2012	Slovenia
2006	Berlin, Germany	2013	[Location not yet selected]

European response or sister organization to the American society Inter-University Seminar on Military and Society. The dominating academic disciplines are political science and sociology, but there has also been an open space for psychology (see below). Membership in the ERGOMAS is individual, just like in any other scientific society, and biannual conferences are open to everybody.

The International Society of Military Sciences is of a later origin. After a couple of years of preparations, the society was established in 2008. In the ISMS case, membership is institutional—not individual. Funding members are the military academies of Austria, Canada, Denmark, Finland, the Netherlands, Norway, Sweden, and the Baltic Defense College (Estonia, Latvia, and Lithuania). The overarching intention is to further research and academic education in military arts and sciences in the broadest sense. The society is open to military academies and individuals other than the founding ones. A main activity is an annual international conference. The first was held in 2009 in Amsterdam.

The lifeblood of both the ERGOMAS and the ISMS is a number of thematic working groups. This is where military psychology has found a place. Although some colleagues are active in other working groups, most can be found in the leadership area. Thus, one of the ERGOMAS working groups is called “Cohesion, Morale and Leadership.” A similar working group in the ISMS is called “Leadership, Command and Control, and Basic Competence.” Membership in the working groups is individual and the groups could be described as “all voluntary forces.”

Thus, there are now two related research networks, both of which include working groups on leadership and kindred issues. This opens up new possibilities of multinational studies with strong research designs. Instead of doing more or less the same kind of research in isolation, researchers can now build on a large pool of ideas, experiences, and resources. Occasionally, even true multi-center designs may be applicable. An example of this is a multinational project started at the ERGOMAS conference in Slovenia in 2002. It ended up with a five-nation study on young military officers’ development as leaders (Larsson et al., 2006; see Chap. 15 for a summary). Looking at it from a purely academic point of view, these kinds of research designs are much desired. Their aggregate value is almost always higher than the contribution of smaller, single studies. To illustrate, one of the reasons behind the success of medical research appears to be

the strong effort they put into creating networks of highly competent researchers in collaboration. In our opinion, military psychology has a lot to learn from this approach, and the aforementioned working groups provide us with challenging opportunities to follow this lead.

A drawback of much multinational research, on the other hand, is that one may miss or underestimate the importance of local historic, cultural specificity. Another problem is that this kind of research inevitably takes longer than isolated nation-based studies. Sponsors of research may be reluctant to wait longer for results. By and large however, the pros could usually be assumed to outweigh the cons. It may not suit all research problems, but when it does the gains can hopefully be most rewarding. On the personal side, taking part in this type of multinational group of colleagues can also be a great learning experience.

The International Military Testing Association—IMTA

The International Military Testing Association celebrated its fiftieth anniversary in Amsterdam in 2008. Over the years the IMTA evolved from its modest beginnings as an organization addressing enlisted job-proficiency evaluation to its current status as a significant venue for discussing testing, occupational analysis, training technology, human factors, leadership, manpower trends, and organizational behavior. The Military Testing Association (MTA), as it was called then, evolved quickly after its start in 1959 as a three-day conference of some 60 representatives of the U.S. military services to discuss “areas of common interest in the field of enlisted job-proficiency evaluation.” Two major trends characterize the history of IMTA: one is related to the topics of the presentations and the other to the participants at the annual conferences. Whereas “testing” used to be the core topic of the association—lots of attention was for instance devoted to Item Response Theory and Computer Adaptive Testing—the addressed topics diversified progressively and nowadays cover most if not all areas of military psychology. The attendance broadened as well. The MTA started as a U.S.-only association of research organizations. Later, new members were accepted, and in 1993 the steering committee decided to change the association’s name to the *International Military Testing Association*. Nowadays, the IMTA counts 21 member organizations from 17 different countries. The main activity of the IMTA is the organization of annual conferences. During the

last ten years, these were held in the United Kingdom, Australia, Canada, the United States, Belgium, Singapore, The Netherlands, Estonia, and Switzerland. Usually, the conferences offer papers and symposia in three simultaneous tracks during three days, and they attract 150 to 200 delegates, mostly military psychologists. Occasionally, conferences have been held in conjunction with a workshop of the NATO Human Factors and Medicine Panel. To find out more about the IMTA, the reader may refer to www.IMTA.info. The website is also the repository for all conference proceedings, which can be downloaded free of charge.

Military Psychology in NATO: The Human Factors and Medicine (HFM) Panel

In the late 1990s, NATO decided to merge two of its major research bodies: the Defense Research Group (DRG) and the Advisory Group for Aerospace Research and Development (AGARD). This resulted in the creation of NATO's Research and Technology Organization (RTO), which started in 1998. The RTO is supported by the Research and Technology Agency in Paris and encompasses three levels: Level 1: the Research and Technology Board; Level 2: six technical panels, "Modeling and Simulation" and "Information Management"; and Level 3: technical teams by which the research is conducted. Activities pertaining to military psychology are essentially concentrated in the Human Factors and Medicine Panel (HFM) at Level 2 and its associated technical teams at Level 3.

It is interesting to note how HFM was started. At the end of 1997, preparatory meetings were held for the planned Level 2 panels. So, the preparatory meeting of the Human Factors Panel, as it was called then, took place in December 1997 at NATO Headquarters in Brussels. Most of the delegates were the planned representatives for the HFM Panel. These were designated by the participating nations, and for some reason, a very high proportion of them were former members of the Aerospace Medical Panel (AMP) of AGARD. As a result, the research program in the early years of HFM was heavily loaded with medical aviation topics. The activities of the panel were divided in three areas: operational medicine, human protection, and human factors that primarily dealt with the man-machine interface. There was very little room for behavioral sciences research. Fortunately, the few psychologists in the panel were quite effective in proposing research topics and having them approved by the panel. Gradually, the dominance of aviation

medicine is declining. Nowadays, an additional area named "Human Effectiveness" is particularly active.

Some of the psychological topics that were addressed by the panel are: "Adaptability in Coalition Teamwork," "Recruiting and Retention of Military Personnel," "Effective Collaboration in Joint, Multinational, Multi-agency Teams and Staffs," "Psychosocial, Organizational, and Cultural Aspects of Terrorism," "Measurement of Effectiveness of Information Operations and Psychological Operations," "Stress and Psychological Support in Modern Military Operations," "Mental Health Training." This is just a small sample of the many, many activities organized by the HFM Panel. A detailed list and many reports can be found on the website at <http://www.rto.nato.int/abstracts.aspx?RestrictPanel=HFM>.

In conclusion, NATO's Human Factors and Medicine Panel developed into a very valuable platform to foster and coordinate research projects related to military psychology. In most cases, NATO membership is not required to actively participate in research projects, for there are many agreements between NATO and particular countries or groups such as the "Partnership for Peace" countries or the "Mediterranean Dialogue" countries.

Military Psychology and the European Defense Agency—EDA

The European Defense Agency (EDA) was established in 2004 to support the member states and the European Council in their effort to improve European defense capabilities. The EDA includes a Research and Technology Directorate, which is responsible for the Agency's goal of enhancing the effectiveness of European defense research. To ensure that research and technology efforts are aligned with agreed capability needs, the Agency has developed a series of "CapTech" networks. Each of them focuses on a particular military *capability* and the *technologies* associated with it, and brings together a network of experts drawn from member states, industry, research institutes, academic institutions, and agencies (international, European and national). One of the CapTechs, Environment, Systems and Modeling #04 (ESM04), is devoted to human factors and chemical, biological and radiological protection. It is interesting to note that the EDA inherited the research capability from the former Western European Armaments Group (WEAG) of the Western European Union. That organization was essentially technology-oriented,

and when EDA was created, the need was felt to add a forum specifically dedicated to human factors. That became the ESM04, which originally was named “Human Factors.” Unfortunately, later the CapTech’s responsibility was enlarged to include medical and CBRN topics, which inevitably diluted the attention originally given to human factors. The main activities of the ESM04 are to hold workshops and to foster, organize, and fund collaborative research projects.

The ESM04 is a young organization that still struggles to obtain recognition and support within the military psychology research community. We see two possible reasons why ESM04 is currently lacking the success it is entitled to hope for. First, partly because of the inheritance of WEAG, the Research and Technology Directorate is primarily technology-oriented. Interest in human factors or broader, behavioral sciences is modest, and the inclusion of medical and CBRN responsibilities into the ESM04 CapTech is illustrative. Secondly and most importantly, there is a large overlap between ESM04 and NATO’s Human Factors and Medicine Panel. The overlap concerns not only the topics of interest to both organizations, but also the resources they can draw upon in terms of researchers and funding. The obvious solution to the problem is a close collaboration between NATO and EDA. Unfortunately, because of potential competition issues in the areas of technology development and armament procurement, the two bodies are quite reluctant to cooperate. The resulting potential duplication of research efforts is regrettable for the soldiers in the field as well as for the European taxpayer, and we only can hope for improvement in the future. For additional information, see the CapTechs’ web page at <http://www.eda.europa.eu/Aboutus/Howweareorganised/Organisation/RandTdirectorat/CapTechs>.

Current International Collaboration and Dialogue

A decade ago, Adler and Bartone (1999) reported results from a pilot study exploring international differences in military psychology across 23 countries. Their study revealed cultural differences in the role of psychologists in the military organization and on deployment, as well as in the degree of professional isolation. Cultural similarities included the ambivalent response to the mental health field by military leaders, the use of psychology as a prevention tool, and the degree of interest in international contact and exchange. From this exploratory study

Adler and Bartone concluded that there is a great need for more international exchange and opportunities for cross-cultural research in military-psychology-related fields.

This section reports the results from an adaptive web-based survey held in March and April of 2010 on military psychology. While Adler and Bartone (1999) primarily targeted European military psychologists in their survey, we have taken a slightly different perspective in targeting potential respondents as broadly as possible. We were lucky to be able to use the mailing lists of different organizations previously described, including APA Division 19, and could ensure that the survey was forwarded to the military psychologists of Australia, Belgium, Canada, Croatia, Estonia, Germany, Norway, Singapore, Sweden, and The Netherlands. There is however no way to guarantee that the respondents to the survey are entirely representative of the international community of military psychologists. We only can testify that efforts were made to avoid biased results. The presented data are based on the valid responses of 314 respondents from 33 different countries.

From Figure 10.1: the sample in this survey is almost equally divided between civilian (33%), uniformed (30%), and social scientists/not specified (37%). It is perhaps surprising that the proportion of uniformed military psychologist is not higher, although this might also depend on the occupational roles they have in their armed forces.

As Figure 10.2 below shows, a relatively low proportion (17%) of this sample defines their primary work role as clinical/mental health professionals, while the majority (59%) see themselves as primarily involved in research, training, and development in the field of military psychology. This relatively low proportion of clinical psychologists could indicate that our sampling procedure has favored those involved in professional training and development—or that this group will be more inclined to respond to a survey on international collaboration and exchange. Quite interestingly, a significant 12% of the sample possesses management positions in the field, indicating that military psychologists in this sample also play a key role in coordinating resources and defining policy and practice in the field of military psychology.

The relatively distinct group with management responsibilities is also reflected in Figure 10.3, where about 25% of the sample reports more than 20 years of service in the field of military psychology. Interestingly, almost half the sample (45%) has less

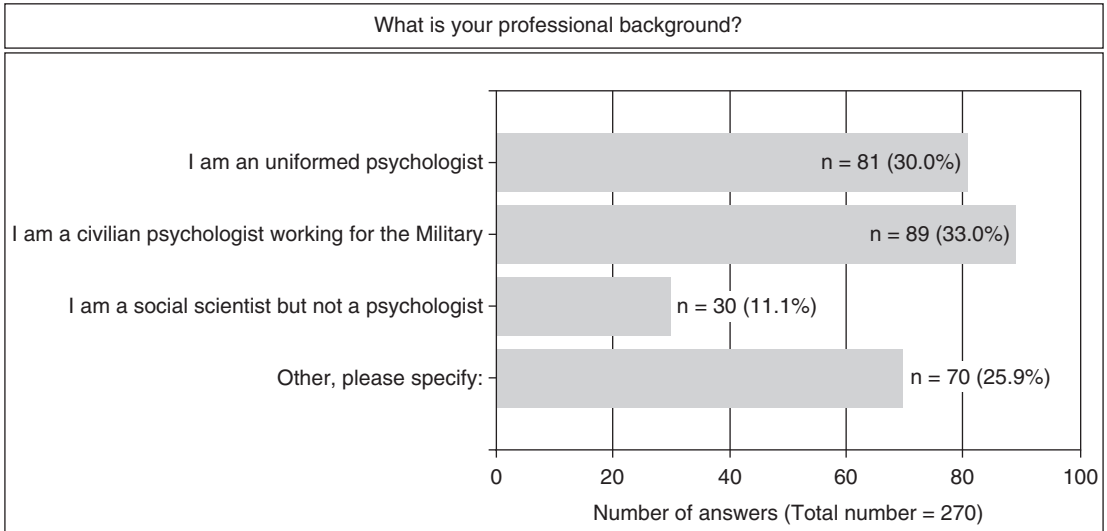


Fig. 10.1 Professional background of the respondents.

than 10 years' experience, indicating a quite strong influx of younger military psychologists over the last decade. From a professional perspective this is certainly promising, and the almost linear trend in experience suggests a relatively stable and steady recruitment of new professionals into the field of military psychology.

An important aim of this survey was to assess how familiar this sample of international military psychologists was with some of the more regular professional forums for international dialogue and exchange in military psychology. Figure 10.4 reveals

that by far the best-known professional organizations were the International Military Testing Association (IMTA), known to almost 70% of the sample; followed by the APA, Division 19, known to 64% of the sample. Still, these numbers are not very impressive, and from the question asked and the responses given by this sample, 30% or more in fact do not know of these most prominent professional organizations in their field! From Figure 10.4 it appears that NATO-RTO, IAMPS, and the Technical Cooperation Program are known to about one-third of the sample, while a number of the forums such as

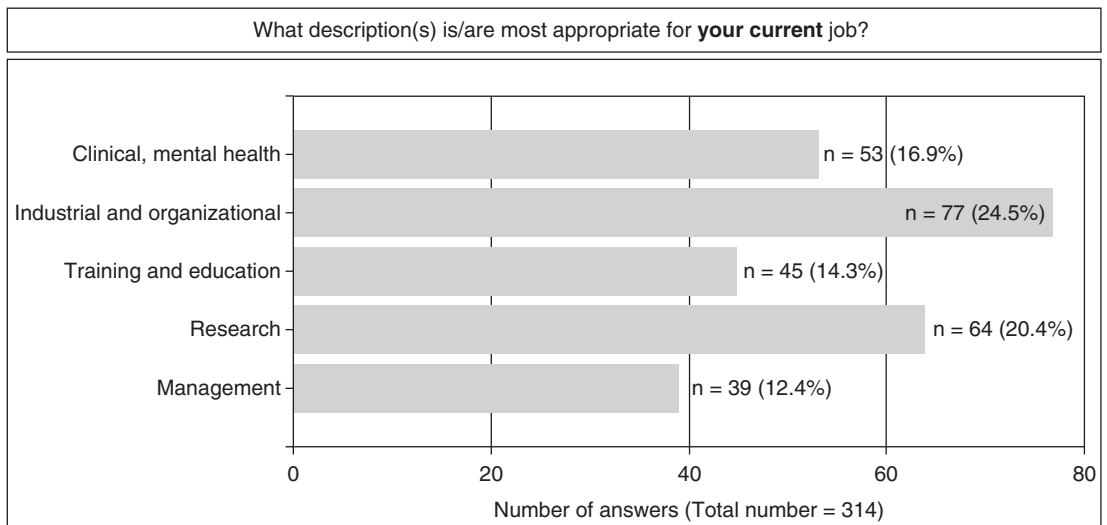


Fig. 10.2 Current job of the respondents who are psychologists.

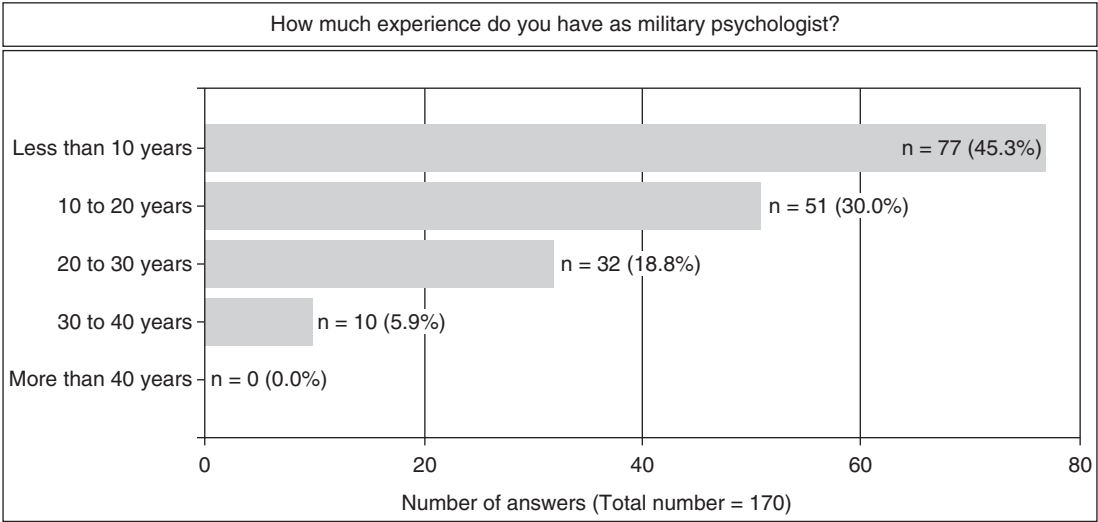


Fig. 10.3 Years of experience as military psychologist of the respondents who are psychologists.

EDA, ERGOMAS, IUSAFS, and ISMS are not well known in the larger professional community of military psychology. Taken together, Figure 10.4 seems to indicate that most, if not all, organizations have a substantial potential to attract more followers from the professional community of military psychology.

The relatively modest interaction with other international colleagues is illustrated in Figure 10.5, where a high proportion (60%) of the military psychologists report that they “never” or “only once a year” interact professionally with military psychologists from other countries. Again, a small number (13%) interact with international colleagues more

often than once a month. It therefore seems that quite a few professionals never attend international meetings, and only rarely do they interact with the larger international community of military psychology.

One possible explanation for this apparent lack of interest in promoting professional international exchange and collaboration could be more nationalistic or negative attitudes towards international collaboration. In Figure 10.6 below, this possibility was explored further by asking about their opinions about the statement that “Military psychology is heavily dependent on national conditions and

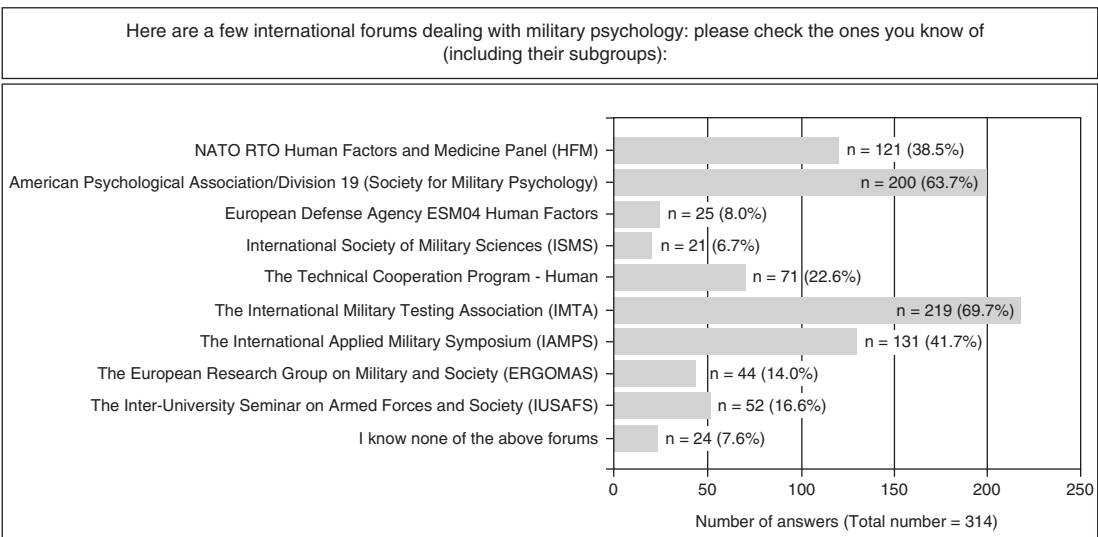


Fig. 10.4 International forums known by the respondents.

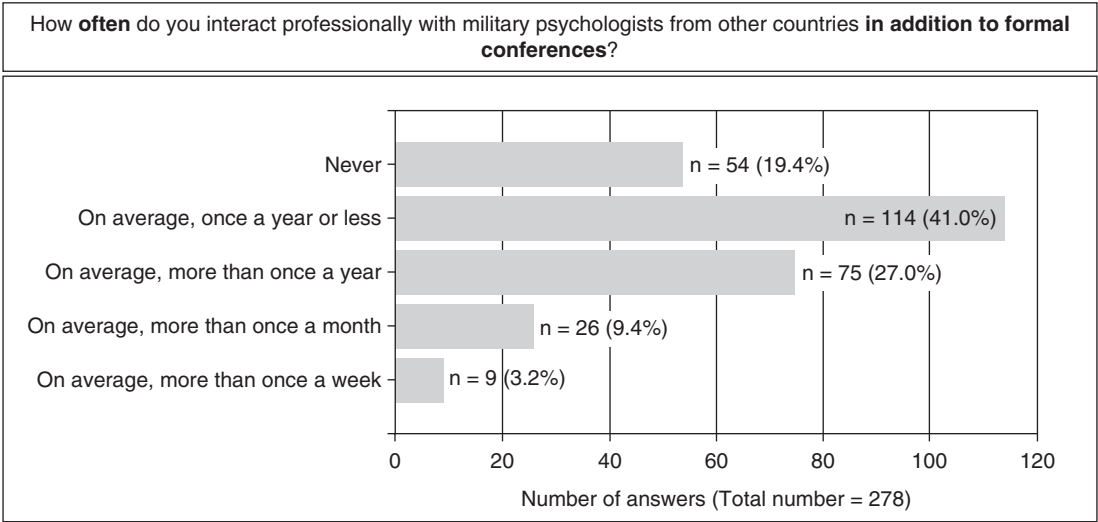


Fig. 10.5 Frequency of international professional interaction with military psychologists (not including conferences).

international perspectives are therefore of little value.” Although a small proportion of the sample (15%) concurred with this statement, it should be noted that the vast majority (73%) disagreed with this rather nationalistic attitude. On a purely speculative basis it therefore seems like the motivation is high, but the means might be insufficient to support international exchange and collaboration.

This positive attitude towards international collaboration is further emphasized by the fact that nearly 60% of the sample in Figure 10.7 stated that international collaborative work is “rather important”

or “very important” in order to be effective in their current job. Following from this it seems to be quite significant to have the opportunity to collaborate internationally to ensure quality of work and services in the field. Taken together, the feedback from this international panel of military psychologists indicates that many have few opportunities to attend or limited access to the professional international forums, despite a desire and sense of the importance of international exchange.

Finally, in Figure 10.8, the panel were asked to give their advice about the most important fields for

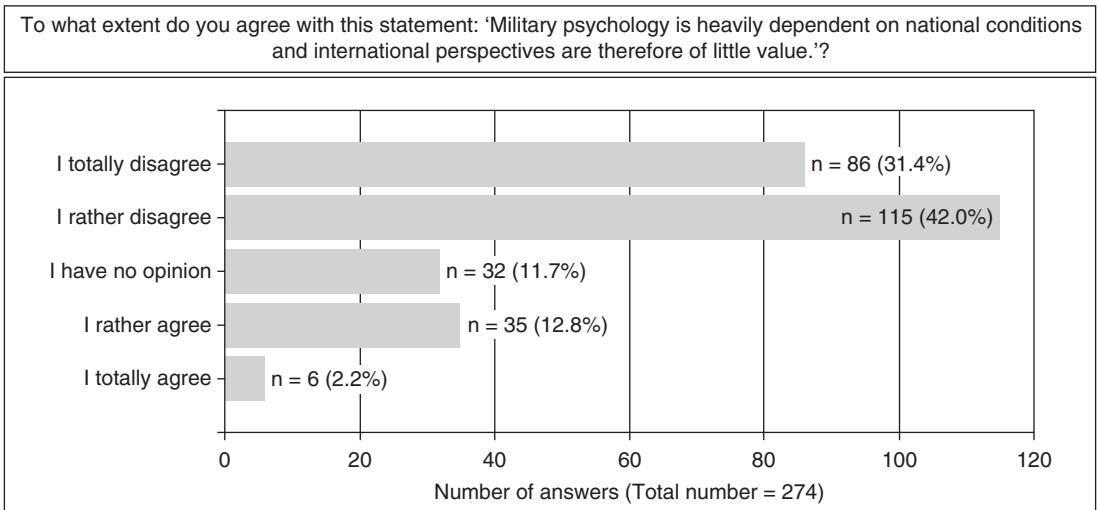


Fig. 10.6 Respondents’ opinion on the national specificity of military psychology.

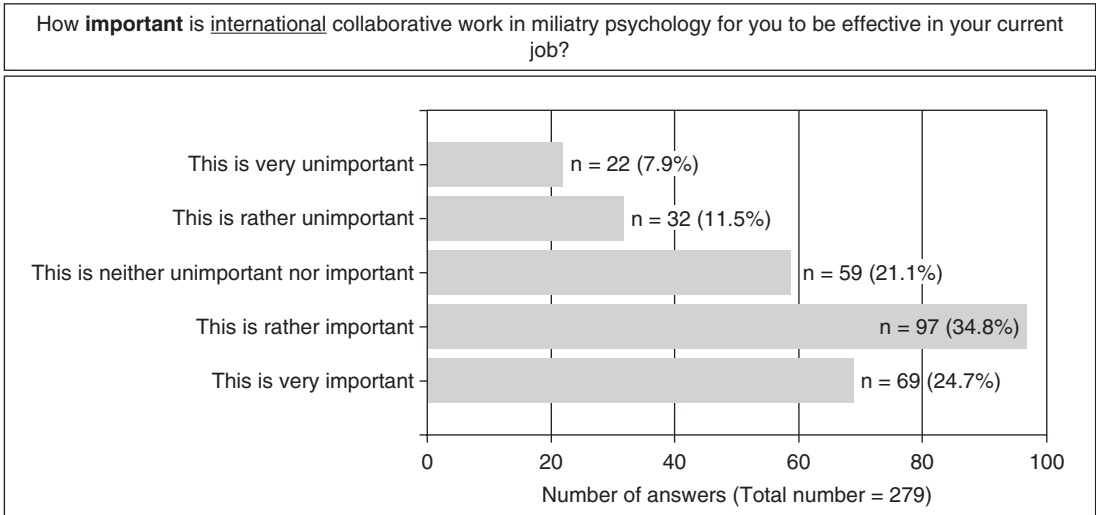


Fig. 10.7 Importance of international collaboration for the respondents' current job.

military psychology in the next decade. Not surprising, the most significant need (36%) is considered to be psychological support for deployed personnel, families, and veterans. Although traditional fields such as selection and leadership issues are still seen as vital by many, it is interesting to note that nearly 20% point out the need to focus on international or intercultural competencies as a future need area for military psychology. In closing, we see this as one important factor that supports our initial assumption about the increasingly international nature and focus of military psychology in the years to come.

Taken together, the results from the 2010 survey of military psychologists reveal remarkable similarities

to the findings from the Adler and Bartone (1999) survey a decade ago. International collaboration and exchange is seen as necessary to fulfill the role of military psychologist, and as a vital element in psychological support of deployed personnel, families, and veterans. Despite the interest in international collaboration and exchange and the relatively many different venues and professional organizations available, a notable finding from the survey was that quite a few psychologists lacked support or resources to participate in international exchange and dialogue. In the current economic situation, resources and travel funds are limited. New and relatively inexpensive technologies, such as video teleconferences,

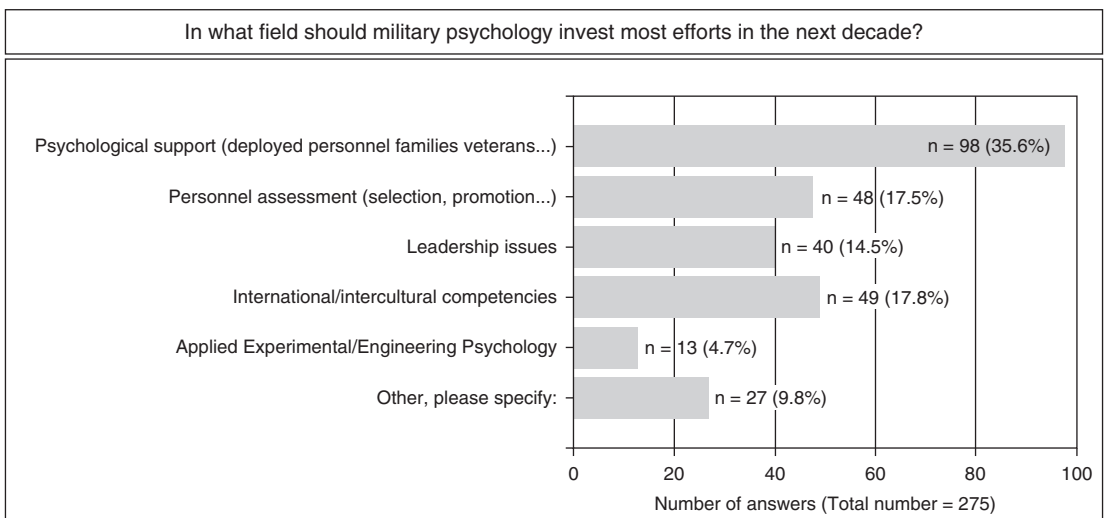


Fig. 10.8 Most-needed research efforts in military psychology.

social media, or digital communities could represent new opportunities for professional exchange and collaboration in addition to the established forums we have mentioned earlier in this chapter.

Closing Remarks

To conclude this chapter, let us try to forecast the near future of military psychology. First, there is little doubt that traditional areas of expertise such as selection and classification, education, and therapy will continue to represent important contributions of military psychology to the overall military endeavor. Second, given the growing internationalization of military operations, specific issues related to the international character of those operations will have to be addressed in more detail. The aspects to be covered encompass the following:

- Coalition forces often consist of several contingents having different ideological and cultural backgrounds, training, equipment, and logistical, public, and political support;
- Effective decision-making at the level of coalition headquarters as well as on the political scene is much more complex and sensitive than in a purely national context;
- Both local populations and the adversary are often culturally very distant from the coalition forces in terms of language, values, religion, beliefs and habits. It is important to make the effort to better understand their point of view and to explain to them the motives and goals of coalition operations.

In these three important facets of current and future international operations, military psychologists can contribute significantly, for they have the adequate behavioral sciences background and research methodology. Finally, it is likely that the commitment of our officers and soldiers will have to be stimulated more actively. In the absence of perceived immediate threats to the home and loved ones of the soldiers, who are embedded in a Western culture in which individual rights are highly valued, it will become quite challenging to recruit, train, lead, motivate, and retain sufficient numbers of able soldiers.

To better understand all these topics and implement the necessary changes to grow towards coalition forces' behaving as a single robust and effective entity, research projects need to be initiated or continued. As the research topics include international aspects, it is desirable to let international teams perform these

research projects. Modern technology allows the creation of "virtual" teams consisting of researchers who are dispersed all over the world and only occasionally need to meet physically. In that way, international collaborative research does not have to be significantly more expensive than research organized nationally. However, there is an urgent need to facilitate international collaborative research by lowering the administrative hurdles that such projects often encounter. As we witness the rise of asymmetrical warfare, we fully agree with General Scales (2009) that the human dimension in military operations is gaining importance over the technological dimension. There is therefore an important mission lying ahead for the military psychologists: to provide our forces with the best research and methodologies to optimize the human dimension in contemporary and future military operations.

Note

1 In the Belgian Military as well as in other Western militaries, remains of concepts dating from Frederick the Great of Prussia claim that "any officer can do anything". The principle leads to assigning officers to perform tasks for which they "are not hindered by any form of competency". While this viewpoint might be very attractive to personnel managers who could think of interchanging personnel members without penalty, it proves in practice to be utterly ineffective and basically naive. The complexity of modern society, including the Military, results in the simple fact that specialists are needed and having specialist jobs performed by all-around officers literally results in *mediocrity!*

References

- Adler, A. B., & Bartone, P. T. (1999). International survey of military mental health professionals. *Military Medicine*, 164, 788–793.
- Febbraro, A. R., McKee, B., & Riedel, S. L. (2008). Multinational military operations and intercultural factors. NATO RTO Technical report TR-HFM-120, Virginia, USA.
- Geldard, F. A. (1957). The first international symposium on military psychology. *American Psychologist*, 12, 737–739.
- Hansen, I. (2006). *Bidrag til psykologitjenestens historie 1 Forsvaret fra 1946—2006* [A contribution to the history of the Norwegian military psychology service from 1946–2006]. Norwegian Staff College, Oslo.
- Johnsen, B. H., & Eid, J., & (2006). Operational psychology: Training and development issues. *Military Psychology*, 18 (suppl.), 1–2.
- Lester, J. T. (1975). International Conference (11th) on Applied Military Psychology at Office of Naval Research London, England. National Technical Information Service, ONR Report nr. C-15-75.
- Snow, Richard E. (1985). The 21st International Symposium on Applied Military Psychology. National Technical Information Service. ONR Report nr. C-9-85.
- Scales, Robert H. (2009). Clausewitz and World War IV in military psychology. *Armed Forces Journal*, 21(S1), S23–S35.

Military Selection and Classification in the United States

Michael G. Rumsey

Abstract

This chapter describes military selection and classification research in the United States from a historical perspective. It describes the evolution of enlisted selection and classification measures from Army Alpha and Beta in 1917 to current explorations into non-cognitive tools. Major developments, such as the transition from service-specific test batteries to the joint service Armed Services Vocational Aptitude Battery (ASVAB) and the joint service project to link enlistment standards to job performance, are given special attention. Officer screening has evolved separately from enlisted screening, and is given separate treatment in this chapter. Both enlisted testing and officer testing have been characterized by a historical progression from fairly broad measures of cognitive ability to a more comprehensive approach, involving not only an expansion of the cognitive components assessed, but also an increasing attention to non-cognitive dimensions. While enlisted and officer testing have many features in common, two themes that have received more emphasis in officer selection are the work in identifying measures that predict aviation success, and the development of realistic assessment centers to validate predictors of officer success. The success of the military in developing enlisted and officer measures that predict important outcomes is a major chapter focus.

Keywords: Military, selection, classification, enlisted, officer, non-cognitive, ASVAB, validate, aviation, performance

There are several characteristics of the military environment that have contributed to the development of the military selection and classification system as it has existed in the past and exists today. The first is the division, if we leave aside for the moment the special case of warrant officers, of the military population into two principal categories—commissioned officer and enlisted. With few exceptions, each individual remains in the category in which he or she is first placed. “Officers” do not become “enlisted,” and the number penetrating the barrier from “enlisted” to “officer” is relatively small. Because these categories are so distinct, the selection and classification processes for each are also distinct. One of the major differences between these processes is that, while the enlisted selection process involves a direct transition from civilian to military

status, the principal selection decision for officer candidates typically involves their selection into a pre-commissioning training program, which they must successfully complete before becoming officers.

The second characteristic is the sheer volume of accessions, from hundreds of thousands to millions of members a year for enlisted personnel alone (Waters, 1997). This has a number of ramifications. One is that the services have been able to invest considerable resources to ensure that the tools used in this process represent the state of the art in testing methodology. Another ramification is that the military has found it efficient to set up special-purpose testing centers across the country for the sole purpose of processing applicants for enlistment. The availability of these testing centers and the sizable quantity of applicants flowing through them daily

make the use of these centers for much of the matching of persons to jobs as well as selection a somewhat natural occurrence.

The third significant characteristic of this environment is the link between accessions and training. Generally, applicants are not presumed to have any training in the job they will be performing when the selection decision is made. The military assumes the burden of training new enlistees and those who have been selected into a pre-commissioning program. By and large, applicants enter at the bottom rung. Lateral entry into a higher-status position is a rare event. These factors contribute to the significance of the selection process. The services are making a major commitment to the development of the individual selected, and any mistakes will be costly.

Scope of This Chapter

The current selection and classification procedures used by the military cannot be properly understood without appreciation of the key historical developments that led to their implementation. Thus, this chapter will be historical in orientation, describing enlisted and officer developments separately. As noted above, enlisted screening is a massive enterprise, conducted through the administration of a joint service selection and classification test battery at a variety of locations. Officer screening is a much more decentralized operation. Not only does each service have its own screening process, but also within each service there are multiple processes. In many cases, officer screening is dependent more upon a whole-person evaluation than on scores on a selected set of tests. As the screening processes for the two groups are divergent, so has been the historical evolution of these processes. The chapter will proceed first with a discussion of enlisted screening, followed by an examination of officer screening.

A full treatment of military selection and classification would incorporate the many significant developments that have occurred outside the United States as well as those that have occurred within. However, such a treatment is far beyond what can be accomplished in a single chapter. The focus here will be limited to the United States.

Certain themes will receive particular emphasis in this review, based on their relevance to the sophistication, maturity, and comprehensiveness of the research and the screening systems generated by the research. These themes relate to the measures developed and the procedures used to develop, assess, and administer those measures. In all these respects

the military has frequently played a leading role, as discussed briefly below.

Development and Assessment

The measures used have often represented the highest standards in terms of quality and relevance. The Army Alpha and Beta tests, developed in World War I, have been lauded as pioneering efforts in group cognitive testing (Zeidner & Drucker, 1988). Later, the services developed highly sophisticated classification batteries, and have recently made significant contributions to the science of personality assessment. Developers have scrupulously applied advanced scientific principles to measurement development. The military has often demonstrated a greater appreciation of the need to validate its measures against some outcome of importance than have many civilian organizations. This is probably due, at least in part, to cost–benefit considerations. Validation is an expensive proposition, and for most civilian organizations, difficult to support for the number of individuals screened on an annual basis. As noted earlier, the military screens an unusually large number of applicants, so the cost of validation in this context is a necessary and justifiable expense, given the enormous difference between benefits associated with a highly valid test and those associated with a test of negligible validity. For a substantial period of time, the “outcome of interest” in military validation research was almost exclusively attrition or success in training.

JOB ANALYSIS

This brings us to the topic of job analysis. Job analysis is often used to help inform selection of which individual difference dimensions to test, but is a particularly critical step whenever job performance measures are used in the process of validating selection instruments. Although the military has played a leading role in the development of job analysis techniques, these techniques have generally been designed more for use in training development than in performance measurement.

Because of the early emphasis on the use of training success to validate selection and classification measures, for several decades little attention was given to comprehensive analyses of job requirements for purposes of developing performance measures. In order to identify appropriate content to predict performance in training, Maier (1993, p. 5) observed that “[r]esearchers typically observe and talk to workers in the area and visit training programs.” While these activities may be considered a form of

job analysis, they do not constitute a particularly systematic form.

Meanwhile, the military was moving forward with the development of job analysis tools that would, when the need was perceived, prove critically valuable in building new outcome measures. One was the job inventory approach, which relies on the identification of discrete tasks. The Air Force developed a sophisticated version of this approach over a ten-year period, from 1957 to 1967 (Christal, 1969), when it was implemented as a fully functioning occupational analysis system. This system involved generating task lists through group interviews and a conference composed of subject-matter experts, then collecting incumbent data on such dimensions as the percentage of time spent on each task and the number performing each. The Air Force's system has often been referred to in terms of the programs used to analyze these data, the Comprehensive Occupational Data Analysis Programs (CODAP). Although the Air Force pioneered this system, the other services have adapted their own forms of it (Mitchell & Driskell, 1996).

The Air Force also developed another valuable form of job analysis, the critical incident technique (Flanagan, 1954), in the course of developing a pilot selection program. This technique focuses on behaviors that led to a particularly successful or unsuccessful outcome in a particular situation. Behaviors thus generated can then form the foundation of dimensions used in rating scales.

VALIDATION

Much of the discussion of validation in this chapter will concern validation against training performance or attrition. However, beginning in about 1970, a fair amount of research has been conducted linking selection measures to job performance. Many of the enlisted efforts were summarized in a review by Welsh, Kucinkas, and Curran (1990). One of these, to be discussed later, was particularly notable. This was known as the Job Performance Measurement Project, which linked selection measures to measures of job performance. What is worth mentioning here is how this project made use of job analysis data to help ensure that the validation was based on relevant criteria. "In the JPM project . . . all the services used task-based job analysis methods" (Knapp, 2006, p. 117), and the "Army and Navy collected critical incident data that were later used in the development of performance rating scales" (Knapp, 2006, pp. 117–118). Each of the services developed hands-on measures and other measures linked to

the job analysis measures and used these to validate the selection measures.

While this was the most prominent example of an effort to link individual-difference measures to job performance, another notable effort, this time with officers, was the Officer Prediction Project conducted by the Army in the late 1950s and early 1960s. An elaborate assessment center was built to represent a variety of job duties, based on input from subject matter experts and technical reviews "at the appropriate branch schools" (Zeidner & Drucker, 1988, p. 118). An immense variety of diverse predictor measures were linked to performance at this center to develop a battery of tests later used in Reserve Officers' Training Corps (ROTC) selection. This, too, will be discussed in more detail later in this chapter.

TEST ADMINISTRATION

In test administration, the military has again played a leading role. Since 1976, enlisted testing has been a joint service function, conducted in numerous locations throughout the country. These testing locations include Military Entrance Processing Stations (MEPS), serving relatively large geographic areas, and the more localized Mobile Examining Team (MET) sites. The MEPS are also used for other enlistment processing activities, including physical screening. The cost of testing is related to the amount of time required to complete the tests. In 1997 the services accomplished a remarkable breakthrough—the initiation of computer adaptive testing at all major testing stations (Personnel Testing Division, 2008). The advantages of this procedure are many, including time savings, scoring efficiency, and an enhanced testing experience for examinees (Sands & Waters, 1997).

This chapter will now turn to an examination of the major historical developments in the domains of enlisted and officer screening.

Enlisted Screening *The Two World Wars*

At the beginning of World War I, with the need for huge quantities of Army troops, the potential value of a screening instrument that could be group-administered was recognized. Robert Yerkes, an eminent psychologist, was given the responsibility of directing the development of the Army Alpha test battery. The Army Alpha had eight parts, including grammar, vocabulary, and arithmetic, among other content areas. These tests were ultimately administered to over 1.7 million men, including 42,000

officers, during the war (Zeidner & Drucker, 1988). A pictorial version of the test battery, known as the Army Beta, was also developed under Yerkes's direction. The development of the Army Alpha and Beta is generally viewed as the initial step in scientific screening of military personnel, as well as an historical development in cognitive testing, which until then had been conducted in an individualized manner. Despite the massive administration of the tests, their use in selection and assignment during this period was sporadic. However, Zeidner and Drucker noted (p. 11) that: "Although the test scores were not universally accepted by Army management, they were allowed to play an important role in many decisions. For example, almost 8,000 recruits were recommended for immediate discharge as mentally incompetent; another 8,000 were assigned to special labor duty." The Army Alpha continued in use for over 25 years (Staff, Personnel Research Section, 1945).

World War II stimulated the next major push forward in the development of enlisted screening tests. Initially, the emphasis was more on tests of general ability rather than specific aptitudes related to job placement. The Army developed the Army General Classification Test (AGCT), a test of "general learning ability," for administration to every "literate inductee" beginning in 1940 (Staff, Personnel Research Section, 1945). The first form consisted of vocabulary, arithmetic, and block-counting items. Despite the rather limited range of content categories initially, the AGCT was used as a classification test in the sense that it could "sort new arrivals" (Staff, Personnel Research Section, 1945, p. 760) and help determine their qualifications for various types of training regimens. In 1942, the Marine Corps began using the AGCT and Mechanical Aptitude Tests for classifying their new recruits (Furer, 1959). In 1945, the Army developed new forms of the AGCT, which contained four subtests—reading and vocabulary, arithmetic computation, arithmetic reasoning, and pattern analysis. These forms provided the model for the Armed Forces Qualification Test (AFQT), which provided "an objective basis for the equitable distribution of human resources" (Zeidner & Drucker, 1988, p. 50) across the services. From 1950 through 1972, all services used a common AFQT for selection.

Development of Classification Batteries

Before World War II, aside from the limited use of specialized tests for a few select occupations, the concept of "classification" generally meant ensuring

that individuals with a high level of general mental ability were matched with the jobs that were judged to require such ability. However, during and after the war, that approach began to change. Classification came to mean a matching of particular aptitudes with particular job requirements. Given the large number of military jobs, the challenge of determining the best combination of tests for each job was enormous. This problem was somewhat simplified by the concept of clustering. Jobs that were found to have similar requirements were clustered together and linked to the same set of tests.

In 1924, the Navy began using a verbal test, the General Classification Test (GCT), to screen candidates for enlistment. During World War II, as the Navy struggled with trying to classify nearly four million enlisted personnel, the Navy General Classification Test was not found to provide a sufficient basis for differentiating across specialties (Faulkner & Haggerty, 1947). Thus, it was supplemented in 1943 with a Basic Test Battery (BTB), which included more specialized tests, such as Mechanical Aptitude and Radio Code Aptitude (Odell, 1947). A version of the BTB consisting of the GCT, an Arithmetic Test, a Mechanical Test, a Clerical Test, and a Shop Practices Test, was linked with final grades across 47 schools. When the tests were combined in a regression analysis, the level of prediction achieved by the BTB (.57, corrected) was found to exceed that observed for the Armed Services Vocational Aptitude Battery (ASVAB, .47, corrected), a test battery to be discussed later in this chapter (Thomas, 1970). The BTB continued in use into the 1970s (Maier, 1993, p. 37).

Between 1946 and 1948, the newly formed Air Force developed its own Airman Classification Battery. Earlier research by the Army Air Force in World War II focusing on officer selection (to be described later in this chapter) provided the foundation for this battery, but new tests were added, focusing on enlisted jobs. Twelve aptitude tests, covering such general abilities as word knowledge and more specific abilities such as aviation information, were developed, along with a biographical inventory. Separate composites of tests, called Aptitude Indices (AI) were developed for separate clusters of Air Force jobs. These tests were found to be highly reliable, and had a median validity of .61 for predicting technical course grades when corrected for restriction in range (Weeks, Mullins, & Vitola, 1975). In 1958, the Airman Classification Battery was replaced with the Airman Qualifying Examination, which was similar but shorter in

length and the time required to complete it. This change coincided with a policy change to make Air Force recruiting more selective. Now, in addition to qualifying on the AFQT, Air Force applicants had to meet qualifying standards on at least one aptitude index of the Airman Qualifying Examination. A mean correlation of .63 was found for a 1960 version of the AQE against 41 sets of school grades. The AQE continued in use until replaced by the Armed Services Vocational Aptitude Battery in 1973 (Weeks, Mullins, & Vitola, 1975).

In 1949, the Army also developed a classification battery that incorporated more specialized tests than did the AGCT. The Army's new battery, the Army Classification Battery (ACB), initially included ten tests, including tests of general ability (math, verbal, information); mechanical ability (electronics, mechanical, automotive, trade); perceptual ability (pattern analysis, auditory perception, attention to detail); and an inventory covering interests in four areas (combat, attentiveness, electronics, maintenance). The tests were combined into ten groupings, or Aptitude Areas, linked to ten job clusters (Zeidner, Harper, & Karcher, 1956).

As more data emerged, revisions were made to the ACB. These revisions were related to accumulated validation findings, typically against training data (e.g., Zeidner, Harper & Karcher, 1956; Maier & Fuchs, 1969), and to an effort to better predict combat performance, which involved linking personality measures to on-the-job ratings. An interesting conclusion that emerged from the latter effort was that "well-adjusted good citizens" (Willemin & Karcher, 1958, p. 7), (e.g., high in self-confidence and emotional stability) and "men with masculine interests" (e.g., sports, motoring, hunting) made "good fighters" (Willemin & Karcher, 1958, p. 8). The last changes to the ACB were made in 1972 (Maier & Fuchs, 1972). The ACB continued in use for the Army up to 1975. The Marine Corps used a version of the ACB known as ACB-61 until 1976 (Matthews, 1977).

Assignment Systems

Linking tests to jobs is only one element in the assignment process. Olson (1968) noted that other factors included service priorities and preferences of the individuals. Somehow all this information must be combined to make the best decision for all concerned. Kroeker (1989, p. 44) noted that personnel assignment in the 1950s "in the armed services was accomplished monthly by large teams of classification technicians who sorted through cards containing

recruit information (e.g., aptitude test scores, biographical data, etc.) and who used their best judgment as the basis for filling duty assignments and training school quotas. This manual procedure involved the human evaluation of trade-offs . . . and often yielded person–job mismatches. . . ."

Beginning with the Army in 1958 and continuing into the 1960s, all services developed automated assignment systems. These systems varied in several respects, perhaps most critically in the extent to which they were designed to optimize person–job match versus other objectives, such as filling high-priority jobs. Kroeker (1989) differentiated between two types of allocation systems. One was characterized by its emphasis on job filling. As an example, he identified the Computer Assisted Assignment System (COMPASS) II model then used by the Navy. Elements of the model were "ASVAB test scores, civilian job experience, educational background, and vocational objectives and preferences." Although a number of objectives were considered in this model, "fill policy overshadow[ed] all other considerations. . . ." (Kroeker, 1989, p. 53).

A second type of allocation system was more balanced between filling jobs and fitting persons to jobs. The flexibility to consider other factors besides immediate "fill" was associated with the shift from a conscription environment in which job assignments occurred after basic training, to a volunteer environment in which job guarantees were made at the time of enlistment. Given the time lapse between commitment to serve and initiation of specialty training, the emphasis on filling immediate service needs was reduced. As an example of this category, Kroeker (1989) offered the Air Force's Procurement Management Information System (PROMIS) model, which sought to optimize fit with the jobs available at the time the applicant was ready to make a commitment.

The services continue to strive to improve their allocation processes. The Army has developed a system known as the Enlisted Personnel Allocation System (Lightfoot, Ramsberger, & Greenston, 2000), which would add an optimization component to a current system that places heavy emphasis on job fill. Implementation of this system has been impeded by concerns that its inclusion in the person–match process might reduce the emphasis on filling high-priority jobs. The Navy has also developed "new classification decision support software, the Rating Identification Engine (RIDE)" to "provide greater utility in the operational classification system" (Farmer et al., 2003, p. 62). Both ability

and interest inputs are intended to be used by this software in making person–job matches. A new computer-administered interest measure, Job and Occupational Interest in the Navy (JOIN) has been developed to improve the quality and precision of the interest inputs (Farmer et al., 2003).

ASVAB and the Job Performance Measurement Project

In the 1970s, the use of separate test batteries by the different services was found to be administratively cumbersome and constraining. “To determine eligibility for enlistment in different Services, an applicant would have had to take the tests specific to each Service” (Maier, 1993, p. 37). Thus, the services combined their efforts to produce a joint service selection and classification battery: the Armed Services Vocational Aptitude Battery (ASVAB). Full administration of this battery began in 1976 (Sands & Waters, 1997) and has continued to this day. Content categories and test content have changed over time, but at the outset, the tests used were very much like those in the individual services’ classification batteries, minus any interest inventory.

The AFQT was maintained as a composite of the ASVAB tests that measured general ability. As tests were revised, efforts were devoted to ensuring that score distributions in the new forms had roughly the same meaning as distributions in the old forms. Screening standards were linked to these score distributions. By 1980, it had become evident that something was very wrong. Complaints were received from the schoolhouses and the field about the performance of newly accessioned service members. Analyses revealed that the process of linking new scores to old had been flawed, and that the result was, in effect, to unintentionally lower entry standards. The scoring problem was corrected, but in the meantime hundreds of thousands of individuals had enlisted who, if the standards had been applied as intended, might have been considered ineligible (Laurence & Ramsberger, 1991; Waters, 1997).

When the situation was explained to Congress, it brought national attention to the enlistment process. Members wanted to know what the impact of enlistment standards was on job performance. Previous research had already demonstrated the link between military tests and training performance. However, assessing training performance was relatively easy compared to measuring job performance. To some extent, training grades were already accessible for analysis. The question of what constituted

training performance was not particularly controversial. It soon became apparent that measures that could be relatively universally accepted as representing job performance were not readily available. Researchers would have to develop and administer such measures on their own. Once service members had graduated from training and settled into their job assignments, they were widely dispersed throughout the world. Locating them and assessing their performance would be an enormous effort.

Congress instructed the Department of Defense to link enlistment standards to job performance. An early concept guiding this research, known as the Job Performance Measurement project, was that job sample, or “hands-on,” testing would be the “benchmark” performance measure. This approach was tied to the view that “the predictor battery of interest (the ASVAB) was intended to predict only job proficiency” (Knapp, 2006, p. 116). It was recognized that hands-on testing would not always be feasible. This consideration gave rise to the idea of alternate measures that could be used if they could be shown to represent reasonable “surrogates” to the hands-on benchmark. In fact, “[e]ach service was assigned a surrogate measurement method to evaluate as part of their research programs” (Knapp, 2006, p. 114).

Within this general guidance, there was considerable flexibility regarding how the services responded to Congress’s instruction. The Air Force developed a procedure called “walk through performance testing” which combined an interview and hands-on approach. Whereas a strictly hands-on test would require the individual to actually perform a task, in an interview the individual would “describe in detail how he or she would perform” the task (Hedge & Teachout, 1992, p. 454). The administrator would then determine “whether the description of each step of the task was correct or incorrect” (Hedge & Teachout, 1992, p. 454). The Air Force supplemented the walk-through with job knowledge and rating measures. The Navy used a hands-on test, a job-knowledge simulation test, and a set of rating scales (Laabs & Baker, 1989). The Marine Corps used hands-on measures, job-knowledge tests, and file data (Carey, 1992).

The Army, like the other services, used multiple performance measures, but presented an alternative conceptualization of performance to the “benchmark” approach. The Army agreed that hands-on tests provided useful performance information, but did not perceive the value of other measures to depend only on the extent to which they could serve

as surrogates for hands-on measures. The Army's position was that no one measure could provide complete information about an individual's performance. Hands-on tests could provide information about an individual's maximum level of task proficiency, but not about that individual's day-to-day performance. Ratings from peers and supervisors familiar with the individual's performance and such administrative measures as letters of commendation could shed light on the individual's day-to-day performance, which might be viewed as a combination of proficiency and motivation. Job-knowledge tests could provide information about proficiency on tasks not tested in a hands-on manner. Since part of an individual's job in the Army is to know how to perform tasks that are typically not performed in peacetime, job knowledge is an important element of performance in its own right. Thus the Army used all of these measures, and all were viewed as potentially valuable sources of information.

Observing that other services developed measures of interpersonal as well as task-related behavior, Knapp (2006, p. 116) noted that, "It was not just the Army that was inclined to view performance with a broader lens than task proficiency." However, the Army's goals were particularly compatible with the use of a broad range of performance measures. As noted above, the development and administration of performance measures, particularly across a wide sample of jobs, is an extraordinarily resource-intensive exercise. Once the services were committed to doing it, it could be viewed not only as a challenge, but also as a unique, literally "once-in-a-lifetime" event. Why not take this opportunity to determine how the selection and classification system could be improved by the addition of new measures? The ASVAB could be viewed as a measure of general cognitive ability. It could not be viewed as a measure of "whole person" potential. Spatial, psychomotor, and personality measures were excluded from the ASVAB. Part of the Army's approach was to develop and administer such measures to determine what they could add to the ASVAB in predicting performance.

This joint service effort demonstrated that the ASVAB predicted job proficiency, whether proficiency was measured by hands-on tests or job-knowledge tests. The Army portion of the effort, untethered from the "benchmark" concept, was able to show a clear differentiation between two major components of performance, "can do" as represented by the proficiency measures, and "will do" as represented by ratings and administrative measures.

This differentiation allowed a more nuanced evaluation of the ASVAB's strengths and weaknesses than an approach focusing on only one of these two components would have permitted. ASVAB's relationship to can-do performance was powerful and undeniable, with multiple correlations in the .60s. ASVAB's relationship to will-do performance was much more modest, opening the door for the addition of new predictor measures. A number of non-cognitive predictor measures were found to add considerably to ASVAB's accuracy in predicting will-do performance. (See Oppler et al., 2001; and for a complete description of the Army's effort to both validate existing measures and develop and validate new measures, which incorporated two projects, Project A and Building the Career Force, see Campbell & Knapp, 2001.)

Non-cognitive Testing

One outcome of the Job Performance Measurement effort was the demonstration that ASVAB does indeed predict job performance. This was important to supporting continued use of the measure. Another outcome was to stimulate further investigation of non-cognitive measures. The Army's Assessment of Background and Life Experiences (ABLE) was a traditional self-report temperament measure, asking individuals to select from a set of alternatives which one best represented themselves, their beliefs, or their attitudes. The other services had developed similar measures that focused on individuals' history. Because of this biographical orientation, they were known as "biodata" measures, although the difference between a biodata measure, and a temperament measure that includes items relating to activities or beliefs in the past, may be subtle or, in some cases, nonexistent. The Air Force began using a biodata measure, the History Opinion Questionnaire, in 1975 (Trent, 1993; Guinn, Johnson, & Kantor, 1975). The Navy developed the Armed Services Applicant Profile (ASAP), based on existing item sources, in the 1980s (Trent, 1993). A measure combining the ABLE and ASAP, known as the Adaptability Screening Profile (ASP), was considered for joint service use (Trent & Laurence, 1993).

A major concern about non-cognitive measures, whether they are classified as temperament, biodata, personality, or interest, is that of faking. Since these measures are self-reported, there is always the danger that the individual may take the opportunity to present himself or herself in the most positive light possible, rather than in terms that would reflect the

individual's characteristics most accurately. Concerns about faking prevented the implementation of the ASP, or of the separate ABLÉ or ASAP measures. However, such concerns also stimulated research to develop and test safeguards against faking. In the Army, the successor to the ABLÉ was the Assessment of Individual Motivation, or AIM (White & Young, 1998). The AIM was designed as a forced-choice measure. The intent was to present options in such a way that the most desirable option was not obvious. The individual was "forced" to choose between two apparently desirable and two apparently undesirable options, so the ultimate score would be more likely to represent behavior related to job success than behavior seen as socially desirable.

Initial research findings suggested that the approach was successful—that it inhibited faking without sacrificing validity (Young et al., 2000). The Army saw a potential application of AIM as a predictor of attrition of non-high-school-diploma graduates. It has historically been observed that those without a high school diploma tend to wash out of the military at a far higher rate than those with a diploma (Department of Defense, 1985). Accordingly, the number of non-graduates to be accepted into the services has been limited by Department of Defense policy. One concern regarding this policy is that there are many reasons why someone may leave the military. Lack of persistence, which failure to graduate from high school may partially represent, may be one of those reasons. However, there may be a more direct way of measuring one's propensity to attrite that might allow the military to salvage some non-graduates who do not have a high propensity to attrite.

Accordingly, a trial program was initiated within the Army to identify promising non-high-school graduates using a combination of AIM, a body mass index, and two ASVAB subtests. This new program was known as the Tier Two Attrition Screen (TTAS). The initial results were disappointing. There was far greater evidence of faking on the AIM when used in this operational trial than there had been in a research context (Young et al., 2004). Researchers went back to the drawing board to see if the problem could be fixed. What they found was that, while some AIM items performed worse in the operational context, others worked just fine. Thus, with some fine-tuning, they were able to improve the AIM's effectiveness (Young et al., 2004; Young & White, 2006). The revised TTAS has been used in a new trial program now for several years, with considerable success.

Computer Adaptive Testing

When first developed, the ASVAB was administered in paper and pencil format. While this was all the available technology would support, it had many disadvantages. The primary disadvantage was the time required for administration, over three hours. Another disadvantage was that it was administratively cumbersome, requiring the printing and distribution of test booklets and answer sheets. A third disadvantage was that it was inefficient and imprecise. The same test questions were administered to everyone, despite their ability level. Someone at a very high level would have to answer a number of very easy questions, which contributed little if any new information about that person's ability beyond the questions closer to that individual's ability level. Someone at a very low level would have to answer a number of very difficult questions, which similarly would provide very little in terms of new information.

Computerized adaptive testing (CAT) offered a way to counter these disadvantages. The key was the "adaptive" part. The basic concept behind CAT was that, for every test taker, there was a "true score" reflecting their true ability on whatever attribute was being measured, and that the object of the test was to pinpoint that true score. Each item administered provided some information about the individual's true score. Each item answered correctly led to a more difficult item; each item answered incorrectly led to an easier item. Ultimately, the individual's ability level and the item-difficulty level would converge and lead to an estimate of the individual's true score. Because a small number of carefully calibrated items could generate a good estimate of that score, an adaptive test could be completed in a much shorter time than a non-adaptive one (Sands & Waters, 1997). This procedure was more efficient and precise than a more conventional one. Computerization made it possible to adapt item difficulty to individual ability, and also made printing and distribution of test materials and answer sheets unnecessary.

In 1979 the Department of the Navy was named as Executive Agent for a project to develop a computerized adaptive version of the ASVAB (Martin & Hoshaw, 1997). Initially, a three-year project was envisioned, but it soon became apparent that this timeline was too ambitious for the challenges involved. The size and scope of military aptitude testing generated delivery system requirements and technical challenges that were beyond the existing state of the art. The types of microcomputers available at the beginning of the project were not

adequate to the need. As the Navy moved forward to meet the technical challenges, the sophistication of computer systems gradually advanced to the point where they could be incorporated into the project (McBride, 1997). A staged approach with more flexible timelines replaced the three-year plan.

However, in 1985, perceived urgency required the Navy lead laboratory, the Navy Personnel Research and Development Center (NPRDC), to implement an accelerated approach. In 1987 a review of the cost–benefit ratio of CAT-ASVAB failed to demonstrate that the new testing program could provide dollar savings in personnel budgets. The Director of Accession Policy in the Department of Defense concluded that “support for computerized testing could be strengthened by emphasizing the potential for use of new types of computerized cognitive tests” (Martin & Hoshaw, 1997, p. 18).

Thus, the Enhanced Computerized Administered Test (ECAT) validity research investigation was approved in 1988. Each of the services had developed tests that could be adapted to a computerized battery, but were not at that time part of the enlisted accessions testing program. Several tests were selected for experimental administration, to be validated against measures of training success. The research was completed in 1992 (Martin & Hoshaw, 1997). Certain of the tests were found to improve upon the predictive validity of the ASVAB, although not by more than a few points. One test from the Army’s Project A, Assembling Objects, was approved for inclusion in the ASVAB (for a complete description of the ECAT project, see Wolfe, 1997).

By this time, the environment was more favorable to the CAT-ASVAB concept. In 1993, implementation of CAT-ASVAB across all Military Entrance Processing Stations (MEPS), beginning in 1995, was approved. (Martin & Hoshaw, 1997).

Learning Abilities Measurement Program (LAMP)

One of the more ambitious efforts to improve enlisted selection and classification was the Air Force’s Project LAMP, a basic research effort that began in 1981 and continued until 1998 (Weissmuller & Schwartz, 2007). The program was designed with the goal to “identify and assess qualified applicants who failed to meet minimum cutoffs on standardized tests” (Weissmuller & Schwartz, 2007, The Learning Abilities Measurement Program [Project LAMP] section, para. 1). The principal focus of the program was to develop a test battery “constructed on the basis of cognitive theory” and

to determine whether this battery could “predict success on learning tasks more accurately” than a battery such as the ASVAB (Kyllonen, 1994, p. 103).

The LAMP researchers developed a taxonomy that combined elements of information processing and basic content categories. The information processing elements were working memory, processing speed, declarative knowledge, declarative learning, and procedural learning. The cognitive categories were verbal, quantitative, and spatial.

These concepts led to the development of successive versions of an experimental test battery known as Cognitive Abilities Measurement (CAM). CAM was designed according to a matrix in which the information processing elements were represented as rows and the content categories as columns, and tests were designed for each cell. Thus, for example, there were verbal tests for each information processing category (Kyllonen, 1994).

The LAMP project was a major theoretical achievement, although practical implementations within the military have thus far been limited. Kyllonen (1994) asserted that the CAM battery predicted performance on learning tasks more accurately than the ASVAB. However, its length was also greater than that of the ASVAB (Kyllonen, 1994), and Schmidt (1994) questioned if it could really provide additional validity beyond that which the ASVAB could provide.

Recent Developments

As the twenty-first century approached, each of the services was involved with advances in digital communication systems and technological advances in weaponry and other equipment, while recognizing that the military was confronting an unprecedented diversity of missions. Thus, each began considering what implications these changes might have for their personnel systems. The Navy’s vision for future personnel research was captured in the document “Sailor 21” (Navy Personnel Research Studies and Technology, 1998), which identified the need to expand “our view of the predictor and criterion space” (p. 30). An Air Force researcher noted, “tomorrow’s weapons . . . will require people to operate and maintain them who have the requisite skills, perhaps many of which we can only vaguely imagine” (Looper, 1997, p. 272). The Army launched a research project known as 21st Century Soldiers, in an attempt to determine what implications changing conditions might have for required characteristics for future success. The results, while not conclusive, suggested that certain characteristics

other than those currently evaluated on the ASVAB deserved particularly close attention. These included peer leadership, cognitive flexibility, and self-esteem (Knapp & Tremble, 2007).

The Department of Defense itself convened an ASVAB Review Panel to examine whether changes to this centerpiece of the existing selection and classification system were needed. The panel emerged with several recommendations. One was that “[n]oncognitive measures should be included in the battery of tests used for classification” (Drasgow et al., 2006, p. iv). The panel also recommended that a “test of information and communications technology literacy” (Drasgow et al., 2006, p. iii) and one or more nonverbal reasoning tests be developed and considered for inclusion in enlisted testing. Furthermore, the panel generated recommendations addressing job analysis and validation issues.

In conjunction with the services, the Department of Defense generated a plan for implementing the panel’s recommendations (Sellman, 2007). Considerable work on non-cognitive measure development was already underway. Both the Navy and the Army were involved in the development of computer-adaptive personality tests, employing breakthroughs achieved by Stark, Chernyshenko, and Drasgow (2005) to build and score paired-comparison forced-choice measures. The Navy’s version, the Navy Computer Adaptive Personality Scales (NCAPS), has been found to be resistant to faking in a research environment (Underhill, Lords, & Bearden, 2006) and to show promising levels of validity for predicting performance (Borman et al., 2009).

The Army’s version has advanced to the operational testing level. In 2007, the success of the TTAS program stimulated Army leaders to examine whether non-cognitive measures might be used in screening high school students as well as the non-high school students included in TTAS testing. The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) initiated a trial of a collection of non-cognitive measures, including one known as the Tailored Adaptive Personality Assessment System, or TAPAS. The TAPAS, unlike the AIM, was designed to be administered in a computer adaptive format. It also incorporated paired items that were more closely paired in judged desirability, thus hopefully even less fakeable. A number of studies demonstrated that the TAPAS format was effective in reducing faking (Drasgow, Stark, Chernyshenko, 2007). TAPAS was found to be an effective predictor of both proficiency and

motivational types of criteria in an experimental administration (Heffner & White, 2009) and was approved for administration in the Military Entrance Processing Stations in an initial operational test and evaluation (IOT&E). That is, it was to be used in a limited way for selection decisions for a three-year period, after which time it would be evaluated for possible future use. This IOT&E began in May, 2009.

Progress has also been made on the other panel recommendations. For example, the DOD sponsored research to review existing information and communications technology literacy tests (Russell & Sellman, 2008; Trippe & Russell, 2008) and nonverbal reasoning tests (Waters, Russell, & Sellman, 2007).

Recent developments in classification theory are also worth noting. Since 1976, all services have used the ASVAB, but each service has combined the ASVAB tests for classification purposes in a manner that served its own needs best. Zeidner and Johnson (1994), in advancing an approach they labeled “Differential Assignment Theory,” argued that existing approaches for developing composites relied too much on determining which set of tests best predicted performance for a given set of jobs. They noted that differential validity, which focused on the extent to which a test or set of tests differentially predicted performance across jobs, deserved greater emphasis. They argued that the critical metric should be mean predicted performance, a concept originated by Brogden (1959) that was “a function of predictive validity, intercorrelations among the least-square estimates of job performance, and the number of job families” (Zeidner & Johnson, 1994, p. 379). They developed a procedure for calculating mean predicted performance through a complex simulation process, and have demonstrated that their methodology can improve classification efficiency.

Officer Screening ***Aviation Screening***

Each of the services has invested heavily in research on aircrew screening. Hunter (1989, p. 129) explained this situation by noting, “[p]ilot training is, almost without exception, the most expensive of the many training programs conducted by the military services.”

The Air Force, Navy, and Marine Corps all use commissioned officers as pilots. The Army presents a special case. After the Air Corps was split off from the Army, the Army focused predominantly on

rotary wing aircraft (helicopters), and used warrant officers to fly these. Thus, the discussion of aviation screening through World War II will focus on the Army Air Force and Navy, while the examination of postwar screening will have one section on Air Force and Navy research and a separate section on Army research.

SCREENING THROUGH WORLD WAR II

Beginning in 1920, special examinations on school subjects were used to determine qualifications for candidates for Army aviation training flight training who did not have the minimum educational requirements. In the Navy, when screening of flight candidates extended beyond physical assessment in the 1920s, it included a "psychological interview of sorts" which addressed the candidate's character, motivation, and intelligence (Brown, 1989, p. 118).

Then came World War II, which was a particularly productive time for the development of officer aviation tests. "By the end of World War II, and certainly by the early 1950s, the present state-of-the-art had been achieved with respect to paper-and-pencil testing," (pp. 1, 3) reported North and Griffin in 1977. When World War II began, "the requirements for aircrew personnel increased dramatically" (Rogers, Roach, & Short, 1986, p. 4). A screening examination known as the Aviation Cadet Qualifying Examination was developed and instituted in 1942. It contained reading comprehension, mathematics, mechanical comprehension, and information items, as well as "questions presenting practical problems which might be met, not only in flying, but in everyday activities. . ." (Flanagan, 1948, p. 54). It was designed to predict success in training. In 1944, when the use of the test was expanded to screen candidates for the enlisted gunner job, it was renamed the Army Air Forces Qualifying Examination (Rogers, Roach, & Short, 1986).

During the course of the war, the Army Air Force conducted a comprehensive program to develop screening measures for three classes of jobs: pilot, navigator, and bombardier. The program began with job analyses for each type of job. These analyses involved the accumulation of various types of data, including faculty board proceedings and evaluation board reports, as well as formal job analyses that consisted of checklists of such things as job duties and the nature of one's work. Twenty traits were identified, divided into four categories: intellectual, perceptual, temperamental, and psychomotor (Guilford & Lacey, 1947). This research led to the

development of a number of iterations of the Aircrew Classification Battery that included a wide variety of both paper and pencil tests and psychomotor tests (Brown, 1989), which were administered between 1942 and 1947. This was followed by a "period of experimentation" (Rogers, Roach, & Short, 1986, p. 7) during which a number of measures were tried. Meanwhile, the Aircrew Classification Battery was discontinued in 1947 and reinstated in 1951 (Rogers, Roach and Short, 1986).

The Aircrew Classification Battery represented a major step forward in terms of military classification tests. Considerable initial effort was made to identify tests that would be appropriate for particular types of jobs. Thus, for example, the initial battery "included four different types of mathematics tests believed to be especially important for the navigator; tests of dial and table reading also believed to be of primary importance in selecting navigators; three tests involving speed of recognition of forms which were considered to be especially important to pilots and the bombardier" as well as various other types of tests, including five "apparatus" (psychomotor) tests (Flanagan, 1948, p. 64). The exploration of the use of psychomotor tests, particularly for pilots, began in 1941 in response to a concern that failures in flight training were sometimes related to "poor coordination' and other categories of presumed psychomotor deficiency. . ." (Melton, 1947, p. 1). Psychomotor testing as part of the Classification Battery was discontinued in 1955 (Carretta & Ree, 1993), "largely due to the unreliability of the electromechanical apparatus" (Hunter, 1989, p. 146).

Similarly, the Navy conducted a comprehensive evaluation of a wide variety of psychological, physical, and psychomotor tests for use in screening aviator candidates in World War II. Based on their validity in predicting future outcomes, a battery of tests was identified that included a general cognitive ability test, the Wonderlic Personnel Test, a mechanical comprehension test, and a biographical inventory (Brown, 1989; Waters 1997). Each of these components was found to correlate significantly with success in training (Hunter, 1989; Fiske, 1947), although Ames and Older (1948) noted that the success of the Wonderlic was most prominent among "low score groups" (p. 533). The Wonderlic and the mechanical test made up the Flight Aptitude Rating (FAR), which was first administered in 1942. The FAR has been shown to be a valid predictor ($r = .63$, corrected) of success in training (North & Griffin, 1977). In 1944, the Aviation Classification

Test (ACT), another test of general cognitive ability that also contained elements specific to aviation tasks, replaced the Wonderlic. The ACT, like the Wonderlic, “was found to predict academic failures (ground-school training) fairly well, but to be of no value in predicting flight-training failures” (Ames & Older, 1948, p. 533). The FAR and the ACT were combined to constitute the Navy’s aviation selection battery (Brown, 1989).

POSTWAR AVIATION TESTING: AIR FORCE AND NAVY

For both the Air Force and the Navy, these early efforts formed the basis for later testing. The Air Force tests helped pave the way for the development of the Air Force Officer Qualifying Test in 1951. The AFOQT contained many of the same kinds of content areas prevalent in the earliest Air Force tests, including current affairs, mathematics, reading comprehension, and biographical information. A total of 16 tests also included such areas as general science, aerial orientation, and visualization of maneuvers (Valentine & Craeger, 1961). This four-hour comprehensive battery has been in continuous use since, while undergoing several revisions (Waters, 1997). It yields five composite scores: Pilot, Navigator-Technical, Academic Aptitude, Verbal, and Quantitative. It has been used for both selection and classification (Waters, 1997). Across a multitude of investigations, validities generally in the range of .20 to .40 have been reported (Brown, 1989).

Interest in psychomotor testing and other “apparatus-based” testing for Air Force pilot selection continued even after such testing was dropped from the Aircrew Classification Battery in 1995. Many studies conducted in the 1970s showed promising results, and in 1981, a “project to develop and validate a computer-based test system known as the Basic Attributes Test (BAT)” (Carretta & Ree, 1993, p. 190) was launched. The BAT measured not only psychomotor abilities, but “cognitive abilities, personality, and attitudes toward risk” (Carretta, & Ree, 1993, p. 192) as well. The BAT was implemented for pilot selection in 1993 and has been shown to be a valid predictor of pilot training success (Carretta, Zelenski, & Ree, 2000). It was replaced in 2007 by the Test of Basic Aviation Skills (TBAS), described as a measure of “psychomotor skills proven to be correlated to the completion of Specialized Undergraduate Pilot training, including hand-eye coordination and listening response” (Reimer, 2006, para. 6). The TBAS is combined with AFOQT and flying hours to produce a Pilot

Candidate Selection Method (PCSM) score that is used in pilot selection (Reimer, 2006).

The Air Force’s Ernest Tupes and Raymond Christal were pioneers in identifying what has become a commonly accepted structure of personality dimensions. The structure, known as “the Big Five,” consists of five dimensions: agreeableness, conscientiousness, extroversion, neuroticism, and openness (1961). Between 1993 and 2004, Christal led an effort to develop an instrument based on the Big Five. The result was the Self Description Inventory Plus, which added two dimensions to the Big Five: Service Orientation and Team Orientation. The Self Description Inventory Plus became part of the AFOQT in 2005, although it was not at that time used for operational selection or classification (Weissmuller & Schwartz, 2007).

In 1953, the Navy introduced the Aviation Selection Test Battery (ASTB), which added a spatial test but otherwise maintained the same general content categories as in the FAR and ACT. The Aviation Classification Test was renamed the Aviation Qualification Test and new forms were developed at this time. Further revisions were made in 1971 and a new test for non-aviation candidates was added (Brown, 1989). The ASTB remains in use today for Navy, Marine Corps, and Coast Guard aviation programs, and includes the following components: math skills, reading skills, mechanical comprehension, spatial apperception, aviation and nautical information, and an aviation supplemental test (Naval Aerospace Medical Institute, 2010b).

The Biographical Inventory, which was included among the tests adopted in World War II, was also initially included in the ASTB (Frank & Baisden, 1993). A factor analysis by Stricker (2005) identified five factors: (1) commissioned officer, (2) science and engineering interests, (3) flight experience, (4) masculine activities, and (5) school athletics. As Stricker wrote in 1993, when a revised version of the measure was still in use: “This device has consistently been one of the most valid predictors of retention vs. attrition in the battery, overshadowing tests of general ability, mechanical comprehension, spatial ability, and aviation information” (p. 7). However, the official website for the ASTB now explains: “Although the [Biographical Inventory] was initially a powerful predictor of attrition, its ability to predict which students will complete aviation training has essentially declined to zero over a period of years and thus, was suspended” (Naval Aerospace Medical Institute, 2010a, “What is the Biographical Inventory,” para. 1).

POSTWAR AVIATION TESTING: ARMY

The Army continued to develop aviation selection tests, following the creation of the Air Force as a separate branch, to meet its remaining needs for rotary-wing and fixed-wing (airplane, jet) pilots. The Army, unlike the other services, had training programs for both commissioned officer and warrant officer pilots. Warrant officer pilot selection, typically associated with helicopter assignments, created special challenges, because candidates could qualify with only a high school education. As it became clear that leader training for these pilots was needed, and that the “double hurdle of leader-pilot prerequisites was one many applicants could not negotiate” (Drucker & Kaplan, 1966, p. 30), the need to develop a new selection battery became evident.

After developing a number of interim batteries relying heavily on Air Force and Navy tests, the Army implemented the Flight Aptitude Selection Test (FAST) in 1966. The test had two forms—one for commissioned officers for fixed-wing training, and one for warrant officers for rotary-wing training. Four content areas were identified: “(1) biographical data and interest information, (2) spatial ability, (3) mechanical ability, and (4) aviation information” (Brown, Dohme, & Sanders, 1982, p. 1174). Validities for predicting flight grades were obtained in the range of .38 to .44. For a variety of job-related and test-related considerations, a shorter Revised FAST (RFAST) was developed and implemented in 1980. It also predicted training success well, with a validity of .33 (Brown, Dohme, & Sanders, 1982). This instrument was later replaced by the Alternate Flight Aptitude Selection Test (AFAST).

In 2004, the Army began work on the development of a new Selection Instrument for Flight Training (SIFT). A prototype battery was developed, which included “measures of task prioritization, perceptual speed and accuracy, motivation to become an Army aviator, and several personality traits” (Bruskiewicz et al., 2007, p. v).

Pre-commissioning Screening

The most common type of pre-commissioning screening program is based on a “whole person” concept, in which different types of indicators are combined to gauge the probability of the candidate’s success. An example is the formula used in West Point selection, where measures of academic potential (weighted 60%), leadership potential (30%), and physical proficiency (10%) are combined for screening purposes. This formula has been in use

since 1958. Validity studies have demonstrated the utility of this composite for predicting academic performance in the United States Military Academy (USMA) (Brown, 1987; Davidson, 1977). These whole-person programs have historically incorporated data from such available sources as the Scholastic Aptitude Test (SAT), the American College Test (ACT), and high school rank. In fact, Arabian and Shelly in 2000 reported that all service ROTC programs and all service academies made use of such data in their screening programs.

While the services have derived much benefit from the use of scores from tests and measures obtained from outside sources, of more interest for this chapter are efforts to develop measures specifically for the purpose of officer selection. In the course of discussing the Air Force, Navy, and Marine Corps’ aviation screening programs, this chapter has also touched on a number of such developments that impact pre-commissioning screening. These include the development of the Navy’s ASTB and the Air Force’s AFOQT (Arabian and Shelby, 2000).

This review has not yet addressed developments in the Army’s history of pre-commissioning screening, which is separate and distinct from its aviation screening process. Thus, the rest of this section will be devoted to such developments. Separate research activities were associated with each of the three primary pre-commissioning programs: USMA, the Army Reserve Officers Training Corps (ROTC), and Officer Candidate School (OCS). As noted earlier, the Army Alpha test developed in World War I was administered to officers as well as enlisted soldiers (Zeidner & Drucker, 1988). Otherwise, there was little systematic screening of officer candidates prior to World War II. In response to a congressional mandate in 1812, West Point administered a fairly basic examination in reading, writing, and arithmetic until 1902, when high school graduation replaced the test as a requirement for entry (Ambrose, 1966).

Significant research on Army officer selection began with the Second World War. At USMA, the initial concern was predicting academic success (Ambrose, 1966). The Personnel Research Branch of the Adjutant General’s Office, later known as the Army Research Institute for the Behavioral and Social Sciences (ARI), developed a test with language and math components during the war. After the war, attention turned to the more elusive concept of leadership. A West Point Biographical Inventory, composed of measures of personal history, personality,

and background, was developed in 1947 (Brogden & Burke, 1950). Its success in predicting important outcomes was limited, a shortcoming that was judged to be related to a tendency for respondents to respond in a way that would maximize their scores, rather than reflect their true characteristics. Developers then turned to a forced-choice approach, designed to counteract this tendency to “fake,” and more positive linkages to ratings of leadership were found, with correlations ranging from .27 to .29 (Brogden, Burke, & Frankfeldt, 1952).

Also in the period following the war, a screening measure was developed for entrance into the Army ROTC Advanced Course. The ROTC Qualifying Examination, consisting of quantitative and verbal tests, was found to be a good predictor of academic grades. Similarly, the Officer Candidate Test, testing arithmetic reasoning, reading comprehension, and data interpretation, was developed for Army OCS selection in 1942 (Parrish & Drucker, 1957).

There have been three major developments in the history of Army officer selection research since World War II. One was the Officer Prediction program, stimulated by a perception in the mid-1950s that ROTC selection procedures were deficient in their assessment of leader potential, particularly combat leadership potential. A wide variety of cognitive, physical and non-cognitive measures were developed for administration to officers who participated in an assessment center consisting of integrated military exercises (e.g., inspecting vehicles, directing evacuation of an office) administered over a three-day period in an escalating hostilities simulation (Helme, Willemin, & Day, 1971; Helme, Willemin, & Grafton, 1974).

The outcome of the Officer Prediction program was to identify measures that differentially predicted performance in three different types of scenarios: technical, administrative, and combat. Since the predictors for technical and administrative tasks were comparable, these were combined. On the cognitive side, tests of knowledge of tactics and practical skills were good predictors of combat leadership performance; while measures of knowledge of history, politics and culture, and math and physical science were good predictors of technical-managerial leadership. A number of measures of non-cognitive dimensions, including endurance and physical leader, predicted combat leadership, and measures of such non-cognitive constructs as verbal/social leader and scientific interest predicted technical-managerial leadership (Helme, Willemin, & Grafton, 1974). The results from this research,

conducted in the late 1960s and early 1970s, led to the development of the Cadet Evaluation Battery in 1972 (Rumsey & Mohr, 1978). The technical-managerial cognitive subtest was used for selection into the ROTC Advanced Course beginning in 1978. This test, under a different name, was also used for selection into OCS beginning in 1979.

The second major historical event in Army officer selection research was stimulated by a recommendation by a 1977 Army study group for a more “performance-based” approach to Army pre-commissioning assessment (Department of the Army, 1978). Following this recommendation, the Army Research Institute (ARI) built three types of measures based on a job analysis conducted to identify critical officer performance dimensions. Situational exercises based on standard platoon-leader types of tasks were generated for an ROTC assessment center. A structured interview was a second assessment tool (Rogers et al., 1982); and a paper and pencil test assessing a variety of cognitive skills, the Officer Selection Battery (OSB), was a third (Fischl et al., 1986). The OSB was found to predict ratings of performance and potential by ROTC instructors with validities of .21 to .29 and final grade in post-commissioning training at an average level of .52 (Fischl et al., 1986). The OSB was incorporated into the ROTC selection system as part of a “whole person assessment,” although the Scholastic Aptitude Test and American College Test eventually replaced it for that purpose.

The third major development is ongoing. It involves renewed interest and application of non-cognitive measures in selection into pre-commissioning training programs. USMA has been exploring the potential predictive value of two personality dimensions in particular, hardiness and grit. Hardiness “refers to a specific set of attitudes and skills” that lead to “resilience and growth in stressful situations (Maddi et al., 2010). In a project known as the Baseline Officer Longitudinal Data Set, or BOLDS, hardiness, a social judgment measure, and cognitive measures such as the SAT and ACT, were all found to relate to performance of USMA cadets (Bartone, Snook, & Tremble, 2002). More recent investigations of the relationship between hardiness and performance of USMA cadets have also shown positive results (e.g., Bartone et al., 2009; Maddi et al., 2010).

Grit “entails working strenuously toward challenges . . . over years despite failure, adversity, and plateaus in progress” (Duckworth et al. 2007, pp. 1087-1088). Grit has been associated with

completion of a USMA summer training program (Duckworth et al.).

ARI has been exploring the link between “rational” biodata measures and performance in precommissioning programs. An item in a rational biodata inventory is developed to represent a particularly promising construct, rather than being selected on an arbitrary basis or because of a random observed relationship with some outcome. Building on some promising findings using this approach (e.g., Kilcullen et al., 1999), the Army has investigated its potential use in predicting success in precommissioning training. Measures incorporating rational biodata scales been found to relate to attrition (Putka, 2009) and performance (Putka et al., 2011) in ROTC and to performance in OCS (Allen et al., 2011). The measure that performed so well in the ROTC context has now been implemented as part of the process of selecting recipients of four-year ROTC scholarships (Putka et al., 2011).

Conclusions and Future Directions

As noted earlier, enlisted and officer selection are very different worlds. The services can now claim a sophisticated, state of the art selection and classification system for enlisted service members. Their tests are highly reliable, cover a wide range of content, and have been shown to be highly predictive of performance both in training and on the job. The computer adaptive delivery system is highly efficient and psychometrically sound. Tests are updated periodically to counteract obsolescence and compromise. Person–job match is achieved through a sophisticated system involving empirically based matching of groups of tests with groups of jobs.

Yet the services are not likely to stand on the status quo. The demands on the testing system are great, and testing technology and policy must advance to meet the challenges ahead. Although the tests are soundly constructed, much of the work that the selection of tested constructs is based on was accomplished many decades ago. The services have conducted much research to explore new content areas. Some of this work, particularly in the non-cognitive realm, is now beginning to affect the accessioning process.

Some might argue that existing tests have proven to be so valid for the prediction of performance that further development is unnecessary. However, the strength of this argument depends partly on the comprehensiveness and representativeness of the performance criteria that have been used in the validation analyses. Project A demonstrated that the validity of

the ASVAB was much greater for technical than for motivational criteria. This project incorporated, so far as is known, the most comprehensive set of criteria ever used in personnel research, but the pursuit of improved performance measures has not ended. The hands-on measures used in Project A represented discrete job tasks, but could not be supposed to represent the full complexity of performance, with the flow of events, interrelationships among activities, and unexpected interruptions characteristic of a realistic job environment. Other measures, such as rating scales, supplemented the hands-on measures, but these have limitations as well. Currently, research is being conducted on more complex simulations in an attempt to represent job performance more fully.

Although the joint service project to link enlistment standards to job performance demonstrated that the services can conduct validation research using job performance measures, there have been very few attempts to do so before or since. Generally, the effort is viewed as prohibitively expensive. Suitable performance measures are not available operationally, so they have to be developed in order for the validation effort to be conducted. The process of determining what should be measured, and then developing measures that sufficiently encompass critical requirements for a particular job, is a major endeavor. The more jobs that need to be covered, the greater the effort.

This criterion problem is a difficult, but hopefully not insurmountable, one. To the extent that the military’s job analysis techniques can be designed to efficiently distinguish the elements that are critical for selection and classification from those that are not, the effort of developing performance measures can be reduced. Insofar as similar requirements across different jobs can be recognized as interchangeable for selection and classification purposes, the necessity of developing separate measures for each job can be alleviated.

Officer Selection

Although there have been many important developments in officer selection research, officer selection has typically not received the same level of attention as enlisted selection. The requirement that officers have a college degree has greatly reduced the need for additional screening for them. However, considerable expense can be saved by screening out from costly pre-commissioning training programs those who have neither the inclination nor the ability to be effective military officers. Non-cognitive measures

can be useful in identifying those who have the intangible qualities associated with effective leadership. Historically, there has been considerable investment in the development of non-cognitive officer selection measures, and recently there has been a revival of this approach.

The challenges of improving current methods of describing jobs and measuring performance are not unique to enlisted selection. To some extent, because there is less diversity and more generality in officer jobs, the challenges are somewhat less than on the enlisted side. However, officer jobs tend to entail more complexity, and in that respect are more difficult to define and present more performance measurement difficulties than enlisted jobs. Thus, efforts to develop new methods of job description and performance measurement for military applications will need to consider the unique characteristics of job requirements for both the enlisted and officer populations.

Final Words

The military today has a well-deserved reputation for the quality of its service members. Quality may be viewed as the product of potential as measured at entry, training, and experience. The “potential” component of this equation is not determined entirely by the selection tools employed. Unless a significant pool of applicants is available, the utility of any screening system will be limited. However, having an ample applicant pool does not guarantee that those chosen will meet the services’ needs. Some means of separating those with high potential from the remainder is another essential requirement for that. The services have devoted substantial effort and resources over many decades to develop the best tools for that purpose. In an era of multiple threats and mounting personnel costs, the payoff for improved screening and assignment procedures will only get greater. This speaks to the need to identify and overcome those obstacles to an optimal selection and classification system that still remain.

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References

Allen, M. T. Babin, N. E., Oliver, J. T., & Russell, T. L. (2011). Predicting leadership performance and potential in U. S. Army Officer Candidate School (OCS). In M. G. Rumsey

- (Chair), *Predicting leader performance: Insights from Army officer research*. Symposium conducted at the annual meeting of the American Psychological Association, Washington, DC.
- Ambrose, S. E. (1966). *Duty, honor, country: A history of West Point*. Baltimore: The Johns Hopkins Press.
- Ames, V. C., & Older, H. J. (1948). Chapter II: Aviation psychology in the United States Navy. *Review of Educational Research, 18*, 532–542.
- Arabian, J. M., & Shelby, J. A. (2000). Policies, procedures, and people: The initial selection of U.S. military officers (pp. 1–1 to 1–7). In *Officer selection*. Cedex, France: Research Technology Organization, NATO.
- Bartone, P. T., Eid, J., Johnsen, B. H., Laberg, J. C., & Snook, S. A. (2009). *Leadership and Organization Development Journal, 30*(6), 498–521.
- Bartone, P. T., Snook, S. A., & Tremble, T. R. (2002). Cognitive and personality predictors of leader performance in West Point cadets. *Military Psychology, 14*, 321–338.
- Borman, W. C., Schneider, R. J., Houston, J. S., & Bearden, R. M. (2009). *The Navy Computerized Adaptive Personality Scales: Evidence for validity* (abstract, briefing slides). Paper presented at the 51st annual meeting of the International Military Testing Association, Tartu, Estonia.
- Brogden, H. E. (1959). Efficiency of classification as a function of number of jobs, percent rejected, and the validity and intercorrelation of job performance estimates. *Educational and Psychological Measurement, 19*, 181–190.
- Brogden, H. E., & Burke, L. (1950). *Validation of the West Point Biographical Inventory, WPB-1, against first-year Aptitude for Service ratings*. (Rep. No. 829). Washington, DC: Personnel Research Section, Personnel Research and Procedures Branch, Adjutant General’s Office (Army).
- Brogden, H. E., Burke, L. K., & Frankfeldt, E. (1952). *Validation of the West Point Personal Inventory* (Rep. No. 882). Washington, DC: Personnel Research Section, Personnel Research and Procedures Branch, Adjutant General’s Office (Army).
- Brown, D. C. (1987). *Military officers: Commissioning sources and selection criteria* (Final Rep. No. 87-42). Alexandria, VA: Human Resources Research Organization.
- Brown, D. C. (1989). Officer aptitude selection measures. In M. F. Wiskoff & G. M. Rampton (Eds.), *Military personnel measurement: Testing, assignment, evaluation* (pp. 97–127). New York: Praeger.
- Brown, W. R., Dohme, J. A., & Sanders, M. G. (1982). Changes in the U.S. Army aviator selection and training program. *Aviation, Space, and Environmental Medicine, 53*, 1173–1176.
- Bruskiewicz, K. T., Katz, L. C., Houston, J., Paulin, C., O’Shea, G., & Damos, D. (2007). *Predictor development and pilot testing of a prototype selection instrument for Army flight training* (Tech. Rep. No. 1195). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Campbell, J. P., & Knapp, D. J. (Eds.) (2001). *Exploring the limits in personnel selection and classification*. Mahwah, NJ: Erlbaum.
- Carey, N. B. (1992). Does choice of a criterion matter? *Military Psychology, 4*, 103–117.
- Carretta, T. R., & Ree, M. J. (1993). Basic Abilities Test: Psychometric equating of a computer-based test. *The International Journal of Aviation Psychology, 3*, 189–201.
- Carretta, T. R., Zelenski, W. E., & Ree, M. J. (2000). Basic Attributes Test (BAT) retest performance. *Military Psychology, 12*, 221–232.

- Christal, R. E. (1969). *Comments by the chairman*. In R. E. Christal (Chair), Division of Military Psychology Symposium: Collecting, analyzing, and reporting information describing jobs and occupations. *Proceedings, 77th Annual Convention of the American Psychological Association*, 77–85.
- Davidson, T. G. (1977). *CEER/ACEER as a predictor of academic grade point average*. (Rep. No. 77-014). West Point, NY: Office of the Director of Institutional Research, United States Military Academy.
- Department of the Army (1978). *A review of education and training for officers (RETO)*. Washington, DC: Department of the Army.
- Department of Defense (1985). *Defense manpower quality, Vol. I*. Washington, DC: Office of the Assistant Secretary of Defense (Manpower, Installations, and Logistics).
- Drasgow, F., Embretson, S. E., Kyllonen, P. C., & Schmitt, N. (2006). *Technical review of the Armed Services Vocational Aptitude Battery* (Final Rep. No. 06-25). Alexandria, VA: Human Resources Research Organization.
- Drasgow, F., Stark, S., & Chernyshenko, S. (Aug. 2007). *Developing TAPAS (Tailored Adaptive Personality Assessment System)*. Presentation to meeting of the Military Accession Policy Working Group, Monterey, CA.
- Drucker, A. J., & Kaplan, H. (1966). Identifying successful pilots through research. *U.S. Army Aviation Digest*, 12, 29–32.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101.
- Farmer, W. L., Bearden, R. M., Eller, E. D., et al. (2003). JOIN: Job and Occupational Interest in the Navy. *Proceedings, 45th Annual Conference of the Military Testing Association*, 62–69.
- Faulkner, R. N., & Haggerty, H. R. (1947). Personnel research and development in the Bureau of Naval Personnel: History and scope of the program. In D. B. Stuit (Ed.), *Personnel research and test development in the Bureau of Naval Personnel* (pp. 3–11). Princeton: Princeton University Press.
- Fischl, M. A., Edwards, D. S., Claudy, J. G., & Rumsey, M. G. (1986). *Development of Officer Selection Battery Forms 3 and 4* (Tech. Rep. No. 603). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Fiske, D. W. (1947). Validation of naval aviation cadet selection tests against training criteria. *Journal of Applied Psychology*, 31, 601–614.
- Flanagan, J. C. (1948). *The Aviation Psychology Program in the Army Air Forces* (Rep. No. 1). Washington, DC: U.S. Government Printing Office.
- Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, 51, 327–358.
- Frank, L. H., & Baisden, A. G. (1993). The 1992 Navy and Marine Corps Aviation Selection Test Battery development. *Proceedings of the 35th Annual Conference of the Military Testing Association*, 35, 14–19.
- Furer, J. A. (1959). *Administration of the Navy Department in World War II*. Washington, DC: U.S. Government Printing Office.
- Guilford, J. P., & Lacey, J. I. (Eds.) (1947). *Printed classification tests: Report No. 5*. Washington, DC: Government Printing Office.
- Guinn, N., Johnson, A. L., & Kantor, J. E. (1975). *Screening for adaptability to military service* (Tech. Rep. No. 75–30). Lackland Air Force Base, TX: Personnel Research Division, Air Force Human Resources Laboratory.
- Hedge, J. W., & Teachout, M. S. (1992). An interview approach to work sample criterion measurement. *Journal of Applied Psychology*, 4, 453–461.
- Heffner, T. S., & White, L. A. (2009, September). *Expanded Enlistment Eligibility Metrics* (abstract). Paper presented at U.S. Army Accessions Command Research Consortium, Hampton, VA.
- Helme, W. H., Willemin, L. P., & Day, R. W. (1971). *Psychological factors measured in the Differential Officer Battery* (Tech. Research Rep. No. 1173). Arlington, VA: U.S. Army Behavior and Systems Research Laboratory.
- Helme, W. H., Willemin, L. P., & Grafton, F. C. (1974). *Prediction of officer behavior in a simulated combat situation* (Research Rep. No. 1182). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Hunter, D. R. (1989). Aviator selection. In M. F. Wiskoff & G. M. Rampton (Eds.), *Military personnel measurement: Testing, assignment, evaluation* (pp. 129–167). New York: Praeger.
- Kilcullen, R. N., Mael, F. A., Goodwin, G. F., & Zazanis, M. M. (1999). Predicting U. S. Army Special Forces field performance. *Human Performance in Extreme Environments*, 4(1), 53–63.
- Knapp, D. (2006). The U.S. Joint-Service Job Performance Measurement Project. In W. Bennett, C. E. Lance, & D. J. Woehr (Eds.), *Performance measurement: Current perspectives and future challenges* (pp. 113–140). Mahwah, NJ: Erlbaum.
- Knapp, D. J., & Tremble, T. R. (Eds.) (2007). *Concurrent validation of experimental Army enlisted personnel selection and classification measures* (Tech. Rep. No. 1205). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Kyllonen, P. C. (1994). Cognitive abilities testing: An agenda for the 1990s. In M. G. Rumsey, C. B. Walker, & J. H. Harris, *Personnel selection and classification* (pp. 103–125). Hillsdale, NJ: Erlbaum.
- Kroeker, L. P. (1989). Personnel classification/assignment models. In M. F. Wiskoff & G. M. Rampton (Eds.), *Military personnel measurement: Testing, assignment, evaluation* (pp. 41–73). New York, NY: Praeger.
- Laabs, G. L., & Baker, H. G. (1989). Selection of critical tasks for Navy job performance measures. *Military Psychology*, 1, 3–16.
- Laurence, J. H., & Ramsberger, P. F. (1991). *Low aptitude men in the military: Who profits, who pays?* New York, NY: Praeger.
- Lightfoot, M. A., Ramsberger, P. F., & Greenston, P. M. (2000). *Matching recruits to jobs: Enlisted Personnel Allocation System* (Special Rep. No. 41). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Looper, L. T. (1997). Changing technology and military missions: Impact on U.S. military personnel systems. *Proceedings, 39th Annual Conference of the International Military Testing Association*, 270–275
- Maddi, S. R., Matthews, M. D., Kelly, D. R., Resurreccion, N., & Villarreal, B. J. (2010). *Relationship between hardiness and performance in challenging environments*. Paper presented at the annual meeting of the American Psychological Association.
- Maier, M. H. (1993). *Military aptitude testing: The past fifty years*. (Tech. Rep. No. 93-007). Monterey, CA: Personnel Testing Division, Defense Manpower Data Center.

- Maier, M. H., & Fuchs, E. F. (1969). *Development of improved Aptitude Area composites for enlisted classification*. (Tech. Research Rep. No. 1159). Arlington, VA: U.S. Army Behavioral Science Research Laboratory.
- Maier, M. H., & Fuchs, E. F. (1972). *An improved differential Army classification system*. (Tech. Research Rep. No. 1177). Arlington, VA: Behavior and Systems Research Laboratory.
- Martin, C. J., & Hoshaw, C. R. (1997). Policy and program management perspectives. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 11–20). Washington, DC: American Psychological Association.
- Mathews, W. T. (1977). *Marine Corps enlisted attrition* (CRC No. 341). Arlington, VA: Center for Naval Analyses.
- McBride, J. R. (1997). Technical perspective. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized Adaptive Testing* (pp. 29–44). Washington, DC: U.S. American Psychological Association.
- Melton, A. W. (1947). *Apparatus tests*. Report No. 4. Washington, DC: U.S. Government Printing Office.
- Mitchell, J. L., & Driskell, W. E. (1996). Military job analysis: A historical perspective. *Military Psychology*, 8, 119–142.
- Naval Aerospace Medical Institute (2010a, Jan 22). *ASTB frequently asked questions*. Retrieved from [http://www.med.navy.mil/sites/navmedmpte/nomi/nami/Pages/ASTB FrequentlyAsked Questions.aspx](http://www.med.navy.mil/sites/navmedmpte/nomi/nami/Pages/ASTB_FrequentlyAskedQuestions.aspx)
- Naval Aerospace Medical Institute (2010b, Jan 22). *ASTB information and sample questions*. Retrieved from [http://www.med.navy.mil/sites/navmedmpte/nomi/nami/Pages/ASTB Overview.aspx](http://www.med.navy.mil/sites/navmedmpte/nomi/nami/Pages/ASTB_Overview.aspx).
- Navy Personnel Research Studies and Technology (1998). *Sailor 21. A research vision to attract, retain, and utilize the 21st century sailor*. Millington, TN: Navy Personnel Research Studies and Technology.
- North, R. A., & Griffin, G. R. (1977). *Aviator selection 1919–1977* (Special Rep. No. 77-2). Pensacola, FL: Naval Aerospace Medical Research Laboratory.
- Odell, C. E. (1947). Selection and classification of enlisted personnel. In D. B. Stuit (Ed.), *Personnel research and test development in the Bureau of Naval Personnel* (pp. 21–30). Princeton, NJ: Princeton University Press.
- Olson, P. T. (1968). *Use of Army school samples in estimating ACB test validity* (Tech. Research Note No. 199). Washington, DC: U.S. Army Behavioral Science Research Laboratory.
- Oppler, S. H., McCloy, R. A., Peterson, N. G., Russell, T. L., & Campbell, J. P. (2001). The prediction of multiple components of entry-level performance. In J. P. Campbell & Knapp, D. J. (Eds.) (2001). *Exploring the limits in personnel selection and classification* (pp. 349–388). Mahwah, NJ: Erlbaum.
- Parrish, J. A., & Drucker, A. J. (1957). *Personnel research for Officer Candidate School* (Tech. Research Rep. No. 1107). Washington, DC: Personnel Research and Procedures Division, Personnel Research Branch, The Adjutant General's Office (Army).
- Personnel Testing Division, Defense Manpower Data Center (2008). *ASVAB Technical Bulletin No. 3: CAT-ASVAB Forms 5-9*. Retrieved from http://www.official-asvab.com/catasvab_res.htm
- Putka, D. J. (Ed.) (2009). *Initial development and validation of assessments for predicting disenrollment of four-year scholarship recipients from the Reserve Officer Training Corps* (Study Rep. No. 2009-06). Arlington, VA: U. S. Army Research Institute for the Behavioral and Social Sciences.
- Putka, D. J., Kilcullen, R., Legree, P., & Wasko, L. (2011). Identifying the leaders of tomorrow: Validating predictors of leader potential and performance. In M. G. Rumsey (Chair), *Predicting leader performance: Insights from Army officer research*. Symposium conducted at the annual meeting of the American Psychological Association, Washington, DC.
- Reimer, K. (2006, July 1). *AETC deploys new pilot screening test for FY07*. Retrieved from <http://www.aetc.af.mil/news/story.asp?id=123023176/>
- Rogers, D. L., Roach, B. W., & Short, L. O. (1986). *Mental ability testing in the selection of Air Force officers: A brief historical overview*. (AFHRL TP-86-23). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, Air Force Systems Command.
- Rogers, R. W., Lilley, L. W., Wellins, R. S., Fischl, M. A., & Burke, W. P. (1982). *Development of the pre-commissioning Leadership Assessment Program* (Tech. Rep. No. 560). Alexandria, VA: U.S. Army Research Institute of the Behavioral and Social Sciences.
- Rumsey, M. G., & Mohr, E. S. (1978). *Male and female factors on the Cadet Evaluation Battery* (Tech. Paper No. 331). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Russell, T. L., & Sellman, W. S. (2008). *Review of information and communications technology literacy tests*. Paper presented at the 23rd Annual Conference of the Society for Industrial and Organizational Psychology, San Francisco, CA.
- Sands, W. A., & Waters, B. K. (1997). Introduction to ASVAB and CAT. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 3–9). Washington, DC: American Psychological Association.
- Schmidt, F. L. (1994). The future of personnel selection in the U.S. Army. In M. G. Rumsey, C. B. Walker, & J. H. Harris, *Personnel selection and classification* (pp. 103–125). Hillsdale, NJ: Erlbaum.
- Sellman, S. W. (2007). *Research and implementation plan. Addressing recommendations for enhancing ASVAB and DOD enlisted personnel and job classification system* (FR-07-46). Alexandria, VA: Human Resources Research Organization.
- Staff, Personnel Research Section, Classification and Replacement Branch, the Adjutant General's Office (1945). The Army General Classification Test. *Psychological Bulletin*, 42, 760–768.
- Stark, S., Chernyshenko, O. S., & Drasgow, F. (2005). An IRT approach to constructing and scoring pairwise preference items involving stimuli on different dimensions: The multi-unidimensional pairwise-preference model. *Applied Psychological Measurement*, 29, 184–203.
- Stricker, L. J. (1993). The Navy's Biographical Inventory: What accounts for its success? (pp. 7–12). *Proceedings, 35th Annual Conference of the Military Testing Association*. Williamsburg, VA.
- Stricker, L. J. (2005). The Biographical Inventory in naval aviation selection: Inside the black box. *Military Psychology*, 17, 55–67.
- Thomas, P. J. (1970). *A comparison between the Armed Services Vocational Aptitude Battery and the Navy Basic Test Battery in predicting Navy school performance* (Tech. Bulletin No. STB 70-4) San Diego, CA: Navy Personnel and Training Research Laboratory.
- Trent, T. (1993). The Armed Services Applicant Profile (ASAP). In T. Trent & J. H. Laurence (Eds.), *Adaptability screening for the Armed Forces* (pp. 71–99). Washington, DC: Department of Defense, Office of Assistant Secretary of Defense (Force Management and Personnel).

- Trent, T., & Laurence, J. H. (1993). Preface. In T. Trent & J. H. Laurence (Eds.), *Adaptability screening for the Armed Forces* (pp. v–vii). Washington, DC: Department of Defense, Office of Assistant Secretary of Defense (Force Management and Personnel).
- Trippe, M. D., & Russell, T. L. (2008). *Issues in information and communication technology test development: A literature review and summary of best practices—Delivery Order 3: Development and validation of similar instruments report* (TO-08-16). Alexandria, VA: Human Resources Research Organization.
- Tupes, E. C., & Christal, R. E. (1961). *Recurrent personality factors based on trait ratings*. (Tech. Rep. No. 61-97). Lackland Air Force Base, TX: Aeronautical Systems Division, Personnel Laboratory.
- Underhill, C. M., Lords, A. O., & Bearden, R. M. (2006). *Fake resistance of a forced-choice paired-comparison personality measure*. Paper presented at the 48th annual meeting of the International Military Testing Association, Kingston, Canada.
- Valentine, L. D., & Creager, J. A. (1961). *Officer selection and classification tests: Their development and use* (ASD-TN-61-145). Lackland Air Force Base, TX: Personnel Laboratory, Aeronautical Systems Division, Air Force Systems Command.
- Waters, B. K. (1997). Army Alphas to CAT-ASVAB: Four-score years of military personnel selection and classification testing. In R. F. Dillon (Ed.), *Handbook on testing* (pp. 187–203). Westport, CT: Greenwood Press.
- Waters, D. D., Russell, T. L., & Sellman, S. W. (2007). *Review of non-verbal reasoning tests*. Alexandria, VA: Human Resources Research Organization.
- Weeks, J. L., Mullins, C. J., & Vitola, B. M. (1975). *Airman classification batteries from 1948 to 1975: A review and evaluation*. (Tech. Paper No. 75-78). Lackland Air Force Base, TX: Air Force Human Resources Laboratory.
- Weissmuller, J. J., & Schwartz, K. L. (2007). *Self-Description Inventory Plus Initiative: Assault on Occam's Razor*. Presented at the annual meeting of the International Military Testing Association, Queensland, Australia.
- Welsh, J. R., Kucinkas, S. K., & Curran, L. T. (1990). *Armed Services Vocational Battery (ASVAB): Integrative review of validity studies* (AFHRL-TR-90-22). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, Air Force Systems Command.
- White, L. A., & Young, M. C. (1998). *Development and validation of the Assessment of Individual Motivation*. Paper presented at the annual meeting of the American Psychological Association, San Francisco.
- Willemin, L. P., & Karcher, E. K. (1958). *Development of combat aptitude areas* (PRB Tech. Research Rep. No. 1110). Washington, DC: Personnel Research Branch, Personnel Research and Procedures Division, The Adjutant General's Office (Army).
- Wolfe, J. H. (Ed.). (1997). Enhanced Computer-Administered Test (ECAT) battery (special issue). *Military Psychology*, 9(1).
- Young, M. C., Heggstad, E. D., Rumsey, M. G., & White, L. A. (2000). *Army pre-implementation research findings on the Assessment of Individual Motivation*. Paper presented at the annual meeting of the American Psychological Association, Washington, DC.
- Young, M. C., & White, L. A. (2006). *Preliminary operational findings from the Army's Tier Two Attrition Screen (TTAS)*. Paper presented at the Army Science Conference, Orlando, FL.
- Young, M. C., White, L. A., Heggstad, E. D., & Barnes, J. D. (2004). *Operational validation of the Army's new pre-enlistment attrition screening measure*. Paper presented at the annual meeting of the American Psychological Association, Honolulu, HI.
- Zeidner, J., & Drucker, A. J. (1988). *Behavioral sciences in the Army: A corporate history of the Army Research Institute*. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Zeidner, J., Harper, B. P., & Karcher, E. K. (1956). *Reconstitution of the Aptitude Areas* (PRB Tech. Research Rep. No. 1095). Washington, DC: Adjutant General's Office (Army).
- Zeidner, J., & Johnson, C. D. (1994). Is personnel classification a concept whose time has passed? In M. G. Rumsey, C. B. Walker, & J. H. Harris (Eds.), *Personnel selection and classification* (pp. 377–410). Hillsdale, NJ: Erlbaum.

Assessing Psychological Suitability for High-Risk Military Jobs

James J. Picano and Robert R. Roland*

Abstract

High-risk military operational personnel engage in physically and psychologically demanding missions under conditions of extreme threat (including combat) in which the consequences of performance failure can be severe or even catastrophic. These personnel typically undergo stringent psychological assessment and selection procedures in order to determine their psychological suitability for specialized, high-risk military assignments. Such assessment requires a thorough evaluation of an individual's psychological and emotional health risks, training potential, job performance potential, and risk for personal misconduct and counterproductive work behaviors. Many military operational selection programs in the United States utilize the assessment center method for this purpose, whose rich heritage extends back to World War II. In this chapter, we discuss the constructs assessed and methods typically used in the assessment of high-risk military personnel, with emphasis on the psychological interview for the assessment of psychological suitability.

Keywords: Assessment and selection, military personnel, interviews

Assessing Psychological Suitability for High-Risk Military Jobs

High-risk military operational personnel engage in physically and psychologically demanding missions under conditions of extreme threat (including combat) in which the consequences of performance failure can be severe or even catastrophic. At some level, all military missions or operations can be said to involve high risk, especially when direct action or combat is involved. However, we differentiate high-risk military operational personnel from other military personnel by the specific mission profiles and demands they ordinarily encounter in their jobs (Picano, Williams, & Roland, 2006). High-risk military personnel typically engage in critical and sensitive national security missions; employ non-routine, nonstandard, or

unconventional military tactics; deploy frequently and often for prolonged durations to denied or hostile environments in various cultural settings; operate fairly independently without much logistical or tactical support; and often encounter unknown and uncontrollable situational factors demanding ingenuity, expertise, initiative, and a high degree of common sense to avoid mission failure (some examples of high-risk occupations include Special Operations forces, astronauts, covert intelligence operatives; Picano et al., 2006). The aforementioned job characteristics differ in both scope and degree from those that define other high-reliability personnel whose jobs demand integrity, trust, reliability, and personal stability (e.g., nuclear power plant personnel, police officers, airline pilots; Flin, 2001), but may not involve as extreme environmental or

* The views expressed in this work are those of the authors and do not reflect the official policy or position of the Department of the Army, the Department of Defense, or the United States Government.

situational challenges, or carry comparable severity of consequences for failure.

Core Psychological Attributes of High-Risk Operational Personnel

Picano and colleagues (2006) proposed that personnel who are especially well suited for high-risk operational jobs possess an identifiable set of psychological attributes regardless of the specific missions or jobs they perform. These attributes represent the core of those required for success in high-risk military operational positions. These core attributes are thought to be essential to successful adaptation regardless of the particular mission or occupation. Although core attributes may be necessary for success in all high-risk occupations, unique mission profiles or other specific occupational demands may necessitate additional attributes for successful adaptation and performance. For example, stress resistance may be important to successful performance in all high-risk operational personnel (Picano et al., 2006); whereas the ability to live a cover identity may be essential for an undercover agent (Girodo, 1997) or intelligence operative (Fiske et al., 1997), but irrelevant to successful adaptation for an astronaut (Galarza & Holland, 1999).

Psychological attributes necessary for successful performance in high-risk occupations are ideally identified *a priori* from a systematic job analysis. However, in our experience, attributes more often emerge retrospectively from the assessment of more general dispositions, qualities, or characteristics.

Examining results from the scant published literature available, as well as from unpublished accounts of psychological attributes accumulated from their work in different operational assessment and selection programs, Picano and colleagues (2006) identified six attribute dimensions that were commonly required for successful performance across a wide spectrum of high-risk operational occupations, ranging from astronauts to clandestine intelligence operatives. The attributes included: emotional stability, adaptability (to changing demands and situations), teamwork abilities, physical stamina and fitness, sound judgement and decision-making, and intrinsic motivation. These attribute areas are not much different than those identified by the Office of Strategic Services (Fiske et al., 1997; OSS Assessment Staff, 1948) in their efforts to select clandestine intelligence operatives during World War II over 60 years ago. The seven general areas outlined by the OSS staff included: motivation for the assignment,

energy and initiative, effective intelligence, emotional stability, social relations, leadership, and security.

Girodo (1997) conducted an analysis of attributes necessary for success as an undercover law-enforcement agent (arguably a high-risk occupation, according to our criteria). He found five categories that he concluded were “surprisingly similar to the dimensions of secret agent success identified by the OSS psychologists” (p. 247). These dimensions were nerve, daring, drive, and imagination; misrepresentation and tradecraft; good team interpersonal relations; adherence to rules and maintaining self-discipline; and stress resistance, mental health, and hardiness. A similar set of attributes has emerged from two job analyses recently conducted for an operational assessment program involving assignment to nonstandard, specialized military duties (Christian et al., 2010). The emergence of a core group of essential attributes for success in diverse groups of high-risk operational personnel over the past 60 years attests to the comprehensiveness, generality, and temporal stability of these “core” attributes (Picano et al., 2006).

While we readily acknowledge that a relatively small number of specific attributes may not be sufficient predictors in and of themselves of success for all high-risk occupations, we do not want to minimize their importance, either. Bartram and his colleagues (Bartram, 2005; Bartram, Robertson, & Callinan, 2002) identified eight broad performance competencies out of hundreds of workplace performance ratings (the so-called Great Eight) that describe a general model of workplace performance for all occupations. In a similar manner, the attributes that Picano et al. (2006) identified are probably the most salient specific attributes representing more generic psychological competencies in emotional, cognitive, social/interpersonal, physical, and intrapersonal (i.e., motives) dimensions. Clearly, additional research in this arena is required. However, at the present time, we believe that these “core” essential attributes can serve as the basis for establishing minimal dimensions of assessment for any high-risk operational position, and should be routinely assessed in operational assessment and selection programs.

Assessment and Selection of High-Risk Operational Personnel

High-risk military operational personnel typically undergo stringent psychological assessment and selection procedures in order to determine their “psychological fitness” (Braun & Wiegand, 1991)

for their assignment, and to assess their potential for successful job performance. The determination of an individual's psychological suitability for specialized, high-risk military assignments requires a thorough evaluation of an individual's psychological and emotional health risks, training potential, job performance potential, and risk for personal misconduct and counterproductive work behaviors. Assessment of psychological suitability for assignment for high-risk jobs typically involves two relatively distinctive processes: selecting out and selecting in (Suedfeld & Steel, 2000). The goal of select-out (or "screen-out") procedures is to assess an individual's psychological and emotional stability—that is, their freedom from psychopathology and the minimal risk of developing psychological problems in the future (Budd & Harvey, 2006). Select-out procedures typically involve records reviews (e.g., personnel, medical, and results of background investigations), psychological testing, and psychodiagnostic interviews, with the overarching goal of eliminating those who are unfit for assignment. On the other hand, "select-in" processes are oriented to evaluating candidates for the complex skills and psychological attributes necessary for successful performance on the job, and are used to recommend both selection and best utilization or placement. Select-in procedures are typically much more comprehensive and intensive, and often include multiple methods and procedures, including biographical and performance-based (i.e., situational or behavioral) interviews, psychological tests, and scenario-based role-plays and simulation tasks.

The Assessment Center Method in the Selection of High-Risk Operational Personnel

Most assessment programs for high-risk operational personnel include a variety of procedures including personality tests, cognitive ability tests, interviews, role-plays, problem-solving exercises, team events, and physical tasks. Modern-day assessment and selection programs for high-risk operational personnel in the United States trace their lineage to the assessment processes designed by the Office of Strategic Services (OSS) during World War II (Fiske et al., 1997). The OSS approach represented the first coherent effort in the United States to establish a structured method to assess qualities deemed necessary for successful performance of hazardous military jobs. The OSS staff designed a set of processes and procedures to reveal significant aspects of personality functioning intended to predict success as a

clandestine operative. The use of a variety of methods for assessing an individual, what the OSS staff referred to as "multiform procedures" (Fiske et al. 1997), is the foundation of the current assessment center method. Contemporary assessment centers comprise standardized evaluations of behavior based upon multiple sources by trained observers using specifically developed simulations with high job fidelity (International Task Force on Assessment Center Guidelines, 2009).

Assessment centers have many advantages in personnel selection such as the capability of assessing complex attributes; ready acceptance by participants; and empirical evidence of low adverse impact and high predictive validity (Robertson & Smith, 2001). Assessment center criterion validities average $r = .37$ (Schmidt and Hunter, 1998). Still, there are lingering concerns about the utility and cost-effectiveness of assessment centers, especially given findings suggesting that the primary construct measured by assessment centers is cognitive ability, for which cheaper and more reliable methods of assessment exist (Robertson & Smith, 2001).

Many contemporary assessment centers for high-risk operational personnel selection follow the processes and recommendations outlined by the OSS staff in the 1948 monograph "The Assessment of Men" (Fiske et al., 1997). Christian and colleagues (2010) discuss the OSS guidelines and principles in the context of their experiences in the design and development of modern-day assessment and selection programs for high-risk operational personnel. Chief among the OSS guidelines are the need for a thorough and specific job analysis to guide the identification of attributes, the use of multiple methods such as interviews, tests, and situational tasks to assess attributes, and the systematic collection of data for later empirical validity analyses as well as strategic problem-solving within the organization. The recommendations that followed from the experiences of the OSS staff square well with the current guidelines and recommendations for ethical and professional practices of assessment centers (International Task Force on Assessment Center Guidelines, 2009). Table 12.1 compares the OSS assessment principles with the current guidelines and ethical considerations for assessment centers.

Although influential in shaping modern practices in specialized operational assessment and selection, the OSS approach is not without critics. Girodo (1997) contends that the OSS approach has been misappropriated by law enforcement in the assessment of agents for domestic undercover work.

Table 12.1 A comparison of the OSS methodological principles and contemporary assessment center guidelines

Program Element	OSS Methodological Principles ^a	Assessment Center Guidelines ^b
Job Analysis	Conduct a job analysis Identify the determinants of performance success and failure and select the attributes to be measured Define a rating scale for each attribute as well as an overall rating of “job fitness”	A job analysis must be conducted Classify behaviors into meaningful and relevant categories A systematic procedure must be used by assessors to record specific behavioral observations
Assessment Techniques	Select several different types of procedures for estimating the strength of each attribute Include a number of situational tests at the same level of integration that the candidate is required to function, and of the same type as those encountered in the field	Multiple assessment techniques must be used The assessment techniques must include a sufficient number of job-related simulations to allow opportunities to observe behavior related to the dimension assessed Techniques used in the assessment center must be designed to provide information for evaluating the dimensions previously determined by the job analysis Multiple assessors must be used to observe and evaluate each assessee
Data Integration	Construct a sufficient formulation of the candidate based upon all information before making a rating or recommendation Write a description of the candidate in non-technical language addressing that individual as a functioning member of the organization Hold as staff conference at the end of each assessment to refine and correct ratings and descriptions	Integration of behaviors must be based upon a pooling of information from assessors Assessors must prepare a report of the observations made during each exercise The integration of information may be accomplished by consensus or some other method of arriving at a joint decision
Validation	Systematically obtain and record all data for use in solving strategic problems Appraise the performance of every accepted candidate after a couple of months on the job and compare assessments with appraisals	Document the selection of the dimensions assessed in the center and the relationship of assessment exercises to the dimensions, attributes, or competencies assessed Conduct validation analyses

Sources: ^aFiske et al. (1997). ^bInternational Task Force on Assessment Center Guidelines (2009).

He specifically argues that the misattribution of OSS procedures governing the social context of assessments, particularly deception (e.g., alien surroundings, uncertainty of test purposes, suppressed identities, focus on secrecy, and other deceptive manipulations by staff), has contributed to selection, training, and subsequent performance problems.

Girodo (1997) details a contemporary undercover assessment center method that he believes more realistically simulates the social and supervisory contexts in which agents typically work. Additionally, his method engages the candidate in the process. Girodo believes that these changes

address methodological limitations of the OSS approach in the assessment and selection of undercover law enforcement personnel. However, in all other ways, the approach he follows conforms to the recommendations and processes of the OSS staff.

The assessment center method that Girodo (1997) describes to select undercover law enforcement personnel is designed to assess three primary areas: performance potential, risks to psychological health, and risk for misconduct. Sources of information for the assessment include psychometric tests, structured tests, role-playing exercises, and field observations from training courses.

The undercover assessment center incorporates two assessment levels. Level 1 assessments are initial candidate assessments and use data from biographical interviews, tests, and behavioral observations during role-play scenarios to assess health and corruption risks, and their potential to acquire undercover skills through training. As previously mentioned, attributes assessed in Level 1 assessments include nerve, daring, drive, and imagination; tradecraft and the ability to misrepresent oneself; team interpersonal relations; adherence to rules and self-discipline; and stress resistance and hardiness. Candidates who are retained beyond this phase (30%–45% of assessees) attend the second level of assessment, which involves field training in self-presentation and identity-suppression, cover, and tradecraft-related activities. Level 2 assessments involve a training course that spans one to three weeks and comprises approximately 40 exercises. Assesseees are rated on a number of job performance dimensions by “handlers” who are trained to observe and rate their performance using anchored ratings for three levels of performance: outstanding, nominal, and deficient. A final performance rating is assigned based upon the candidate’s overall performance on the exercises.

In keeping with best practices of the assessment center method, Girodo (1997) systematically tracks and analyzes the data collected during the assessment process in order to demonstrate the effectiveness of the methods, and presents retrospective, and concurrent empirical analyses testifying to the assessment center’s effectiveness.

We have been involved for some time in an assessment center designed to assess and select elite military personnel for hazardous and unconventional operational military assignments. Our assessment center is fashioned after that of the OSS and is similar in structure to the undercover agent assessment center described previously. It operates in

accordance with the guidelines and ethical considerations for assessment centers (International Task Force on Assessment Center Guidelines, 2009). The assessment center model is presented in Table 12.2.

Candidates are recruited via word-of-mouth, leadership referral, and formal recruitment presentations. Applicants complete extensive prescreening questionnaires during the recruitment process, and must pass stringent psychological, medical, and security screening standards in order to be invited to participate in the assessment program. Viable candidates are invited to the assessment center. Attendance is entirely voluntary. The first phase of assessment is the *Reception Phase*, where candidates are put through a series of formal interviews and evaluations to determine whether they are medically, physically, and psychologically qualified for the job. In addition, security risks and acceptability for a position of trust are gauged during this phase. This phase is similar to the Level 1 assessment described by Girodo (1997). Qualified candidates (usually over 90% of those who are assessed) then participate in an extended—three- to four-week—*Assessment Course* comprising high-fidelity field training exercises, role-plays, and simulations designed to assess job aptitude and performance under stress. Performance during these exercises is assessed by trained raters, all experienced operational personnel themselves, using anchored ratings of attributes and dimensions relevant to the job. This phase is similar to the Level 2 assessment described by Girodo (1997). During this phase, many candidates either self-eliminate or are eliminated because of their failure to meet performance standards. A smaller percentage of candidates are eliminated for medical reasons. Candidates who remain after this phase (usually significantly fewer than half who attend the assessment) will go before a selection *Review Board* whose members review all the psychological and performance data, interview

Table 12.2 Assessment center model

Phase	Reception Station	Assessment Course	Review Board
Process	Personnel and Records Review Medical/Physical Evaluations Security Evaluations Psychological Evaluation	Role-Plays Situational Tasks Field Training Exercises	Board Interview Comprehensive Review of Psychological and Performance Data
Outcome	Advance to Assessment Phase Unqualified	Advance to Board Standards Eliminations Medical Eliminations Self-Elimination	Advance to Training Eliminate

the candidate, and make a decision to either eliminate the candidate from further consideration, or to advance the candidate to training. The assessment data are recorded in a database for validation use.

One of the most significant events for determining the candidate's psychological suitability for high-risk assignment in the reception phase process is the psychological evaluation. The evaluation comprises cognitive and personality tests, in addition to a structured biographical interview. The objective of this evaluation is to determine the candidate's training and job performance potential, psychological fitness and emotional health risks, potential for counterproductive work behaviors, and risk for personal misconduct.

The Psychological Interview as a Method for Determining Suitability for High-Risk Operational Jobs

The centerpiece of the psychological evaluation in our assessment center is the psychological interview. Interviews have a long tradition in personnel selection and assessment center methods and have been shown to predict performance in job-training programs and on the job (Schmidt & Hunter, 1998). Research has also shown that structuring interviews greatly improves both their reliability (Conway, Jako, & Goodman, 1995) and their validity (Moscato, 2000; Salgado, 1999; Schmidt & Hunter, 1998). Schmidt and Hunter (1998) reported average corrected validities in the $r = .36$ range for unstructured interviews and $r = .51$ for highly structured interviews.

Huffcutt, Conway, Roth, and Stone (2001) conducted a meta-analytic review of interview studies and developed a comprehensive taxonomy of constructs typically assessed in employment interviews. They proposed seven construct areas that employment interviews typically assess. The first construct category was *mental capability*. This area assessed how well candidates could think, and comprised general mental ability or "g"; applied mental skills or problem-solving, judgement and decision-making skills; and creativity. The second category was *knowledge and skills*. This area focused on accumulated job knowledge and skills, education and training, and work experience. The third category was *basic personality tendencies*, and concerned predispositions to act in certain ways in the workplace based upon personality traits. The fourth category that Huffcutt et al. (2001) proposed was *applied social skills*. This area comprised constructs oriented to assessing how well candidates can deal with other

people, such communication, interpersonal, and leadership skills. The fifth category was *interests and preferences*. It was oriented to what candidates liked to do, including occupational interests, hobbies, and extracurricular activities. *Organizational fit* was the sixth category. This category assessed the compatibility of the individual's attitudes and beliefs with those of the organization, and focused on what the candidates really believe in—their values, morals, and acceptance of the organization's mission. Finally, the last category identified was *physical attributes*, including physical attractiveness, fitness, agility, and stamina.

Huffcutt and his colleagues (2001) reviewed 47 studies comprising 338 ratings and found that personality and applied social skills were the most frequently rated constructs in employment interviews. They determined that highly structured interviews tended to focus on constructs such as job knowledge, organizational fit, interpersonal and social skills, and applied mental skills, whereas less-structured interviews often focused on general intelligence, education and training, and interests (Huffcutt et al., 2001). Huffcutt and colleagues (2001) surmised that structured interviews may achieve higher validities in part because they tend to focus more on constructs that have a stronger relationship with job performance.

Given the prominence of interviews in employee selection, it is no surprise that interviews are also commonly used in selection programs for high-risk operational personnel (Christian et al., 2010). It also comes as no surprise that early efforts used unstructured biographical interviews (e.g., the OSS), whereas contemporary selection efforts use more standardized and structured interviews (Galarza & Holland, 1999; Girodo, 1997; Picano et al., 2010). Such interviews are structured to gauge the attributes and dimensions identified for successful training and job performance, as well as those related to the mitigation of risk for emotional and health problems, personal misconduct, and counterproductive work behaviors.

PSYCHOLOGICAL INTERVIEW DIMENSIONS

Girodo (1997) described five interview domains for determining an applicant's suitability for undercover law-enforcement assignment. *Motivation and interest* concerns the applicant's intrinsic interest in and perceived strengths for undercover work. *Prior job performance* comprises assessment of work history and performance appraisals. *Adherence and compliance* involves familiarity with the drug culture and

the capacity to use alcohol in the line of duty. *Complaints* concerns professional conduct and exploration of counterproductive work behaviors and incidents or investigations. Finally, *Lifestyle* entails assessment of the applicant's hobbies and pastime activities.

The biographical interview that Girodo (1997) describes does not generate a single rating of applicant suitability. Rather, the information is integrated with other sources of data into 14 rating variables that are grouped into three broad areas: performance potential (e.g., undercover motivation, dissimulation aptitude); psychological health risks (e.g., emotional health risks and status, anger management); and risk for misconduct and corruption (e.g., critical motives and events, self management). The 14 dimensions are then transformed into a six-point scale of desirability ("strongly undesirable" to "strongly desirable"; Girodo, 1997).

Picano, Roland, Via, and Williams (2010) reported on the use of a structured interview in an assessment center for selecting high-risk military operational personnel. Their interview also evaluates five major domains: *motivation*, *occupational fit*, *trainability*, *psychosocial stability*, and *personality competence*.

Motivation refers to the assessment of the candidate's motives for seeking assignment to high-demand, nonroutine military missions. Assessment of *occupational fit* includes elements of physical fitness, acquired military skills, and operational experience. A third rating category, *trainability*, assesses their learning capacity as reflected in their success in academic and structured educational situations, communication skills, and cognitive complexity. *Psychosocial stability* assesses lifestyle, family and relationship stability, and legal, moral, and ethical behavior. Of particular concern in this area is the capacity of the individual and his family to tolerate the hardships imposed on them by multiple or extended deployments. The final rating category, *personality competence*, assesses the individual's "personality fit" for high-demand assignments. Interviewers focus on the individual's emotional stability, stress tolerance, and interpersonal competencies.

The information from the interview is used to generate a rating for each component. Ratings are assigned on a four-point scale ("low suitability" to "high suitability") with half-steps to yield a seven-point rating scale for each component. Table 12.3 shows the interview constructs, attributes, and dimensions assessed within each of the constructs and examples for low and high rating anchors.

Interviewers calculate an average score for the five ratings, which serves as the overall rating of suitability. The team of psychologists discusses each candidate's ratings after the interviews, and final ratings may be adjusted as a result of the discussion. Thus, the final assigned rating represents a consensus rating.

Picano, Roland, Williams, and Rollins (2006) reported a check of inter-rater reliability of the pre-adjusted component ratings assigned to participants in a small sub-sample ($n = 12$) interviewed by two senior military psychologists. Results indicated adequate agreement for the overall rating ($r = .84$). Agreement for the component ratings ranged from $r = .71$ (personality competence) to $r = .90$ (psychosocial stability). To ensure consistency and accuracy of ratings from assessment cycle to assessment cycle, interviewers are continually calibrated, regardless of experience. Calibration interviews (at least two) are conducted at the beginning of each assessment cycle. All interviewers assigned to that cycle are present for calibration interviews. One interviewer primarily conducts the interview, and all examiners assign component ratings independently. At the end of the interview, the raters discuss their ratings and rationale for the ratings, and then agree on a final rating for each of the components. Whenever new raters are introduced into the process, they are first trained with the rating system and are then paired with experienced raters for training and observation of competency before interviewing independently.

Picano and colleagues (2010) presented validity evidence for their interview ratings in a sample of 592 male candidates for high-risk operational military jobs who were assessed between 1995 and 2010. Results of a factor analysis indicated that only one factor could be extracted from the five component ratings. This factor had its highest component loadings with Motivation and Personality Competence, and accounted for 46% of the variance. Additionally, Picano and colleagues (2010) found that overall suitability (as indicated by the average of the suitability ratings) was significantly correlated with selection outcome, and in the magnitude found in research on employment interviews ($r = .28$, uncorrected for unreliability; Schmidt & Hunter, 1998).

More illuminating results emerged when the interview ratings were examined in groupings. Average interview ratings were grouped into five suitability groups (very low, low average, high, very high). Candidates who were rated in the two suitability

Table 12.3 Structured interview components, attributes, and sample rating anchors

Interview Component	Attributes and Dimensions	Low Ratings (<3.0)	High Ratings (>3.0)
Occupational Fit	Fitness and Stamina Military Skills Operational Experience	Unfit appearance, consistent history of low physical fitness scores, limited “hard” military skills or field experience, limited participation in physically challenging activities	History of excellent physical fitness, extensive military field experience, specialized operational experience and deployments, participation in rugged activities or hobbies
Motivation	Motivation (extrinsic vs. intrinsic)	Compensating for past failures, seeking relief from an unpleasant current assignment	Seeking greater challenge, serving a greater purpose, stated enjoyment of the implied tasks
Trainability	Written and oral communication Academic achievement Novel thinking ability Mental agility	Weak oral and written communication, spotty academic achievement, failure in military courses, no academics beyond high school	History of academic honors, articulate oral and written communication abilities, multiple successes in post–high school military and civilian academics
Psychosocial Stability	Family stability Personal and social responsibility Judgement Trustworthiness	Evidence of family instability during past absences, high dependence on service member for family effectiveness, continuing or unresolved marital, family, financial, or legal problems	Spousal self-sufficiency, family history of successful coping with extended or multiple absences, evidence of sound financial management and stability
Personality Competence	Stress tolerance Resilience Interpersonal-social skills Integrity Impulse control	Personality problems in history or manifest in interview, limited tact or diplomacy, and psychologically brittle or defensive demeanor	Obvious people-handling skills, amicable and generally free of irritating personality qualities, psychologically hardy and resilient, optimistic attitude, and positive, upbeat demeanor

groups that had below-average suitability ratings (very low and low suitability) were much more likely to be eliminated from the selection process. At these lowest levels of suitability, candidates had about half or less the selection rate as candidates who were average or higher in suitability (see Figure 12.1).

Picano and colleagues (2010) also examined variances in suitability rating attributed to cognitive ability and personality tests. Psychologists had access to these measures during the interview, and could have been influenced by these results when assigning ratings. Regression analysis showed that general mental ability and personality accounted for only about 15% of variance in suitability ratings. Moreover, when cognitive, personality, and interview ratings were entered together as predictors of selection outcome in a stepwise regression analysis, average suitability rating from the interview emerged as the strongest predictor of selection outcome. Overall, results suggested that dimensions

and attributes relevant to the psychological suitability for high-risk military jobs can be reliably rated by trained interviewers, capture variance that is related to but largely independent of that measured by cognitive and personality tests, and differentiate selection criteria to a greater extent than do cognitive and personality measures.

Summary and Directions for Further Research

Assessment and selection of military personnel for high-risk jobs and special mission units is a central role of psychologists working in operational military settings (Staal & Stephenson, 2006; Williams et al., 2006). Many military selection programs in the United States use the assessment center method for this purpose, whose rich heritage extends back to World War II. This method has more recently been applied to the selection of Iraqi Special Forces personnel (Staal & Stephenson, 2006).

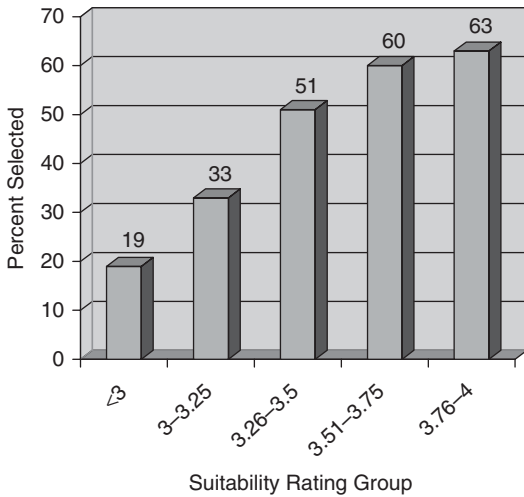


Fig. 12.1 Percent selected as a function of suitability rating for five rating groups. Average (SD) overall suitability rating is 3.3 (.39). Selection rate is 45%. $N = 592$. Adapted from Picano et al. (2010).

Psychological evaluations occupy a central position in the assessment center method for high-risk operational personnel, and constitute the most direct and distinguishing contribution of psychologists, though psychologists play multiple key roles throughout the assessment center (Christian et al., 2010). We have chosen to highlight the interview portion of that evaluation in this chapter for a couple of reasons. First, interviews are valid personnel-selection tools with high reliability and validity. Second, psychological interviews are used extensively in assessment centers oriented to evaluating high-risk operational personnel. One likely reason may be because lifestyle factors and considerations are among the most important dimensions for success in these jobs (see Picano et al., 2006), ostensibly because the jobs' demands (deployments, limited contact with loved ones) significantly affect family stability, and problems in the family can distract an operator from the mission. Finally, results from our assessment center indicate that interview ratings are better predictors of successful selection in our program than are the psychological measures we use (Picano et al., 2006; 2010); though our findings do show that standardized measures incrementally predict selection to a small extent.

It is challenging to conduct research within operational assessment centers for high-risk military personnel. In our experience, military operational psychologists lack either the inclination or the time, or both. Still harder is the open dissemination of results for peer review. All of the programs we are

aware of reside in organizations where secrecy is paramount and security concerns preclude disclosure, or where concerns over compromising the process predominate. These realities may account for the limited empirical literature on the assessment and selection procedures for high-risk operational personnel (Flin, 2001; Picano et al., 2006).

Nevertheless, we propose that operational psychologists undertake research oriented to understanding how best to conceptualize psychological suitability for high-risk occupations, and how best to measure it. Given the nature of the dimensions and attributes that are thought to be essential to successful adaptation and performance in high-risk military jobs, structured biodata questionnaires may be particularly suited for use. Structured biodata inventories, while demonstrating lower validities than structured employment interviews in predicting job performance (Schmidt & Hunter, 1998), have the advantage of convenience. Moreover, Kilcullen, Mael, Goodwin, and Zazanis (1999) showed that rationally developed biodata scales predicted field performance in U.S. Army Special Forces soldiers.

We have yet to see reports that detail the relative contribution of various assessment techniques to the prediction of success in the selection of high-risk operational personnel. We hypothesize that observations of performance in simulations may make for better "select-in" measures, whereas interview ratings of psychological suitability, which indicate potential for success, may be better "select-out" measures. Our data show that candidates who are rated as very low in suitability are eliminated fairly early in the assessment process. However, very high ratings of suitability are no guarantee of selection in our program, and examination of our data (as presented in Figure 12.1) suggests that there may be a point at which the candidate has enough of the "right stuff," and other performance factors from the assessment process might better predict selection. Thus, psychological suitability (as we and others currently conceptualize it) may be necessary, but not sufficient for successful adaptation and performance in high-risk jobs. Put differently, our interview measures *potential*, whereas simulation and scenarios assess how well the candidate is likely to *perform* in the job.

Finally, the ultimate goal of our efforts in the assessment and selection of high-risk operational personnel is unchanged from that which guided the OSS staff over 60 years ago: to arrive at "sufficient conclusions . . . which will serve, by the elimination

of some and the better placement of others, to decrease the ultimate failures or unsatisfactory performers” (Fiske et al., 1997, p. 9). The cost of failure in high-risk missions is simply too great; modern-day assessment and selection programs for high-risk operational personnel bear a responsibility to the nation, organization, and candidate, to incorporate the best methods that our science has to offer.

References

- Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology, 90*, 1185–1203.
- Bartram, D., Robertson, I. T., & Callinan, M. (2002). Introduction: A framework for examining organizational effectiveness. In I. T. Robertson, M. Callinan, & D. Bartram (Eds.), *Organizational effectiveness: The role of psychology* (pp. 1–10). Chichester, UK: Wiley.
- Braun, P., & Wiegand, D. (1991). The assessment of complex skills and of personality characteristics in military services. In R. Gal & D. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 37–61). New York: Wiley.
- Budd, F.C., & Harvey, S. (2006). Military fitness for duty evaluations. In: C. H. Kennedy and E. A. Zillmer, (Eds.), *Military Psychology: Clinical and operational applications* (pp. 35–51). New York: Guilford.
- Conway, J. M., Jako, R. A., & Goodman, D. F (1995) A meta-analysis of interrater and internal consistency reliability of selection interviews. *Journal of Applied Psychology, 80*, 565–579.
- Christian, J. R., Picano, J. J., Roland, R. R., & Williams, T. J. (2010). Guiding principles for assessing and selecting high risk operational personnel. In P. T. Bartone, J.M. Violanti, B.H. Johnsen, J. Eid, & J.C. Laberg, (Ed.). *Enhancing Human Performance in Security Operations: International and Law Enforcement Perspectives* (pp. 121–142). Illinois: Charles C. Thomas.
- Fiske, D. W., Hanfmann, E., MacKinnon, D. W., Miller, J. G., & Murray, H. A. (1997). *Selection of personnel for clandestine operations: Assessment of men*. Laguna Hills, CA: Aegean Park Press. (Original work published 1948).
- Flin, R. (2001). Selecting the right stuff: Personality and high-reliability occupations. In R. Hogan and B.R. Roberts (Eds.), *Personality psychology in the workplace* (pp. 253–275). Washington, D.C.: American Psychological Association.
- Galarza, L., & Holland, A. (1999). Critical astronaut proficiencies required for long-duration spaceflight. (SAE Technical Paper 1999-01-2097). Washington, D.C.: Society of Automotive Engineers.
- Girodo, M. (1997). Undercover agent assessment center: Crafting vice and virtue for imposters. *Journal of Social Behavior and Personality, 12* (5), 237–260.
- Huffcutt, A. I., Roth, P. L., Conway, J. M., & Stone, N. J. (2001). Identification and meta-analytic assessment of psychological constructs measured in employment interviews. *Journal of Applied Psychology, 86*, 897–913.
- International Task Force on Assessment Center Guidelines (2009). Guidelines and ethical considerations for assessment center operations. *International Journal of Selection and Assessment, 17*(3), 243–253.
- Kilcullen, R.N., Mael, F.A., Goodwin, G. F, Zazanis, M.M. (1999). Predicting U.S. Army Special Forces files performance. *Human Performance in Extreme Environments, 4*(1), 53-63.
- Moscoco, S. (2000). Selection interview: A review of validity evidence, adverse impact, and applicant reactions. *International Journal of Selection and Assessment, 8*, 237–247.
- Picano, J. J., Roland, R. R., Via, J., & Williams, T. J. (March 2010). Psychological suitability for high-risk military assignment. Paper presented at the 2010 Midwinter Meeting for the Society of Personality Assessment, San Jose, CA.
- Picano, J. J., Roland, R. R., Rollins, K. D., & Williams, T. J. (2006). Sentence completion test verbal defensiveness as a predictor of success in military personnel selection. *Military Psychology, 18*, 207–218.
- Picano, J. J., Williams, T. J. and Roland, R. R. (2006). Assessment and selection of high-risk operational personnel (pp. 353–370). In: C.H. Kennedy and E.A. Zillmer (Eds.), *Military psychology: Clinical and operational applications*. New York: Guilford.
- Robertson, I. T., & Smith, M. (2001). Personnel selection. *Journal of Occupational and Organizational Psychology, 74*, 441–472.
- Salgado, J. F. (1999) Personnel selection methods. In C. L. Cooper, & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp 1–54). New York: John Wiley & Sons
- Schmidt, J. E., & Hunter, F. L. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin, 24*, 262–274.
- Staal, M.A., & Stephenson, J.A. (2006). Operational psychology: An emerging subdiscipline. *Military Psychology, 18*(4), 269–282.
- Suedfeld, P., & Steel, G. D. (2000). The environmental psychology of capsule habitats. *Annual Review of Psychology, 51*, 227–253.
- Williams, T. J., Picano, J. J., Roland, R. R., & Banks, L. M. (2006). Introduction to operational psychology (pp. 193–214). In C. H. Kennedy & E. A. Zillmer (Eds.), *Military Psychology: Clinical and Operational Applications*. Guilford Publishing.

Leadership in Dangerous Contexts

A Team-Focused, Replenishment-of-Resources Approach

Donald J. Campbell

Abstract

Researchers have recently become interested in examining how leadership might differ in dangerous environments relative to more conventional settings. This chapter outlines a “replenishment-of-resources” framework to address this question. The framework proposes that, on the team level, dangerous environments act to deplete the cognitive, affective, and behavioral resources of units operating in such environments; and that effective leadership in these contexts functions to replenish some of these resources and substitutes for others. More specifically, the framework argues that (a) dangerous environments can be defined by the nature and degree of threat they contain; that (b) both the type of threat and the limitations present in team characteristics determine resource depletion; and that (c) four distinctive leadership resources can function to replenish the various cognitive, affective, and behavioral deficits created by the threatening aspects of the context and the limitations of the team. The chapter concludes with a consideration of the implications of the framework for team performance in dangerous contexts.

Keywords: Team leadership, threat, dangerous environments, situational deficits, leadership resources, typology of environments

Although effective leadership is essential for success in virtually all organizations, certain environments demand leadership qualities that go far beyond the demands encountered in normal work settings. In these environments, tasks and job activities take place under conditions that are naturally inimical to human survival; or involve undertakings that are inherently dangerous; or require the sporadic or periodic use of physical force (including lethal force) against other individuals. Because these environments typically involve serious risk to the well-being of the leader, the work team, and other members of the immediate community, researchers (e.g., Hannah, Campbell & Matthews, 2010; Hannah, 2006; Kolditz, 2007) have suggested that effective performance in these contexts demands a singular type of team leadership, with characteristics, interactions, and behaviors that are distinctly aligned with the unique requirements of these contexts.

For example, because of the personal risks assumed by participants and the serious consequences usually associated with failure, effective team leadership in some highly dangerous environments (e.g., military combat operations; aspects of law enforcement; firefighting) must generate levels of member commitment and motivation that substantially exceed levels found in more conventional work. Additionally, these contexts appear to require special organizational cultures—ones strong enough to reassure individuals that they can trust each other with their lives (e.g., Sweeney, 2010). Also, such environments require significant adaptability among work-unit members, with leaders who are comfortable granting their colleagues high levels of responsibility and freedom during task operations. In these contexts, effective leadership typically results in the creation of an almost vocational orientation in unit members, with intrinsic

sources of motivation trumping extrinsic sources (cf. Hannah, 2006).

Analyses such as above have provided initial insights into how dangerous contexts may place special demands on the leadership process. They have also highlighted the need for more rigorous conceptual examinations of “dangerous” environments—approaches that can organize the accumulating evidence in a systematic way; and provide suggestions regarding the kinds of empirical evidence that would best serve to guide the field and to advance understanding in this research area. Some research efforts along these lines have begun to appear (e.g., Campbell, Hannah, & Matthews, 2010; Hannah et al., 2010) but in this early stage of theory development, additional conceptual work is clearly valuable. Thus, the goal of the current chapter is to offer a potential organizing framework for this area, structured around a “replenishment of resources” view of team leadership. This approach argues that dangerous contexts by their nature act to exhaust the cognitive, affective, and behavioral resources of work units functioning in these environments. Consequently, the role of effective leadership in such contexts is to replenish some of these cognitive, affective, and behavioral resources and to substitute for others.

Specifically, the approach proposes to define and classify dangerous environments by the nature and degree of threat each contains. Next, the framework argues that the type of threat characterizing the environment, together with the kinds of limitations present in the work unit, determine the nature and degree of resource depletion. Finally, the framework asserts that four distinctive leadership capacities (problem-defining/problem-solving capacity; task-facilitative capacity; communicative/persuasive capacity; and inspirational/charismatic capacity) can serve to replenish the various cognitive, affective, and behavioral deficits created by the threatening aspects of the context and the limitations of the team. The chapter presents a detailed examination of each of these ideas in the sections that follow. Finally, in the last section, the chapter considers the implications of the proposed framework for leadership and for team performance in dangerous contexts.

Threat: The Defining Characteristic of Dangerous Environments

Although dangerous environments may differ from more conventional contexts on several specific features (e.g., Hannah et al., 2010), the presence of real or perceived “threat” is the primary distinctive

characteristic that is common to all these contexts. Dangerous environments all contain risks of physical and psychological harm; and involve potential exposure to injury, pain, damage and loss. It is this notion of impending harm, especially physical harm, to the lives or well-being of units operating in these contexts that make dangerous environments unique.

Some investigators of dangerous environments (i.e., Hannah et al., 2010) have found it useful to distinguish between extreme events and extreme contexts, noting that extreme events can occur in conventional contexts that normally would not be classified as extreme. This distinction between dangerous events and dangerous environments is particularly helpful for investigators examining the transition period that occurs when conventional contexts start turning dangerous; and as the demands of leadership in normal circumstances swiftly change into the demands of leadership in dangerous circumstances. Since this transition period is not a major focal point in the current approach, we simply treat dangerous events (e.g., a hotel collapse; a police SWAT raid) as particular cases of dangerous contexts. Collapsing these categories poses no substantive conceptual difficulties for the framework proposed here.

In creating a practically useful classification of dangerous environments, the general concept of “threat” (i.e., the risk of possible harm and injury, with potential exposure to physical pain, damage and loss) is insufficiently specific and requires refinement. Four sub-elements of threat appear particularly important for classification purposes: the genesis and nature of the threat; and the expectation and intensity of the threat. The first two sub-elements focus primarily on objective aspects of the threat; and the next two focus primarily on psychological aspects. However, given the inter-connectedness and overlap of the four sub-elements, this division between objective and psychological characteristics is not absolute.

Genesis and Nature of the Threat

GENESIS

While all dangerous environments contain some type of risk to the well-being of work units in those settings, it is clear (as suggested by Hannah et al., 2010) that virtually *any* environment has at least the potential to be dangerous. For example, the startling appearance of a cooking stove fire in a restaurant, or the unexpected engine shut-down of an in-flight passenger jet, can suddenly transform a formerly benign work environment into a dangerous one.

Similarly, settings inimical to human life (e.g., desert, polar, or high-altitude regions) may typically pose little threat to work teams with proper preparation and training (e.g., see Banderet & Burse, 1991; Kobrick & Johnson, 1991), but an unanticipated weather change or equipment failure can make such work settings lethally dangerous. In other contexts, the genesis of the threat is in deliberate, intentional human behavior. War fighting, peacekeeping interventions, and crime control provide relevant examples. Threat in these environments stems directly from the social context and not in natural or accidental situational factors.

While all the contexts described above are dangerous, researchers (e.g., Taylor, 1991) have generally found it useful to distinguish among them. The leadership resources required for effective unit performance in contexts where threat is natural or accidental (i.e., non-adversarial environments) are likely distinct from the leadership resources demanded for effective performance in contexts where threat originates in deliberate human actions (i.e., adversarial environments). For example, ignoring for a moment the idiosyncratic nature of every dangerous context, we might speculate that the proportion and sequencing of task-related leader actions relative to person-oriented behaviors (e.g., Yukl, 1994) would differ in these two kinds of dangerous environments.

NATURE

Another essential element for classifying threatening environments is the inherent aggressiveness of the threat; that is, whether the threat is primarily passive and requires some external action to trigger its harmful potential; or whether it is active and dynamic in nature, with its potential lethality self-generated. The most vivid dynamic threats are often found in adversarial environments (e.g., combat firefights); with passive threats typically characterizing non-adversarial environments (e.g., mining collapses). This connection is not absolute, however. Passive threats can occur in adversarial environments (e.g., landmines; trip-wires); and active, dynamic threats can occur in non-adversarial contexts (e.g., wild-fires; earthquakes). Further, passive threats, once triggered, can become dynamic (e.g., a nuclear reactor meltdown).

Related to the aggressiveness of the threat is the immediacy of the threat; that is, whether the threat is imminent; or whether it is simply impending and anticipated. This distinction is different from the active–passive continuum discussed above, in that the distinction is applicable only to those

environments where the threat can be foreseen or anticipated; and in that it is psychologically anchored, requiring human assessment. Nonetheless, we suggest that, because of its immediacy, imminent threat functions similarly to active threat, at least for classification purposes. As before, the leadership capacities required for effective unit performance in contexts where threat is dynamic or imminent (i.e., actively aggressive environments) are almost certainly dissimilar from the leadership capacities demanded for performance in contexts where threat is simply passive or impending (i.e., reactively aggressive environments). To use a simple example (and ignoring again the idiosyncratic nature of every dangerous context), we might anticipate that the proportion of directive versus participative leader actions (e.g., Yukl, 1994) to differ in these two contexts. Further, some empirical evidence (e.g., Mulder & Stemerding, 1963) suggests this is likely to be so.

Expectation and Intensity of the Threat

EXPECTATION

In addition to an environment's objective characteristics, psychological considerations such as expectations (i.e., the anticipation and assessment of potential harm) are significant factors in determining the classification of dangerous environments. Since expectations can be as much a function of the individual as the situation, it may seem odd to employ a psychological variable in developing a context typology. However, for classifying "dangerous" environments, a focus on some psychological processes is inevitable. Evaluations of danger (and thus dangerous contexts) are inextricably linked to an individual's subjective assessment and judgment regarding risk and harm (Mowen, 1993). Further, the triggering event for various leader and team responses to threat is actually not the threat itself but rather the *perception* of threat—a psychological phenomenon. Thus, from a leadership perspective, expectations of risk and perceptions of threat, while certainly connected to an environment's objective characteristics, are essential considerations in their own right.

In conventional settings, threat expectation is minimal; and in obviously dangerous contexts, threat expectation is high. Between these extremes, the expectation and perception of threat can take multiple forms; that is, contexts where danger is "chronic" (e.g., underwater construction); "episodic" (e.g., police work); "continuous" (e.g., military firefight); "sporadic/continuous" (e.g., military campaign) or

even “unforeseen” (e.g., sudden structural collapse). More generally, threat expectation can arise out of the inherent demands of specific jobs or tasks; from the demands of the general setting in which the job or task takes place; or from both task and setting.

From a psychological perspective, however, the essential consideration is whether threat expectation is chronic and continuous; or whether it is sporadic and episodic. The leadership capabilities required by these two different expectations of threat and perceptions of risk are likely to be distinct. Noy (1991), for example, focusing just on combat-related stress, has argued that supportive leadership is important in both contexts; but becomes absolutely essential when threat is chronic and continuous. Other researchers (Campbell, Campbell & Ness, 2008) have also noted the significant role effective leadership plays in creating resilience in contexts of continuous and on-going threat.

INTENSITY

This last sub-element of threat refers to the magnitude of the threat, both in terms of its lethality and in terms of containment. Widespread and uncontained threats are more intense than limited and

contained threats; and mortal threats are more intense than non-lethal threats. As with expectations, although objective situational characteristics are the foundation of this sub-element, threat intensity is primarily a psychological experience. Further, similar to expectations, threat intensity is important from a leadership perspective in that the leadership capacities demanded by high-intensity threat environments are likely to be different both in kind and in degree from the capacities needed in less intense contexts. For example, Wallenius (2001) has noted that, under high-intensity threat, psychological adaptation systems often become inadequate, resulting in an inability to process incoming stimuli and a loss of cognitive and emotional control (pp. 163–164). While a team’s specific reactions will obviously depend on its resources and past training, without supplementary coping supports (e.g., specific capacities provided by effective leadership) the occurrence of maladaptive group behaviors such as panic or paralysis is almost certain in contexts of high threat.

As suggested earlier, the four sub-elements and their defining characteristics overlap somewhat because the experience of threat is a dual function of

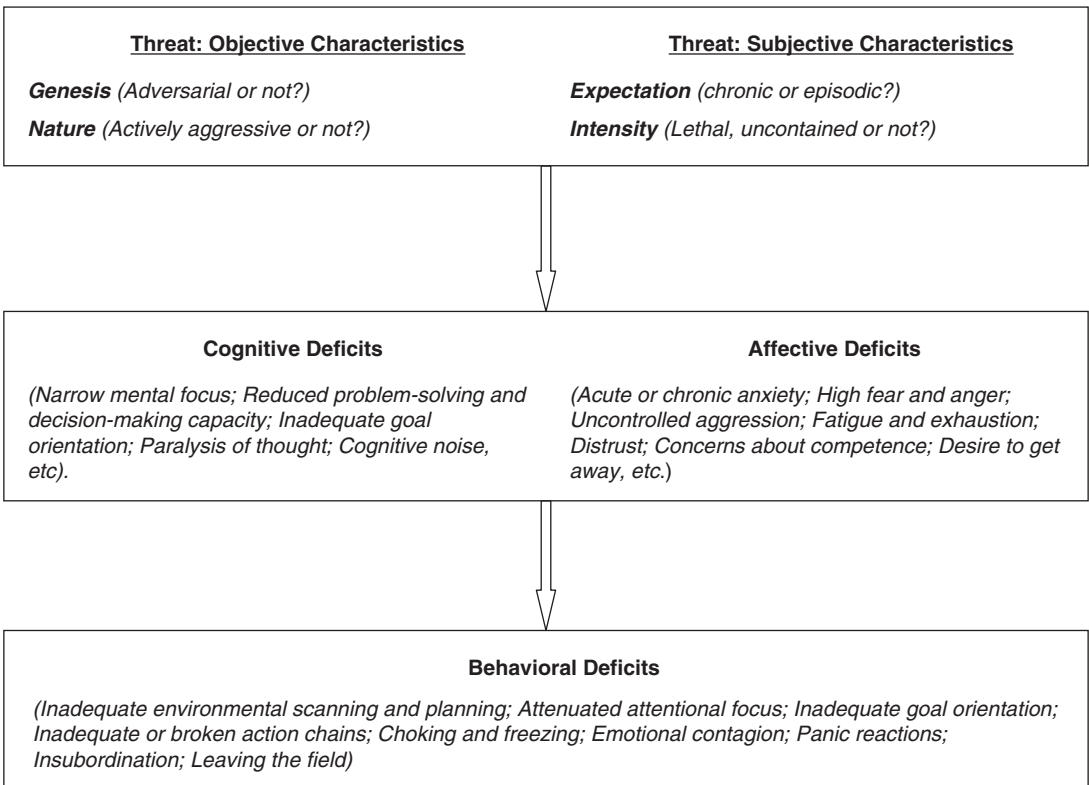


Fig. 13.1 Impact of threat characteristics on psychological processes.

a context's objective characteristics and the related psychological processes these characteristics evoke. Thus, strong conceptual (and practical) connections necessarily exist between the various dimensions defining threat. Figure 1 attempts to capture these objective–subjective connections explicitly, and to highlight the associated psychological process, in a simplified diagram.

The top of figure proposes that the essential objective feature of dangerous environments (from a leadership perspective) is the presence or absence of adversarial or non-adversarial threat elements; and whether these elements are actively or reactively aggressive. However, in terms of psychological processes, Figure 1 implies that individuals perceive and experience these objective characteristics more elaborately. In addition to assessing the origin and immediate nature of a threat, individuals also generate expectations regarding whether the threat is chronic or episodic; and assess its intensity—how potentially lethal and uncontained it is.

The rest of Figure 1 implies that the psychological processing of the four threat sub-elements evolves as a team operates in a dangerous environment. Members' subjective evaluations and reevaluations of these elements strongly influence the team's cognitive, affective, and behavioral responses to their context. These responses ultimately determine unit performance in the specific context. When unit responses are insufficient or inappropriate, effective leadership becomes crucial. The particular kinds of leadership capacities required depends heavily on the kinds of cognitive, affective, and behavioral deficiencies the unit experiences. Thus, before offering a typology of dangerous contexts, the chapter first examines the cognitive, affective, and behavioral deficiencies that typically affect teams in such environments.

Cognitive, Affective, and Behavioral Deficits in Dangerous Contexts

Research has indicated that the perception of physical threat results in predictable and well-understood effects on human cognitive processing and affective reactions (e.g., Becker, 2009; Staw, Sandelands, & Dutton, 1981; Wallenius, 2001: 9–32). As these changes in individuals' cognitions and emotions narrow team members' attention to address the threat, they also begin to focus the team's behavioral reactions; that is, typically channeling options along a limited number of paths that reflect prior dominant response patterns (e.g., Staw et al., 1981). If these past response patterns are insufficient or

inappropriate for meeting the current danger, leadership must replenish the various deficits created by the threat.

Cognitive Deficits

Conceptually, cognitive responses to the perception of threat fall along a continuum paralleling the well-known Yerkes-Dodson (1908) inverted “U” function; that is, ranging from positive cognitive impact at one end to cognitive collapse at the other. Stress (as central nervous system and endocrine arousal) generated by a perceived threat can often provide some short-term gains in increased strength (sympathetic nervous system arousal), memory (moderate amygdala/hippocampal arousal) and so forth. However, we are interested in the range of the continuum where a perceived threat has increasingly negative effects on cognition, interfering with cognitive performance. Depending on the immediacy and intensity of the threat, this interference may take various forms, including a narrowed mental focus; reduced problem-solving and decision-making capacity; inadequate goal orientation; or even paralysis of thought. In general, research in this area suggests that threat tends to reduce the use of peripherally relevant information and focuses individuals' attention on information that they perceive to be the most important and relevant to their primary task (Staal et al., 2008). It is thought that this attention tunneling occurs because a threat depletes cognitive resources and thus reduces an individual's attentional bandwidth (Chajut & Algom, 2003).

The idea that threats might draw down cognitive capacity is not radical: researchers (e.g., Kahneman, 1973; Norman & Bobrow, 1975; 1976) have long proposed limited-capacity, cognitive resource models, where attention to one task subtracts from the capacity to attend to others. Complementary investigations further suggest that narrowed attention may often lead to reliance on the information that is easily accessible or most proximal, rather than most task-relevant (Chajut & Algom, 2003). Similarly, threat has potentially dysfunctional effects on memory, in that by provoking a shift of attention to the here-and-now, it sometimes degrades individuals' performance on tasks that involve either retrospective, long-term memory or prospective memory; that is, memory that preserves intentions and action plans that must be executed at some future point (Staal et al., 2008). Even more generally, some researchers in memory (e.g., Mandler, 1979) have argued that stress (e.g., perceived threat)

creates cognitive system “noise,” which then competes for limited cognitive resources.

Threat perception can also degrade judgement and decision-making (JDM). Typically, threat restricts information processing (e.g., Gladstein & Reilly, 1985) and individuals become less flexible in choosing or formulating JDM strategies (e.g., Janis, Defares, & Grossman, 1983; Keinan, 1987; Streufert & Streufert, 1981); and they often persist with a problem-solving strategy even after it fails to be useful (e.g., Cohen, 1952). Threat may also lead to hypervigilance (i.e., a state of disorganized attentional processing) which produces frantic searching, rapid attention shifts, and a reduction in the quality and quantity of considered alternatives. In its extreme form, hypervigilance may lead to panic (Janis et al., 1983; Keinan, 1987).

Affective Deficits

In addition to their cognitive impact, threat perceptions also generate emotional reactions in individuals (e.g., Williams, 2007). These reactions also range along a continuum, from one extreme, where threat has no dysfunctional implications and may even have positive consequences (e.g., increased group attachment); to the other extreme where affective reaction is incapacitating and strongly dysfunctional. As before, our interest is in the part of the spectrum where threat results in increasingly debilitating affective reactions. Research (e.g., Boyd, 1981; Wallenius, 2001: 36–37) has described these affective reactions. They include acute or chronic anxiety, varying degrees of fear or anger, controlled and uncontrolled aggressiveness, feelings of mental exhaustion and fatigue, increasing distrust of others’ motives, growing worries about others’ competence, and intense desire to get away or escape.

In attempting to understand such reactions, some investigators (e.g., Baumeister et al., (2007) have distinguished between full-blown conscious emotions and automatic affective responses; and this dual-process distinction seems especially useful when considering threat perceptions. Baumeister et al. (2007) have argued that, while the two types of responses are interrelated and coordinated, they apparently serve different functions. Conscious, complex reactions stimulate analysis, learning, and adaptation, typically in the *aftermath* of behavior and its consequences; while rapid, automatic reactions (e.g., good/bad; like/dislike) typically guide immediate, in-the-heat-of-the-moment behavior. Threat evokes both types of responses; and both can create dysfunctional or counterproductive outcomes.

Researchers (e.g., Baumeister & Scher, 1988; Loewenstein et al., 2001) have documented various means by which emotional distress (such as that generated by a perceived threat) may lead to irrational or self-defeating behavior. For example, such distress can reduce individuals’ appreciation of outcome probabilities while increasing their sensitivity to vividness and temporal proximity. Specifically, Loewenstein et al. (2001) found that emotional individuals often make decisions simply on the basis of outcome magnitudes, rather than on both magnitude and probability. Additionally, Luce and his colleagues (Luce, 1998; Luce, Bettman, & Payne, 1997) found that aversive emotions can motivate people to take immediate, short-term gains while overlooking substantial long-term costs. Luce (1998) also found that, in attempting to avoid anticipated negative emotions, individuals often resort to hasty and simplified decision-making. More generally, aversive emotional states appear to reduce the search for and processing of relevant information: that is, individuals just select the first appealing option without additional exploration or examination (Keinan, 1987). These cognitive deficits share some similarity to deficits found in individuals suffering from traumatic brain injury, especially those with prefrontal cortex damage (Matthews, 2010).

In a related vein, Leith and Baumeister (1996) have shown that strong negative emotion shifted individuals’ decision choices toward high-risk, high-payoff choices, even when these were objectively poor choices. These risky decisions were aimed at alleviating current emotional distress, in that individuals typically selected the option with the highest outcome, even when that option carried a high probability of failure. Negative emotions can also impact individuals’ beliefs regarding the likelihood that desirable and undesirable events will happen to them (Johnson & Tversky, 1983). Overall, then, while emotion has numerous positive functions, significant empirical evidence exists indicating that high-arousal, negative emotions (such as those associated with threat perception) can lead to self-defeating and counterproductive behavior by further distorting individuals’ cognitive processing (Baumeister et al., 2007).

Automatic affective reactions (in the form of extremely rapid evaluations along good/bad or like/dislike dimensions) can also have dysfunctional implications, but these threat reactions often directly impact behavior; for example, a sudden and overwhelming surge of fear causes a combat soldier to

abandon fighting and simply hunker down. This type of response does not necessarily involve full-blown emotion, and it does not rest on elaborate cognitive processing. However, in fast-shifting situations where conscious emotion is too slow to guide behavior, rapid affective evaluations can evoke immediate responses; and in a prolonged episode, these might evolve into a conscious emotional state (Baumeister et al., 2007). While such immediate threat reactions are often extremely functional (e.g., in helping individuals avoid or escape dangerous situations), they become counterproductive when the behaviors they provoke are either likely to be ineffective for achieving desired objectives or (as in the example above) are even contrary to those objectives.

Behavioral Deficits

As Figure 13.1 and the discussion above suggest, significant cognitive and affective distortions generated by threat perception ultimately affect individuals' behavior; and often result in undesirable actions and poor performance (e.g., see Kolditz, 2007; McKean, 1994). These ineffective behaviors take various forms, including inadequate environmental scanning and planning, attenuated attention and focus; inadequate or broken action chains; "choking" and "freezing"; emotional contagion and panic; and so forth. For example, Wallenius (2001: 53–55), in his studies of Swedish peacekeeping forces in life-threatening situations, noted delays in initial responding, low ability for complex information processing, incorrect responding, flight behavior, irrational behavior, passivity, hyperactivity, and paralysis. Other researchers (Staw et al., 1981) have noted how threat tends to channel behavior into well-learned, dominant responses, even when these dominant responses may not be situationally relevant. In general, behavioral fallout reflects two kinds of problems: concentration problems that inappropriately shift attention away from essential tasks and actions; and incapacity problems that actively interfere with individuals' normal capacity to carry out vital tasks and actions (Campbell et al., 2008).

In addition to the behavioral deficits actively created by perceived threats, behavioral deficits can also occur when specific individual and team characteristics are either absent or ill-suited for a given context. For example, if a mismatch exists between the collective skills and abilities of a work team and the performance demands of the context in which the team operates, this mismatch also results in behavioral deficits. While leadership has traditionally been

called upon to compensate for these human-resource-based gaps (e.g., Hersey & Blanchard, 1993), this leadership obligation is absolutely crucial in dangerous environments, where both threat-based and human-resource-based deficits may occur. The next section examines leadership as a replenishment mechanism in more detail.

Leadership as Resource Replenishment

In attempting to understand effective team leadership, early conceptualizations focused either on the particular characteristics of the leader (e.g., tireless energy) or on the general types of behaviors the leader might engage in (e.g., task- or person-oriented behaviors). Later, more sophisticated conceptualizations, taking into account the variety of complex demands placed on leadership, shifted focus to the necessary interconnectedness between leaders' actions and the overall requirements of the situation. These contingency views have posited that leadership effectiveness hinges on whether the leader provides the specific conceptual, psychological, and behavioral qualities needed to insure team success within the team's particular work context (e.g., Hunt & Phillips, 1991; Yukl, 1994).

Theorists have assumed that these specific, required leadership qualities must complement the collection of traits, characteristics, and skills already present in the work team, and the specific characteristics and demands of the work itself. Thus, some leadership investigators (e.g., House & Mitchell, 1974) have concentrated on work-group motivation and have examined the contextual conditions requiring directive or supportive leadership, or participative and achievement-oriented leadership. Other researchers, concentrating on decision-making, have examined the contextual contingencies under which a directive, consultative, or participative leadership style is effective (e.g., Vroom & Yetton, 1973). Still other investigators have concentrated on the type of power a leader has, and on the structure of the task involved, to determine when a task- or person-oriented leader style works (e.g., Fiedler, 1971).

Along similar lines, Hersey and Blanchard (1993) have argued that effective leadership centers on the leader's recognizing what the work team lacks at specific points in the group's development (typically, competence in the team's early stages; commitment at later stages) and then providing what is required at that developmental stage through appropriate leadership interactions (i.e., telling, selling, participating, or delegating). On a more general level, Yukl (1994: 294–304) has also proposed a complex

conceptual framework that examines many team and organizational characteristics believed to influence the contextual suitability of particular leadership approaches.

In all the approaches above, leadership influence implicitly emanates from a specific individual: the team's formal or informal leader. More recent conceptualizations (e.g., Carson, Tesluk, & Marrone, 2007; Pearce & Conger, 2003) have expanded this traditional perspective; and have suggested that team leadership might sometimes be shared; that is, distributed among team members rather than just residing in a single designated individual. As Day, Gronn, and Salas (2004) have noted, this perspective usefully complements the traditional view of leadership as a special member's independent input to team processes and performance. Furthermore, given the ambiguity, confusion, and complexity usually associated with dangerous environments, the notion of shared leadership seems especially relevant to the ideas examined in this chapter. It is improbable that any single individual will have the capacity to supply the team with all necessary leader functions all the time. Thus, in the approach developed here, we implicitly incorporate this more complex view. The "leader" does not necessarily have to be the formal team leader; the leader can be a team member who only temporarily steps up to provide the team with the resources needed to overcome whatever impending cognitive, affective, and behavioral deficits the team is experiencing.

Overall, this brief overview of leadership conceptualizations leads to three important conclusions for the current analysis. First, substantial conceptual precedent exists for framing leadership as a "resource reservoir" (e.g., Campbell et al., 2008; Hersey & Blanchard, 1993; see also Hunt, 1985) which primarily functions to supply the work team with whatever required cognitive, affective, or behavioral resources the group is missing or has depleted. Second, leadership itself is not a single, unitary construct. Rather, as the contingency theories argue, it is more usefully thought of as a compendium of distinct components, each potentially providing the leader with cognitive, affective, or behavioral assets for enhancing the group's resources in different situational contexts. Third, in line with shared leadership conceptualizations, leader functions are not necessarily the responsibility of a single individual. Different team members may assume these functions at different times. The following section elaborates on some of these ideas and their implications for dangerous environments.

Leadership: Four Core Resource Components

While numerous definitions of leadership exist (Yukl, 1994: 2–4), they virtually all agree that leadership is a social influence process based on the leader's ability to supply followers with what the group needs or wants. For example, Katz and Kahn (1978) have provided a highly regarded formulation of the leadership process, and these researchers have argued that leaders gain influence with subordinates by using a more effective combination of the five classic bases of power—reward, punishment, legitimacy, referent, and expertise (French & Raven, 1959). Thus, while leadership is always social influence, the various resources that leaders may use for gaining influence vary significantly; and the relevance of any particular resource is (as the contingency theories imply) situationally determined.

Building on these ideas, some investigators (Campbell, Dardis, & Campbell, 2003) reviewed the leadership development literature and identified four resource components that appeared especially important in providing leaders with increased influence. They considered these four components "core" resources because of their widespread contextual applicability. The four leadership resources identified were: (1) charisma and trust-engendering assets; (2) communication and persuasion assets; (3) problem-defining and problem-solving assets; and (4) action- and performance-facilitation assets.

CHARISMA AND TRUST-ENGENDERING ASSETS

An essential feature of early trait theories of leadership, *charisma* refers to an individual's personal magnetism and ability to generate exceptional loyalty and enthusiasm in colleagues and followers (Conger, 1989). As a leadership resource, this type of interpersonal influence is especially important in affectively charged contexts; that is, contexts characterized by the need to make critical decisions under severe time pressure, among alternatives that the team cannot fully analyze, or where members disagree over choices. In such situations, it is imperative that the team have a resource available that members trust and whose guidance they will accept, if necessary, on faith.

The importance of charisma as a leadership resource derives from the trust members place both in the leader personally, and in the leader's judgment and decisions. It is members' trust in the leader that allows the leader's decisions to provide a standard accepted by all, and potentially to foster agreement in conditions where the team might otherwise hesitate or argue. From this perspective,

other trust-engendering leader qualities would also be relevant. For example, subscribing to, and behaviorally endorsing, certain values (e.g., integrity; concern for justice and fairness) reassures others about the individual's general motives and intentions, and increases the likelihood that they will accept that person's influence attempts (Zand, 1997). The heavy emphasis some leadership theorists (e.g., Bass & Steidlmeier, 1999) place on the leader's need for an "internal moral compass," as well as the emphasis some leader-development approaches place on the leader's character (U.S. Department of the Army, 1999), partially and indirectly reflect these trust requirements (Campbell et al., 2003). Some evidence suggests that threat itself tends to increase leaders' influence with their followers (Staw et al., 1981) and the followers' trust in their actions.

COMMUNICATION AND PERSUASION ASSETS

A complementary leadership resource, particularly valuable in contexts where team members are discouraged or confused, is the leader's communicative and persuasive abilities. Transformational leadership theories (e.g., Bass, 1985; Burns, 1978; Yukl, 1994: 350–354) have especially emphasized the pivotal role of a leader's communication skills in providing followers with inspiration and an image of a desirable future state they can create with dedicated effort. This inspirational ability rests on the leader's communicative capacity for tapping into the strongly held ideals and values of the group (e.g., duty, excellence, justice); and in communicating conviction regarding what needs to be done and in the team's ability to do it. Additionally, this capacity complements and reinforces followers' identification with, and trust in, the leader. In turn, this increases the likelihood that the leader can create hope and enthusiasm in situations that otherwise might seem hopeless; and can set high demands about team performance even in unique and dangerous circumstances (Campbell et al., 2003).

Aside from its potential inspirational uses, communicative capacity is a leadership resource even in less demanding circumstances. The leader's talents in "selling" the team on a particular strategy, and convincing members of the soundness and reasonableness of the actions the course implies, is often essential in circumstances where the group faces multiple, conflicting possibilities (Yukl, 1994: 223–225). More broadly, the leader's communication assets are often essential in helping the team correctly frame and make sense of the chaos inherent in many dangerous contexts. Such sense-making reduces the ambiguities

in these situations, with leaders and team members involved in ongoing, reciprocal communications as they develop a common understanding of the dangers they face (e.g., Baran & Scott, 2010).

PROBLEM-DEFINING AND PROBLEM-SOLVING ASSETS

Problem solving involves identifying and prioritizing specific individual, team, and task-related difficulties, systematically analyzing these difficulties, and then generating various effective solutions for alleviating these difficulties (see Yukl, 1994: 87–90). As a core leadership resource, problem-solving capacity provides influence by allowing an individual to contribute to the team's effort to overcome task-achievement obstacles; that is, by helping colleagues solve work difficulties. This is particularly the case when the individual's problem-solving capacity extends beyond the usual range found in managers and leaders, and incorporates aspects of expertise particularly relevant to the team's undertakings. In some cases, the valued problem-solving capacity may reflect actual subject-matter expertise in areas of general concern to the work group; or it may simply reflect a broad-based and diffuse capacity for innovative and creative analysis (Campbell et al., 2003; more broadly, see Hunt & Blair, 1985).

Mumford and his colleagues (e.g., Mumford & Connelly, 1991; Mumford & Van Doorn, 2001; Mumford et al., 2000) have also noted the role this asset plays in team leadership, suggesting that problem-solving capacity is valuable and dominant in situations where individuals influence others by identifying and communicating solutions to significant issues. In dangerous environments, with imminent and unexpected threats creating serious problems demanding effective resolution, a team leader's problem-solving capacity clearly becomes a critical resource.

ACTION- AND PERFORMANCE-FACILITATION ASSETS

The last core leadership resource that individuals can draw upon is simply a capacity for facilitating the work of the team. Facilitation can take various forms. In some circumstances it might entail providing actual physical resources necessary to accomplish the team's objectives. In other circumstances, it might entail providing interpersonal resources (e.g., listening empathetically; resolving intra-group friction). Several theorists have examined important facilitation skills that leaders potentially provide: structuring tasks (e.g., Fiedler & Garcia, 1987); resolving procedural issues (e.g., Hersey &

Blanchard, 1993); being directive or supportive (e.g., House & Mitchell, 1975), and so on. Because facilitation is especially dependent on the particular demands of the situation, this leadership resource is somewhat different from the other three. Trust, communication, and problem-solving assets are capacities centered in an individual; and they are available to the team through that person's unique qualities and skills. In contrast, useful facilitation may sometimes require assets beyond any individual's personal capacities, and require the leader to supply additional physical resources from the environment. Success in doing so obviously depends on whether such needed assets are practically available; and on whether larger organizational support structures are in place to deliver the required assets.

In summary, then, the argument here is that the function of leadership is to provide the team with different degrees of these four core resources in an assortment of circumstances. The degree and combination of resources the team may require depend on the team's collective skills and abilities, the demands of the task environment, and the team's specific objectives. This argument presumes that when difficult tasks and dangerous environments exhaust or exceed the collective skills and abilities of the team, the role of leadership is to supply the team with additional capacity by replenishing the cognitive, affective, or behavioral needs the team has exhausted. The next section elaborates on these ideas by providing a taxonomy of dangerous environments. By

examining the type of demands made on the team in the taxonomy's specific environments, we will attempt to identify the core leadership resources likely to be especially relevant in each environment.

Dangerous Environments: A Psychological Taxonomy

As noted earlier, dangerous environments can be classified using both objective and subjective characteristics to distinguish them from more conventional environments. This chapter has suggested a classification scheme using four threat characteristics (i.e., genesis, nature, expectation, and intensity) with each threat element judged along a bipolar scale: adversarial versus non-adversarial, actively aggressive versus reactively aggressive, chronic versus sporadic, and high intensity versus moderate intensity. This scheme produces a 16-category classification matrix. A classification approach of this size appears fine-grained enough to capture the many variations of threatening environments that individuals and teams are likely to encounter. Table 13.1 illustrates the classification matrix and provides some examples of the 16 categories. As research accumulates, investigators can use empirical findings to revise and modify the matrix as appropriate.

At this point, the fine-grained breakdown provided in Table 13.1 currently exceeds both the level of theory development and the available empirical evidence that would allow us to distinguish reliable systematic variations in the cognitive, affective, and

Table 13.1 Psychological taxonomy of dangerous environments

	Genesis: <i>Non-Adversarial</i>				Genesis: <i>Adversarial</i>			
	Aggressiveness: <i>Passive</i>		Aggressiveness: <i>Dynamic</i>		Aggressiveness: <i>Passive</i>		Aggressiveness: <i>Dynamic</i>	
	Intensity: <i>Lower</i>	Intensity: <i>Higher</i>	Intensity: <i>Lower</i>	Intensity: <i>Higher</i>	Intensity: <i>Lower</i>	Intensity: <i>Higher</i>	Intensity: <i>Lower</i>	Intensity: <i>Higher</i>
Expectation: <i>Sporadic</i>	Work Sites Accidents: (construction)	Work Sites Accidents: (nuclear plant)	Disaster Areas Contained: (flood)	Disaster Areas Uncontained: (wildfire)	Police Work Traps: (bomb disposal)	Military Work Traps: (IEDs)	Police Work Traditional: (traffic stop)	Police Work Undercover: (drug deal)
Expectation: <i>Chronic</i>	Locations Extreme: (desert)	Locations Extreme: (space station)	Environments Training: (escape/evade)	Environments Training: (SEAL/Ranger)	Military Work Buffer Zones: (obstructions)	Military Work Buffer Zones: (mine-field)	Military Work Limited (border dispute)	Military Work General (battlefield war)

behavioral deficit patterns in all 16 potential categories. With more empirical data, the leadership impact of relatively subtle differences across the 16 threat categories will become clearer; or data may show the leadership differences to be negligible, allowing the elimination of some categories. In the interim, the chapter proposes a broader psychological typology of dangerous environments, drawing upon the threat elements used to construct the matrix but applying them more selectively. This psychological typology recognizes that the four threat elements give rise to multiple variations of dangerous contexts, but makes a simplifying assumption that, from a leadership perspective, all these variations eventually evolve into three basic contexts: problem environments, panic environments, and paralysis environments.

Problem Environments

Threats in these environments typically are nonadversarial in nature and are only moderate in intensity. Danger stems from the inherently inimical characteristics of the physical environment: extremes of temperature (e.g., desert heat, polar cold); of altitude or depth (e.g., mountain summits, mining shafts) and even of pressure and breathability (e.g., space stations, undersea habitats). Teams in these contexts generally operate near the boundary of human survivability and would probably perish without external support and specialized equipment. Nonetheless, with appropriate planning, adequate team training, and good equipment, such environments usually are just *potentially* dangerous. Until something goes wrong, team functioning in these contexts generally reflects processes similar to those that occur in conventional work settings; leadership requirements in these settings is also similar.

With accidents or equipment failures that go beyond the standing operating procedures of the group, demands on leadership change. When incidents require solutions that are outside the cognitive resources of the team, the leader must provide the team with the problem-defining and problem-solving assets necessary to generate viable solutions. In some cases, these assets take the form of the individual's own generic problem-solving capacity or his situationally-relevant, specific expertise. In other cases, solutions may require the leader to provide the team with additional performance-facilitation assets, and push the team members' own problem-solving efforts beyond their normal limitations, as Shackleton apparently did with his stranded team of Antarctic explorers (Campbell et al., 2008). Since

the threat is only of moderate intensity, the leader has time to provide these problem-solving or facilitation assets.

Variations on this type of problem environment exist. Some of these variations contain nonadversarial, moderate intensity threats but occur in contexts that are not normally inimical. The contexts only become inimical after some catastrophe, significant accident, or natural disaster (e.g., a powerful earthquake, a major structural collapse, a large-scale flood). In these situations, rescue teams and first-responder teams, arriving after the initial devastation, are surrounded by threats from unstable structures, fires and potential explosions. Again, however, with good training, adequate equipment, and effective planning, team functioning typically reflects well-understood, shared patterns of past interactions.

Leadership demands change when the team encounters dangerous situations that are particularly perplexing and go beyond the accumulated experience of past team operations. As before, it falls to the leader to provide the team with additional cognitive capacity; that is, with the problem-solving or performance-facilitation assets needed to generate solutions. Since the team arrives *after* the initial destructive event, we have assumed the threat is experienced as only moderately intense. This again gives the leader time to provide problem-solving or facilitation assets. (If the threat is experienced as high-intensity, we categorize the environment as a panic environment, discussed below.)

Other variations of the problem environment occur in contexts containing adversarial, moderate-intensity threats. For example, a detachment of peace-keeping troops moving through a disputed city sector may encounter stubborn resistance and unexpected weapons fire. If the particular circumstances of the situation eventually exhaust the team's cognitive resources for generating a viable solution, the leader's role here, as above, is to provide the team with additional cognitive capacity.

Panic Environments

Threats in these environments are typically high in intensity and they can reflect either adversarial or non-adversarial characteristics. All the problem environments discussed above can evolve into panic environments if, as time passes and the threat increases in intensity, the problem-solving or facilitation assets provided by the leader fail to result in a viable solution to the initial difficulty. This failure-to-solve stresses the affective resources of the team as frustration and anxiety build. Left unresolved, the

increasing anxiety and fear in even a few members of the team has the potential to infect other team members in episodes of emotional contagion (e.g., see Barsade, 2002).

Additionally, some accidents or equipment failures are so severe that these non-adversarial threats are high-intensity from the start; similarly, a team may for various reasons experience some adversarial threats from the outset as high-intensity (e.g., a prolonged and savage fire). As fear and imminent danger create the kind of affective deficits discussed earlier, the team leader must both stabilize the team's affective balance and also address the team's cognitive deficits. In replenishing the team's affective resources, the leader draws upon charisma and trust-engendering assets, to calm team members and help them manage their emotions (e.g., see Williams, 2007). To replenish the team's cognitive resources and help determine the most promising course of action, the leader draws upon both problem-solving assets and persuasion assets, getting the team to accept and follow the most promising course of action in spite of confusion and disagreement. Panic environments are more demanding on leadership than problem environments because of this dual replenishment requirement and because of the pressure of acting all the while under severe time constraints.

Paralysis Environments

Threats in these environments, as in panic environments, are also high in intensity and can reflect either adversarial or non-adversarial characteristics. Additionally, the threat is typically actively aggressive and immediate. While panic environments require the leader to provide cognitive and affective support to the team, paralysis environments not only make these demands but also require the leader to compensate for specific behavioral deficits in the team's processes. As suggested earlier, as a threat increases in intensity, immediacy, and aggressiveness, the significant cognitive and affective distortions that threat creates ultimately impact individuals' behavior. Sometimes this impact results in ineffective, unproductive actions by diffusing the team's attention and concentration across crucial and inconsequential tasks indiscriminately, as in the unfocused activity that occurs in panic environments. At other times, the impact results in the opposite extreme, incapacitating team action and shutting down responding altogether (Hannah et al., 2010). In these paralysis environments, effective leadership must not just replenish the team's cognitive and affective deficits, but also provide

direction and initiate actions to overcome team members' immobilization (e.g., Fodor, 1978; Kugihara et al., 1982).

In addition to high intensity, immediacy, and active aggressiveness, threats in paralysis environments are typically sudden and unexpected. For example, some members of firefighting teams cut off and isolated by an abrupt, unpredicted directional change in an out-of-control wildfire (non-adversarial), or some humanitarian team members suddenly confronted by violent, armed assailants in an unanticipated encounter (adversarial), may freeze or choke; and not respond to the threat at all. Whether adversarial or non-adversarial, dangerous contexts of this nature are potential paralysis environments. Furthermore, panic environments may become paralysis environments, at least for some members who individually respond more strongly to the fear and stress evoked by the threat.

Figure 13.2 summarizes graphically the proposed relationships between threat-created deficits and the core leadership assets for the three dangerous environments. Heavy, solid arrows identify primary connections; lighter, dashed arrows indicate contributing, secondary linkages.

The psychological typology displayed in Figure 13.2 arranges dangerous environments along a rough continuum; that is, with problem environments placing fewer extraordinary demands on leaders and teams, and paralysis environments placing greater demands. This general ordering, while potentially useful conceptually, is obviously an oversimplification, since it assumes that the degree of each specific potential deficit (cognitive, affective, or behavioral) is identical; and that the only consideration is the general presence or absence of a deficit element. This is not likely to be the case objectively; nor is it likely to be the case subjectively.

The Subjective Environment

Leaders operating in dangerous environments are unlikely to frame their contexts using the static abstractions discussed above. Their experienced environment is much different. From a leader's subjective perspective, dangerous environments all trigger a fundamentally similar response process: (a) making sense of the situation; (b) assessing threats; (c) determining situational requirements; (d) identifying action alternatives; and (e) executing chosen alternatives (e.g., Kapucu & Van Wart, 2008; Wallenius, 2001).

While the specific context (i.e., problem, panic, or paralysis environment) largely determines the mix and degree to which the leader needs to provide

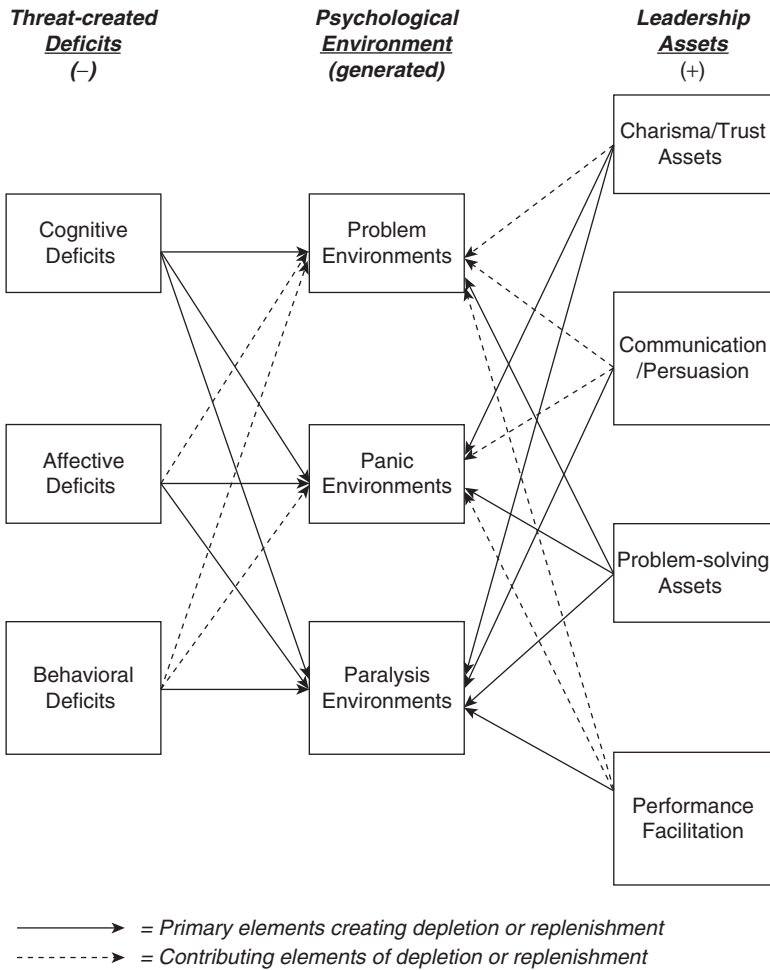


Fig. 13.2 Elements of unit resource depletion and unit resource replenishment.

analysis, direction, coordination, reassurance, and solutions, subjectively the leader's focus centers on achieving a combination of threat neutralization, task achievement, and team safety. The nature of the team, the nature of the task, and the nature of the threat substantially determine the tradeoffs individuals make in trying to realize this combination; but ultimately success depends on whether the leader can provide the team with the cognitive, affective, and behavioral assets necessary to replenish team deficits, drawing on the four core leadership assets.

Supplementing Leader Assets

As noted previously, team resource replenishment does not rest solely on the formal leader's own personal capacities and characteristics. While this individual's capacities and characteristics are certainly critical, nevertheless these personal assets are not the only means for replenishing team deficits; and in

themselves they may not always be sufficient (e.g., see Hannah et al., 2010; Tosi, 1985). Various team members might temporarily step up to meet team needs (their own personal leadership resources allowing), in some form of distributed leadership.

Furthermore, in certain dangerous contexts, team leaders may have available communication channels to external supporters who can extend and increase the core leader assets with additional capacity. Thus, the leader of a team facing a potentially lethal equipment malfunction—one beyond the problem-solving capabilities of both team and leader—may obtain solutions from relevant technical experts who are not part of the team and are not present in the dangerous environment itself. Similarly, a combat leader linked into external sources and whose own actions are insufficient in helping the team achieve its objective may simply radio for additional help (e.g., an airstrike, more

troops, etc.). In both examples, outside resources have in essence supplemented the leader's own problem-solving and action facilitation assets in replenishing team deficits.

More broadly, actions and activities undertaken by the leader and the team *prior* to entering or encountering a dangerous environment can also supplement leader and team resources (e.g., Hannah et al., 2010; Samuels, Foster & Lindsay, 2010; Wallenius, 2001: 60–61). Specifically, prior planning, preparation, training, and anticipatory “what-if” scenario thinking heavily influence the kind and degree of cognitive, affective, and behavioral resources available to a leader and a team when threat appears. Developing a facility among members to easily switch mental processes from “normal” to “crisis”; a facility to perform swift but accurate situational assessments; a facility for rapid communication and coordination; a facility for flexible thinking, adaptable problem-solving, and quick decision-making; training and practice can enhance and supplement all these customary leader and team assets. Of course, as Staw and colleagues (1981) have noted, practice and training are most effective when the parameters of the threat situation are familiar to the team; or when the training specifically focuses on cognitive flexibility under adverse circumstances.

Additionally, for dangerous environments that have complex organizations dedicated to them (e.g., firefighting, policing, national defense), the parent organization's culture, strategies, policies, and general effectiveness have a profound influence on supplemental assets potentially available to leaders and teams in the field (e.g., see Kapucu & Van Wart, 2008). Both formal policies and informal norms, for example, may encourage (or circumscribe) the leader's willingness even to consider seeking necessary assets from outside the team; or they may encourage (or circumscribe) the team's willingness to follow outsider expertise, particularly in cases where the proposed guidance violates organizational expectations and standard operating procedures. Thus, to fully appreciate on-site team leadership in these dangerous environments, it is necessary to examine the leadership, culture, and norms of the parent organization with its associated supporting structures and processes. Some investigators (e.g., Yammarino et al., 2010), adopting this perspective, have already called for multilevel conceptualizations of leadership in dangerous environments. As more empirical evidence accrues, the team-level analysis of the current chapter may evolve into a more complex, multilevel framework.

Conclusions: Team Performance in Dangerous Contexts

The proposed replenishment-of-resources framework argues that leadership in dangerous environments is best understood when viewed using a specialized contingency lens. Through this lens, leadership remains an influence process, but the primary objective of the process is not the usual goal of motivating and guiding the team to its best task performance—the nature of most dangerous environments typically insures that conventional task motivation problems are almost irrelevant in these contexts. Instead, the leader's primary objective is to help the team effectively respond to the fear and anxiety that threatening environments generate; to compensate for the cognitive, affective, and behavioral deficits that intense threat perception creates; and, ultimately, to achieve mission objectives with as little damage to the team as possible. To accomplish these goals, leaders can draw on four core assets (charisma and trust, communication and persuasion, problem-defining and problem-solving, and action-facilitation assets) and use these assets to resupply the team.

Within the framework, as in all contingency models, several factors govern actual team performance. The demands of the task and the context in which the task occurs represent one factor; the characteristics of the work team (i.e., members' knowledge, skills, abilities, and other qualities) represent a second factor; and the depth and breadth of the leader's four core assets represent a third factor. In general, context requirements (particularly the degree to which situational threats evoke anxiety and fear) and specific team characteristics (particularly the cognitive and affective resources the team brings to the situation) determine the types and severity of team deficits. Finally, the depth and breadth of the leader's core assets determine the degree to which leadership can compensate for specific deficits. A conceptual equation expresses this notion more succinctly: team performance is a function of team resources (TR) minus threat-generated deficits (TGD) plus leader-supplied assets (LSA). In equation form:

$$\text{Team Performance} = f [(TR) - (TGD) + (LSA)]$$

In considering this equation, the discussion has focused only on the distinguishing aspect of dangerous environments; that is, the presence of a threat and the potential issues that threat creates for the team. However, these potential threat issues are *in addition* to the “normal” problems teams encounter

in working towards task accomplishment. In conventional environments, limitations in the team's knowledge, skills, and abilities relative to task requirements often inhibit a team's task achievements. Such conventional misalignments between team resources and task demands can also occur in dangerous environments. Thus, in reality the leader's goal in dangerous contexts is much more complex than in traditional work contexts, and more complicated than the equation acknowledges. The leader must help the team accomplish the primary task; simultaneously compensate for threat-related problems; and minimize the likelihood of avoidable injury or death. To do this successfully, it is paramount that the team trust the leader and the leader's judgement (e.g., Fisher, Hutchings, & Sarros, 2010; Sweeney, 2010); and that the team leader possess the four core leadership assets in sufficient depth and breadth to meet contextual conditions.

Leader Shortcomings and Team Performance

What happens if the individual does not possess the four core assets in sufficient depth and breadth? As discussed previously, this does not necessarily mean that team deficits go unreplenished. Team deficits are not simply the problem of the leader alone. Consistent with the notion of shared leadership, if various unit members have the required core assets, they may temporarily "fill in" for the formal leader. Similarly, some investigators have argued that effective team leadership in certain dangerous contexts is an ongoing sense-making process; and responsibility for successful performance rests with all team members, not just the designated leader (Baran & Scott, 2010; Hannah et al., 2010). While sense-making conceptualizations provide a different view of team leadership than the one developed here, they, too, suggest that leadership assets are not necessarily limited to one individual.

Additionally, because dangerous environments particularly highlight dramatically effective (or ineffective) individual action, it is easy to overlook how greatly organizational-level leadership far removed from threat or danger can indirectly determine a team's *in situ* performance. Expressed in policies and directives regarding team composition, selection, preparation, and development, this organizational-level leadership can enhance or inhibit the capacity of team-level leadership. For example, organizational expectations regarding the degree to which team leaders communicate and coordinate with home base before taking the initiative and engaging

in independent action will influence team performance. Even more directly, the organization's ability and willingness to provide team leaders with backup resources in deteriorating circumstances will also affect the team's level of achievement. Thus, while the replenishment-of-resources framework does not emphasize the interconnections between team leadership and organizational leadership, a full accounting for team performance certainly requires an examination of these links (e.g., Yammarino et al., 2010).

For these reasons, then, it would be inappropriate to attribute ineffectiveness team performance simply to ineffective leadership; or, conversely, effective team performance solely to effective team leadership. Nonetheless, having acknowledged these complicating factors, the framework suggests a catalogue of *specific* errors that leaders could commit in dangerous contexts. Potentially useful for analyzing and improving team and leader performance in after-action reviews, these errors include: (1) providing the team no guidance when guidance is needed; (2) ignoring or overlooking context-relevant cues; (3) focusing on irrelevant cues; (4) under-weighting or over-weighting team input; (5) engaging in micro-management; (6) being over-cautious or over-confident; (7) exercising inadequate judgement or inferior decision-making; (8) failing to provide assurance or reassurance when such is needed; (9) failing to establish a sense of order and control, and so forth. In contrast to this specific focus, the framework's more general approach (emphasizing potential cognitive, affective, and behavioral deficits in problem, panic, and paralysis environments) is likely to provide a better basis for simply *understanding* effective and ineffective team performance across a spectrum of dangerous contexts; and for a wide range of operating teams.

Limitations and Future Directions

In ending the chapter, it is especially appropriate to consider limitations and future directions in the same section, since the limitations of the current analysis point to important areas for future investigation. Specifically, regarding limitations, the replenishment-of-resources framework presently consists of a set of implied hypotheses; that is, the framework's central conceptualizations are premises that have yet to undergo direct, rigorous empirical testing. For example, the framework uses a psychological typology of dangerous contexts, combining objective and subjective characteristics into a three-category classification system. This typology is different from more typical approaches (e.g., Pulakos et al., 2000) to classifying behaviors in conventional

work settings. The typology requires further analysis and examination to establish whether it is truly adequate for capturing the full variety of dangerous contexts that exist. Such additional analysis and evaluation is particularly called for, since this typology is itself a simplification of a more complex, but equally untested, analysis of threatening environments.

The framework's premises about threat and the creation of cognitive, affective, and behavioral deficits represent a second area that must undergo empirical examination. While a great deal of evidence shows that fear and anxiety often result in the kinds of cognitive, affective, and behavioral issues considered in the chapter, the framework argues that some dangerous contexts predominantly create cognitive deficits (i.e., problem environments); others predominantly create affective deficits (i.e., panic environments); and still others predominantly create behavioral deficits (i.e., paralysis environments). Acceptable support for the framework certainly does not require that actual dangerous environments correspond completely to these ideal types. However, acceptable empirical support does require that the expected type of deficit truly does predominate in the predicted dangerous context.

Finally, empirical investigation must confirm the framework's contention that team leaders in dangerous contexts are successful only to the degree that they supply the team with the specific, core leadership elements required by the specific dangerous context the team is operating in. Obtaining empirical evidence of this nature is likely to be especially difficult, both because of the methodological complexities associated with testing any contingency theory; and because of the nature of the specific environments under examination. In spite of these daunting practical challenges, empirical examination of this nature is crucial.

Regardless of the limitations, the replenishment-of-resources approach represents a step forward, in that it provides a framework for identifying how team leadership in dangerous contexts specifically differs from leadership in conventional settings. On an intuitive level, it seems clear that dangerous environments (relative to "normal" environments) call for greater leader adaptability, greater improvisational skill, greater innovativeness, and so forth. The replenishment-of-resources approach pushes beyond these intuitive notions and implicitly suggests *why* these qualities are necessary in dangerous contexts; and *how* leaders meet the demands of such contexts

using the four core leadership assets discussed throughout the chapter.

Dangerous environments have not received the type of attention their societal importance would suggest. While the analysis of leadership in these environments is not likely to alter basic conceptualizations (Hannah et al., 2010), team leadership in dangerous contexts is distinctive; and further examination and analysis should provide additional important insights. Thus, if the replenishment-of-resources framework encourages researchers to undertake a greater consideration of dangerous environments, resulting in a more intricate understanding of leadership in these contexts, the framework will have been successful.

References

- Banderet, L., & Burse, R. (1991). Effects of high terrestrial altitude on military performance. In R. Gal and A. Mangelsdorff (Eds.), *Handbook of military psychology*. West Sussex, England: John Wiley & Sons.
- Baran, B., & Scott, C. (2010). Organizing ambiguity: A grounded theory of leadership and sense-making within dangerous contexts. *Military Psychology*, 22(Suppl. 1), S42–S69.
- Barsade, S. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly*, 47, 644–675.
- Bass, B. (1985). *Leadership and performance beyond expectation*. New York: Free Press.
- Bass, B. M., & Steidlmeier, P. (1999). Ethics, character, and authentic transformational leadership. *Leadership Quarterly*, 10, 181–218.
- Baumeister, R., Vohs, K., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, 11, 167–203.
- Baumeister, R., & Scher, S. (1988). Self-defeating behavior patterns among normal individuals: Review and analysis of common self-destructive tendencies. *Psychological Bulletin*, 104, 3–22.
- Becker, M. (2009). Panic search. *Psychological Science*, 20, 435–437.
- Boyd, S. (1981). Psychological reactions of disaster victims. *South African Medical Journal*, 60, 744–748.
- Burns, J. (1978). *Leadership*. New York: Harper & Rowe.
- Campbell, D. J., Campbell, K. M., & Ness, J. (2008). Resilience through leadership. In B. Lukey & V. Tepe, (Eds), *Biobehavioral resilience to stress* (pp. 55–88). Boca Raton, FL: Taylor & Francis/CRC Press.
- Campbell, D. J., Dardis, G., & Campbell, K. (2003) Enhancing incremental influence: A focused approach to leadership development. *Journal of Leadership and Organizational Studies*, 10, 29–44.
- Campbell, D. J., Hannah, S., & Matthews, M. (2010). Leadership in military and other dangerous contexts: Introduction to the special topic issue. *Military Psychology*, 22(Suppl. 1), S1–S14.
- Carson, J., Tesluk, P., & Marrone, J. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal*, 50, 1217–1234.

- Chajut, E., & Algom, D. (2003). Selective attention improves after stress: Implications for theories of social cognition. *Journal of Personality and Social Psychology, 85*, 231–248.
- Cohen, E. (1952). The influence of varying degrees of psychological stress on problem-solving rigidity. *Journal of Abnormal and Social Psychology, 47*, 512–519.
- Conger, A. (1989). *The charismatic leader: Behind the mystique of exceptional leadership*. San Francisco, CA: Jossey-Bass.
- Day, D., Gronn, P., & Salas, E. (2004). Leadership capacity in teams. *Leadership Quarterly, 15*, 857–880.
- Gladstein, D., & Reilly, N. (1985). Group decision making under threat: The tycoon game. *Academy of Management Journal, 28*, 613–627.
- Fiedler, F. (1971). Validation and extension of the contingency model of leader effectiveness: A review of empirical findings. *Psychological Bulletin, 76*, 128–148.
- Fiedler, F. & Garcia, J. (1987). *New approaches to effective leadership: Cognitive resources and organizational performance*. New York: John Wiley.
- Fisher, K., Hutchings, K., & Sarros, J. (2010). The “bright” and “shadow” aspects of *in extremis* leadership. *Military Psychology, 22*(Suppl. 1), S89–S116.
- Fodor, E. (1978). Simulated work climate as an influence on choice of leadership style. *Personality and Social Psychology Bulletin, 4*, 111–114.
- French, J., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power*. Ann Arbor, MI: Institute for Social Research.
- Graen, G., & Cashman, J. (1975). A role making model of leadership in formal organizations: A developmental approach. In J. Hunt and L. Larson (Eds.), *Leadership frontiers* (pp. 143–165). Kent, OH: Kent State University Press.
- Hannah, S. (2006). Developing leaders for dangerous contexts. Panel Presentation at the Global Leadership Conference. U.S. Military Academy, West Point, NY, April.
- Hannah, S. T., Campbell, D. J., & Matthews, M. (2010). Advancing a research agenda for leadership in dangerous contexts. *Military Psychology, 22*(Suppl. 1), S157–S189.
- Hannah, S. T., Uhl-Bien, M., Avolio, B., & Cavarretta, F. (2009). A framework for examining leadership in extreme contexts. *Leadership Quarterly, 20*, 897–914.
- Hersey, P., & Blanchard, K. (1993). *The management of organizational behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Hollander, E. (1980). Leadership and social exchange processes. In K. Gergen, M. Greenberg, and R. Willis (Eds.), *Social exchange: Advances in theory and research*. New York: Winston-John-Wiley.
- House, R., & Mitchell, T. (1974). Path-goal theory of leadership. *Contemporary Business, 3*, 81–98.
- Hunt, J. (1985). Leadership: The state of the art and the future battlefield. In J. Hunt & J. Blair, *Leadership on the future battlefield* (pp. 76–96) McLean, VA: Pergamon-Brassey.
- Hunt, J., & Blair, J. (1985). *Leadership on the future battlefield*. McLean, VA: Pergamon-Brassey.
- Hunt, J., & Phillips, R. (1991). Leadership in battle and garrison: A framework for understanding the differences and preparing for both. In R. Gal and A. Mangelsdorff (Eds.), *Handbook of military psychology*. West Sussex, England: John Wiley & Sons.
- Janis, I., Defares, P., & Grossman, P. (1983). Hypervigilant reactions to threat. In H. Selye (Ed.), *Selye's guide to stress research*, Vol. 3 (pp. 1–42). New York: Van Nostrand Reinhold.
- Johnson, E., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology, 45*, 20–31.
- Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, NJ: Prentice Hall.
- Katz, D., & Kahn, R. (1978). *The social psychology of organizations*. New York: Wiley.
- Kapucu, N., & Van Wart, M. (2008). Making matters worse: An anatomy of leadership failures in managing catastrophic events. *Administration & Society, 40*, 711–740.
- Keinan, G. (1987). Decision making under stress: Scanning of alternatives under controllable and uncontrollable threats. *Journal of Personality and Social Psychology, 52*, 639–644.
- Kobrick, J., & Johnson, R. (1991). Effects of hot and cold environments on military performance. In R. Gal and A. Mangelsdorff (Eds.), *Handbook of military psychology*. West Sussex, England: John Wiley & Sons.
- Kolditz, T. (2007). *In extremis leadership: Leading as if your life depended on it*. San Francisco, CA: Jossey-Bass (Wiley).
- Kugihara, N., Misumi, J., Sato, S., & Shigeoka, K. (1982). Experimental study of escape behavior in a simulated panic situation: Leadership in an emergency situation. *Japanese Journal of Experimental Social Psychology, 21*, 150–166.
- Leith, K., & Baumeister, R. (1996). Why do bad moods increase self-defeating behavior? Emotion, risk taking, and self-regulation. *Journal of Personality and Social Psychology, 71*, 1250–1267.
- Loewenstein, G., Weber, E., Hsee, C., & Welch, N. (2001). Risk as feeling. *Psychological Bulletin, 127*, 267–286.
- Luce, M. (1998). Choosing to avoid: Coping with negatively emotion-laden consumer decisions. *Journal of Consumer Research, 24*, 409–433.
- Luce, M., Bettman, J., & Payne, J. (1997). Choice processing in emotionally difficult decisions. *Journal of Experimental Psychology: Learning, Memory and Cognition, 23*, 384–405.
- Mandler, G. (1979). Thought processes, consciousness, and stress. In V. Hamilton & D. Warburton (Eds.), *Human stress and cognition: An information processing approach* (pp. 179–201). New York: John Wiley & Sons.
- Matthews, M. (2010). Personal communication.
- McKean, K. (1994). Using multiple risk factors to assess the behavioral, cognitive and affective effects of learned helplessness. *Journal of Psychology, 128*, 177–183.
- Mowen, J. (1993). *Judgment calls. High stakes decisions in a risky world*. New York: Simon & Schuster.
- Mulder, M., & Stemerding, A. (1963). Threat, attraction to group, and need for strong leadership: A laboratory experiment in a natural setting. *Human Relations, 16*, 317–334.
- Mumford, M. D., & Connelly, M. S. (1991). Leaders as creators: Leader performance and problem solving in ill-defined domains. *Leadership Quarterly, 2*, 289–315.
- Mumford, M. D., & Van Doorn, J. R. (2001). The leadership of pragmatism: Reconsidering Franklin in the age of charisma. *Leadership Quarterly, 12*, 279–310.
- Mumford, M. D., Zaccaro, S. J., Harding, F. D., Jacobs, T. O., & Fleishman, E. A. (2000). Leadership skills for a changing world: Solving complex social problems. *Leadership Quarterly, 11*, 11–35.
- Norman, D., & Bobrow, D. (1975). On data-limited and resource-limited processes. *Cognitive Psychology, 7*, 44–64.
- Norman, D., & Bobrow, D. (1976). On the analysis of performance operating characteristics. *Psychological review, 83*, 508–510.

- Noy, S. (1991). Combat stress reactions. In R. Gal and A. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 507–530). West Sussex, England: John Wiley & Sons.
- Pearce, C., & Conger, J. (eds.). (2003). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage.
- Pulakos, E., Arad, S., Donovan, M., & Plamondon, K. (2000). Adaptability in the work place: Development of a taxonomy of adaptive performance. *Journal of Applied Psychology, 85*, 612–624.
- Samuels, S., Foster, C., & Lindsay, D. (2010). Freefall, self-efficacy, and leading in dangerous contexts. *Military Psychology, 22*(Suppl. 1), S117–S136.
- Staal, M., Bolton, A., Yaroush, R., & Bourne, L. (2008). Cognitive performance and resilience to stress. In B. Lukey & V. Tepe, (Eds), *Biobehavioral resilience to stress* (pp. 259–299). Boca Raton, FL: Taylor & Francis/CRC Press.
- Staw, B., Sandelands, L., & Dutton, J. (1981). Threat-rigidity effects in organizational behavior. *Administrative Science Quarterly, 26*, 501–524.
- Streufert, S., & Streufert, S.C. (1981). Stress and information search in complex decision making: Effects of load and time urgency. Technical Report No. 4, Arlington, VA: Office of Naval Research.
- Sweeney, P. (2010). Do soldiers re-evaluate trust in their leaders prior to combat operations? *Military Psychology, 22*(Suppl. 1), S70–S88.
- Taylor, A. (1991). Individual and group behavior in extreme situations and environments. In R. Gal and A. Mangelsdorff (Eds.), *Handbook of military psychology*. West Sussex, England: John Wiley & Sons.
- Tosi, H. (1985). Why leadership isn't enough. In J. Hunt, & J. Blair, *Leadership on the future battlefield*, (pp. 119–132). McLean, VA: Pergamon-Brassey.
- U.S. Department of the Army (1999). *Army leadership: Be, know, do*. (FM 22-100). Washington, DC: Department of the Army
- Van Fleet, D., & Yukl, G. (1986). *Military leadership: An organizational perspective*. Greenwich, CT: Jai Press.
- Vroom, V., & Yetton, P. (1973). *Leadership and decision-making*. Pittsburgh: University of Pittsburgh Press.
- Wallenius, C. (2001). *Human adaptation to danger*. Karlstad, Sweden: Lund University.
- Williams, M. (2007). Building genuine trust through interpersonal emotion management: A threat regulation model of trust and collaboration across boundaries. *Academy of Management Review, 32*, 595–621.
- Yammarino, F., Mumford, M., Connelly, M., & Dionne, S. (2010). Leadership and team dynamics for dangerous military contexts. *Military Psychology, 22*(Suppl. 1), S15–S41.
- Yerkes, R., & Dodson, J. (1908). The relation of strength of stimulus to rapidity of habit formation. *Journal of Comparative and Physiological Psychology, 18*, 459–482.
- Yukl, G. (1994). *Leadership in organizations*. Upper Saddle River, NJ: Prentice Hall.
- Zand, D. (1997). *The leadership triad: Knowledge, trust and power*. New York: Oxford University Press.

Swift Trust in Ad Hoc Military Organizations

Theoretical and Applied Perspectives

Paul B. Lester and Gretchen R. Vogelgesang*

Abstract

In this chapter, we explore the rapid development of interpersonal trust—known as “swift trust”—within temporary systems and focus on our attention on the military context. We suggest that, within the leader–follower dyad, followers make swift trust decisions based on a series of appraisals regarding both static and dynamic factors about the leader. We suggest that certain leader behaviors and decision making—participative decision making, transformational leadership behaviors, and general positive attitudes—can accelerate followers’ making swift trust decisions about the leader. Implications for research are provided.

Keywords: Trust, swift trust, leader, follower

In the fall of 1997, a young infantry second lieutenant fresh out of Ranger School was about to lead his platoon through the best light infantry training anywhere in the world, the Joint Readiness Training Center at Fort Polk, Louisiana. He and his soldiers were excited and understood the mission: The platoon was to infiltrate the training area—known as “The Box”—via truck, dismount, move along a narrow axis of advance for approximately three kilometers, then seize a small hilltop they referred to as OBJECTIVE DALLAS. The platoon rehearsed the mission and contingencies for two days—they were ready to go—then a call came over the radio for platoon leaders to report to the company commander’s location.

This is how it went.

The platoon leader was met at the company command post by his commander, who launched right into a new set of instructions.

“Lieutenant, slightly new mission for your platoon,” he said. “I need your platoon to safely escort a Naval

Gunfire Control Team into OBJECTIVE DALLAS, secure them while they set up and operate, then figure out a way to link them up at battalion Tactical Operations Center once they finish their firing mission.”

“OK, sir, I understand,” the platoon leader replied. “One question, though. How many people in the control team?”

“Don’t know, I’ve never worked with one.” The commander smiled and said, “Don’t worry, they’ll be here in about 30 minutes for a link up.”

“Roger, sir . . . umm, one other question. Do they have weapons?”

“Maybe, but if they do then they’ll probably be side arms . . . not much good to you.”

The platoon leader looked perplexed and said “Sir, I’m a bit worried here . . . they don’t even know our patrolling procedures, we might have breaks in contact while we move. . . .”

The commander cut him off and shot back, “Yeah, roger, got it. Doesn’t matter, stop worrying, just get the mission done. OK, I’m headed to battalion.”

* The views and opinions stated herein are those of the authors, and do not necessarily represent the views of the United States Army or the Department of Defense.

The platoon leader waited at the company command post for 30 minutes, and sure enough, a truck pulled up and four sailors climbed out. The sailor who looked senior—the platoon leader didn't know Navy enlisted ranks—saluted and stated that they were ready to head out. The platoon leader paused for a second and asked, "You guys ever been to JRTC before?"

"No, sir," the sailor said. "In fact, this will be the first time we've worked with the Army or, um, together at all on a real training mission for that matter. We're activated Naval Reservists called up to do our two weeks of annual training. I'm Chief Petty Officer Gibbs and I'm from Mississippi; Bobby over there is from South Carolina, Mike is from New Jersey, and the young lookin' kid over there—Smith—is from Florida. We all met about a week ago, got certified on our gunfire drills, and here we are."

With a sigh, the platoon leader picked up his assault pack and weapon, turned, and muttered, "Great. . . ."

When the platoon leader got back to the platoon assembly area, he called over to his senior squad leader and said, "Sergeant Naughton, I've got something for you. See those guys over there repacking their rucksacks? Yeah? OK, I need you to embed them within your squad and provide security for them during our movement along the axis of advance to OBJECTIVE DALLAS. Once we get there, your squad will primarily serve as their security and, once they finish with their fire missions, I'll plus you up with another team from First Squad and you'll escort them to battalion HQ. Got it?"

Naughton paused and said, "Hey sir, I understand the mission and all, but who are these guys? They're not even in the same uniform as us. . . . if we make contact, some private is liable to light 'em up thinking that they're on the enemy's side, and that'll suck for all of us but mostly for you because you'll have to report it up to HQ. Worse, lookin' at their rucks, it doesn't look like they've done a lot of patrolling or tactical movements. I mean, I could throw a hand signal, they might not know what it means and make up their own, and pretty soon we're gonna look like the Village People out there dancing around to 'YMCA!'"

The platoon leader put his hands up and said, "Hey, hold up a second. I'll tell you the same thing the commander told me—'Yeah, roger, got it.' Look, you're the senior squad leader, you can handle it."

Sergeant Naughton walked over to Chief Gibbs and said, "Hey, got a second? I'm Naughton and my squad is responsible for you during the mission. Now, what is it you guys do again?"

Gibbs laughed under his breath and said, "We call in naval gunfire. You know how each infantry platoon gets a forward observer to communicate with Army artillery?"

Yeah? OK, we're like them, only a bit bigger in terms of numbers, and we talk to the ships instead of artillery batteries. We've done dismounted operations over rough terrain before, but we didn't work together and instead of the Army it was with the Marines."

"OK, that makes sense," said Naughton., "Here's the deal—you'll be walking between A and B Team with me. You guys have any night vision? No? That's what I was afraid of. Don't worry, we'll work around that. Bottom line is I've got to get you to DALLAS in one piece."

For the most part, the mission went well and casualties were light. The platoon made contact with the enemy twice, but it handled both situations quickly and efficiently, just like they rehearsed. Once on OBJECTIVE DALLAS, the platoon leader called over Chief Gibbs and said, "OK, we're here, DALLAS is secure, time for you to do your thing. Need anything from us?"

Gibbs replied, "No sir, we'll take it from here." As he did, both looked up as it sounded like there was a large animal up in the trees. "See, sir, that's Smith up there hauling up one of our antennas. We need it to talk to the ships. Once he's set, we'll be calling gunfire missions within two minutes. We just need you to keep the enemy away from us for at least the next hour or so."

The platoon leader said, "OK, let me get out of your way."

The platoon leader decided to walk with Naughton and the gunfire control team back to the battalion tactical operations center. As he stepped into the tent, his battalion commander turned, smiled, and said, "Hey, nice job with the gunfire team last night. Those boys really brought down some serious damage on the enemy's artillery positions. Without the Navy's support, the night might have turned out a lot different—and worse—for us."

After some coffee, the platoon leader walked over to Chief Gibbs, held out his hand for a shake, and said, "Hey, great mission last night. It was good working with you—take care, and I'm sure we'll see each other around somewhere." With that, he linked back up with Sergeant Naughton and the squad moved back to OBJECTIVE DALLAS without incident.

The platoon leader never saw Chief Gibbs or anyone from his team again. But he continued to work with sailors, and later airmen and Marines from time to time, whenever the mission called for it—in training and in actual combat—over the next ten years.

Introduction

As a matter of policy, doctrine, and context, the military habitually operates in ad hoc, temporary groups that are tailored to mission requirements.

Be it in a joint environment, where the various military services work together, or in a combined arms environment, where different systems and platforms work together, military policy states that leaders at all levels are to work towards breaking down insular silos, find efficiencies, and reduce redundancies whenever possible (Garamone, 2010). Additionally, Joint Publication 3-0 (U.S. Department of Defense, 2010a, pp. 11–12) states that our military forces must be doctrinally organized to “accomplish the mission based on the [command’s] vision and concept of operations. Unity of effort, centralized planning and direction, and decentralized execution are key considerations.” Contextually, the military operates in a complex, rapidly changing environment where significant social, economic, or political problems can emerge, fester, then dissipate at great speed. The operational environment has grown so complex over the last few decades that authors of an Army strategic capabilities assessment stated: “More than ever, the U.S. National Security Strategy must be an interagency effort, integrating all elements of national power. Those elements will include not only our diplomatic, economic and military capabilities, but also the power of the human dimension that motivates and executes the details of that strategy” (U.S. Army Training and Doctrine Command, 2008, p. 47). Contextual complexities permeate well below strategic levels of the military as well, as it is common today to see leaders in a combat environment fill multiple roles (e.g., warrior, diplomat, public works engineer) and incorporate diverse groups (e.g., interagency, joint, and combined arms) into mission planning and execution on a daily basis (Lester et al., 2010).

With these factors in mind, the purpose of this chapter is to explore one construct that significantly impacts success and failure in this turbulent, complex, and often very temporary context of warfare in the 21st century: Swift trust in ad hoc military organizations. Trust, defined here as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (Rousseau et al., 1998, p. 395), has been directly linked to individual job (Dirks & Ferrin, 2002) and team performance (Dirks, 2000). However, both studies cited here involved matured leader–follower relationships. In current military contexts, mission requirements and time constraints often preclude leader–follower trust relationships from fully developing (Lester, 2006). In short, there simply is not enough time for the trust relationships to mature.

Instead, today’s military leaders find themselves in situations where they must make swift trust appraisals and move forward towards mission execution. As Meyerson, Weick, and Kramer (1996, p. 170) point out, “to trust and be trustworthy, within the limits of a temporary system, means that people have to wade in on trust rather than wait while experience gradually shows who can be trusted. . . Trust must be conferred presumptively or *ex ante*.” Given this, a series of research questions emerge: First, how does swift trust differ from that of mature trust relationships? Second, what are the swift trust factors most germane to a temporary, complex military context? Third, what can leaders and followers alike do to accelerate the development and strength of swift trust relationships? Though very little research exists on this topic, each of these questions helps provide a roadmap for exploration of theory and application. We will end this chapter with implications for future research.

Trust vs. Swift Trust ***On Trust and Its Varieties***

Trust has largely been conceptualized as being state-like, suggesting that it can change from context to context and is open to development (Rousseau et al., 1998), or trait-like, suggesting that trust is driven more by personality, that it tends to be more stable, and therefore that trust is less open to development (Rempel, Holmes, & Zanna, 1985). Though definitions of *trust* differ widely based on how it is conceptualized, the trust literature tends to converge along three dimensions. First, that when an individual trusts (the trustor) another person (the trustee), the trustor expects that the trustee will act in a predictable manner, referred to as “trustee predictability” (Rempel et al., 1985). Stated another way, if you trust someone with an important piece of information, you expect that the trustee will keep it confidential or use that information within the bounds that the two of you set. Second, the literature widely agrees that trust is an interdependent relationship that inherently involves risk and vulnerability for the trustor (McAllister, 1995; Deutch, 1960; Lester, 2006). Here, the trustor chooses to make him- or herself vulnerable because, in most contexts, the trustor needs to trust the trustee in order to reach a desired outcome, hence the interdependence. Clearly, what runs in parallel with that choice is risk—risk that the trustee will violate the trust. Third, that along with vulnerability for the trustor also comes uncertainty (Whittener et al., 1998). The trustor cannot know for certain that the

trustee will do as mutually agreed, which ties back to the earlier trustee predictability. Returning to the first point, trustee predictability shores up the trustor's notion of uncertainty (e.g., if the trustee has a history of being trusted) and helps the trustor make the best choice.

Understanding what trust is not is also helpful. Trust is not "familiarity" or "confidence," although they are somewhat related constructs (Lester, 2006). Familiarity may help establish trust (or not). According to Luhman (1988, p. 95), "familiarity is an unavoidable fact of life . . . [while] trust is a solution for specific problems." Here, an individual may be familiar with someone, and the superficial knowledge gleaned from the familiarity informs the trust decision. Likewise, trust is associated with confidence, as they tend to go hand-in-hand, but unlike familiarity, confidence is usually based on a deeper level of knowledge and tends to be context-specific. For example, you may trust an accountant because the accountant has repeatedly acted in a trustworthy fashion with your money, and you may have confidence in his skills because he has saved you money during income tax season, but you may choose to not trust the accountant with something that you value more than money.

There are two taxonomies of trust. The first taxonomy focuses on "cold" thoughts and "hot" emotions, referred to as *cognitive* and *affective* forms of trust. Here, trust is conferred if the trustor can determine through cognition that he or she has good reasons for developing a trusting relationship with someone (Lewis & Weigert, 1985). Likewise, a trustor may develop an emotional link with a trustee, thereby developing trust affectively (McAllister, 1995). Here, the trustor may simply like a trustee; or in grave situations, the trustor may be desperate to solve a problem.

The second taxonomy is based on three sequential stages—calculus-based trust, knowledge-based trust, and identification-based trust (Lewicki & Bunker, 1996; Shapiro, Sheppard, & Cheraskin, 1992)—that build on themselves due to the interdependent nature of the trust relationship, repeated interaction, and of course, time. Similar to cognition-based trust, calculus-based trust (CBT) is based on a fairly simplistic cost-benefit analysis. As Lewicki and Bunker (1996, p. 120) point out, CBT is "derived by determining the outcomes resulting from creating and sustaining the relationship relative to the costs of maintaining or severing it." Therefore, the trustor chooses to trust or not based on a series of "good reasons" for doing so, and these

reasons are probably linked to some sort of benefit for the trustor.

As the relationship matures and a history is established between the trustor and the trustee, calculus-based trust gives way to knowledge-based trust. Knowledge-based trust (KBT) is largely built on trustee predictability and repeated interactions (Lewicki & Bunker, 1996; Rotter, 1971). One way to conceptualize what happens in the KBT phase of trust is to think of it as a courtship. Here, the trustor gains knowledge of the trustee through regular communication and perhaps the trustee's successful completion of tasks of lesser importance. As communication and interaction increases and continues across time, and provided that the trustee proves that he or she will not violate the trust relationship, it becomes easier for the trustee to make future trust decisions. The CBT-to-KBT progression is common in leader-follower relationships within the military, particularly when new recruits join an established unit. Here, new recruits are initially trusted to perform those tasks they were trained to do during their basic military training. As the recruit proves that he or she is proficient, the unit leaders continue to communicate with the recruit and learn new information about the recruit, such as additional skills and experiences that may transcend what was taught in basic military training. Armed with this new knowledge, leaders have a better understanding of the recruit's true skill set and may choose to trust the recruit with more challenging assignments that are complex.

Similar to affect-based trust, knowledge-based trust may give way to identification-based trust (IBT) if the conditions are right. Lewicki and Bunker (1996, p. 122) write that IBT is established when "the parties effectively understand and appreciate the other's wants; this mutual understanding is developed to the point that each can effectively act for the other . . . [and] thus permits a party to serve as the other's agent and substitute for the other in interpersonal transactions." There is probably positive affect between the trustor and the trustee (Lester, 2006) or, at a minimum, a healthy respect for each other's trustworthiness and skill sets. Within the military context, IBT is perhaps best illustrated as a relationship between a veteran commander and his or her senior enlisted advisor. The demands on a command team are such that the senior enlisted advisor must often speak for the commander, and he or she must often "stand in" for the commander due to competing priorities. The deep trust within a command team does not happen automatically,

but it often happens quickly due to the unique challenges found within garrison, training, and combat environments.

Swift Trust and Its Context

The swift trust context is that of a temporary system with a limited lifespan. According to Meyerson and colleagues (1996), temporary systems are usually formed to tackle a specific problem set, and then they are usually disbanded—an example that they provide is a movie crew that is formed, shoots a film, and then crew members disperse to work on other projects. Members of the crew are selected because they each have a specific skill-set necessary to complete the movie (e.g., actors, cameramen, writers, directors, etc.), but the skills are necessarily diverse. Only by working together interdependently can the crew accomplish the task, which would suggest that trust is a necessary component to their success.

Yet the swift trust context often prevents the formation of higher-order forms of trust because two important ingredients are usually missing—time and repeated interactions. Continuing the movie crew example, keeping a crew idle in order to build trust slowly is simply not cost-effective. It is also likely that the crew has not worked together in the past, that perhaps at best a few may have a history together, or perhaps they were included in the crew because they had a positive reputation for high-quality work. In the context described here, success is assuredly influenced by the speed with which the crew can establish a baseline of trust—what Meyerson and colleagues (1996) refer to as swift trust—and rapidly move forward towards completing the film.

It is not difficult to overlay these time- and group-experience challenges over a modern military context. As described in the introduction, the U.S. military team organizes to accomplish a specific mission, the mission is often time-sensitive, and, while deep expertise probably exists within the ranks, groups often have not fought alongside one another. With this in mind, a significant burden is placed upon the leader: **What can a leader do to accelerate the development of swift trust in the team?** We propose that there are specific leader behaviors that will accelerate swift trust, and we discuss them later in this chapter.

Turning to how swift trust differs from other forms of trust, Meyerson and colleagues (1996) proposed that swift trust is highly cognitive—that it is a calculus-based trust because there is insufficient

time and little incentive to develop higher forms of trust. After all, using their example, why would we expect members of a movie crew to invest in a higher form of trust if the crew will immediately disband when the mission is accomplished? Yet, where the movie crew example and the military context diverge is in their understanding of the stakes involved. If a movie crew fails, money is lost and personal reputations are likely to suffer; this would be unfortunate, but limited in scope. However, if the military fails, lives are likely to be lost, and the reputation of an entire nation suffers. Likewise, members of the military are often asked to place themselves in uncommon danger. **Therefore, is it unrealistic to expect that, even in the briefest of encounters, members of the military would not develop a higher form of trust just based on the unique context and the shared experience?** Later in the chapter, we propose that swift trust does indeed have affective components, that higher forms of trust can be established rapidly, and that doing so is a burden shared by both leader and follower.

Swift trust also differs from other forms of trust in that it is conceptualized to be action-oriented (Jarvenpaa, Knoll, & Leidner, 1998; Meyerson et al., 1996). This is logical given the context—the temporary system is formed to address a specific problem set. Swift trust's action orientation meshes well with how the military typically operates. Though military organizations exist somewhat independently of each other, they are often put into action against a specific problem set, and their actions are typically governed by operational orders, mission statements, and the commander's stated intent. Each organization has a role within the mission, and the mission's success or failure is largely dependent on the organizations' ability to work interdependently with each other.

Trust vs. Swift Trust: Conclusions

We introduced several different concepts of trust and pointed out that trust involves a choice for a trustor to be vulnerable before a trustee. This choice carries a certain amount of risk that the trustor must accept or reject in making a trust decision. We also highlighted several levels of trust—calculus-based trust, knowledge-based trust, and identification-based trust—then moved on to highlight swift trust and the contextual forces that shape it. Next, we will describe a few individual factors unique to leader-follower relationships that probably influence the development of swift trust in a military context.

Static Swift Trust Factors in a Military Context

As we have stated, trust relationships involve trustor vulnerability and risk, along with trustee predictability. Likewise, we have stated that within a swift trust context, the decision to trust must be made very quickly, and the trustor usually does not have the luxury of gradually “easing into” a relationship with a trustee. This type of context is common within the military operating in training and combat environments, where teams are quickly formed to complete specific missions and trust decisions must be made quickly because lives are often at risk.

In this section, we focus specifically on the leader–follower swift trust dynamic and, more specifically, examine swift trust through the eyes of the follower. We begin with a discussion of the static factors about the leader and within the follower that are likely to influence swift trust decisions made by the follower, and here we focus on the leader’s rank and authority, military service affiliation, expertise, and reputation, as these are but a few factors that a leader cannot change when inserted into a swift trust context. Instead, these factors serve both as cues for the follower in the trust decision process and as leverage points for the leader. Later in the chapter, we provide a discussion of the dynamic factors—specific leader behaviors—that also influence follower swift trust decisions.

Leader Characteristics

RANK, AUTHORITY, AND THEIR USE IN CONTEXT

Rank is revered in most military organizations. Greater rank is earned through a combination of performance, experience, and time in service to the military. Rank serves as an important cultural symbol (Schein, 2010) as it helps to not only describe the military hierarchy, but also highlight certain rites (e.g., saluting, referring to officers as “sir” or “ma’am,” etc) and behaviors (e.g., deference to higher rank) endemic within the military culture. In line with Chaiken, Liberman, and Eagly’s (1989) work on the heuristic-systematic model and Moskowitz’s (2005) writings on the least-effort principle, we suggest that military rank serves as a cultural heuristic that impacts followers’ swift trust decisions.

Rank, however, is not the same as “authority derived from legitimate sources” (French & Raven, 1959). Regulations and military law (UCMJ, 2005) provide that persons of superior rank have certain authorities over persons of lesser rank. For example, under Article 92 of the Uniform Code of Military

Justice, a superior officer may give lawful orders to those below his or her rank, and failure to obey the order could result in punishment meted out by a court martial. So, while rank may assist an officer in compelling action, it does not mean that the actor actually trusts the source of the order. Stated another way, at a minimum, followers are taught from their earliest moments in the military that they should take note of and follow orders from individuals of higher rank, or otherwise risk punishment. From a heuristics standpoint, rank and authority simplifies the decision to follow the order. Yet, whether or not the follower trusts the source of the order is another matter entirely.

Lastly, rank and authority and their impact on follower trust decisions should be taken in context—a swift trust context—and here we focus on role clarity, defined as the individual’s understanding of his or her specific role contribution towards task completion (Dawes, 1994). Under Meyerson’s (1996) conceptualization of the swift trust context, every member of the temporary system has a specific role, a job to do, and problems can arise when these roles are blurred. Using an Army example, we submit that followers are much more likely to trust a platoon leader who is commanding and controlling the platoon in combat because he was *trained to do this task and his role calls for him to do this task*. Change the context—such as having the platoon leader cease performing his duties and instead man a crew-served weapon—and we would expect the levels of follower trust to change. While the platoon leader may have been trained to use the weapon at some point in his career, his stated role as platoon leader would rarely if ever call for him to use it, perhaps only in the direst, most exigent circumstances.

SERVICE AFFILIATION

The current operational environment and the military’s doctrine call for joint warfare whenever appropriate; this commonsense approach leverages each service’s strengths. Yet each service has its own unique culture, traditions, and operational procedures. Likewise, the notion that people trust those with whom they share similarities is hardly a new concept (Allport, 1954; Bruner, 1957; Moskowitz, 2005; Lester, 2006), and stereotyping is all too common a factor that could not only affect swift trust decisions, but also influence organizational performance.

Theories of the self and group dynamics help illuminate how stereotyping influences trust decisions. Turner’s (1985) self-categorization theory posits that

joining a meaningful group leads to self-concept change, wherein the self-concept shifts from individuality to group prototypicality—a drive to be like those in the group. This prototypicality is linked to a major tenet of social identity theory (Tajfel & Turner, 1979), which suggests that distinctions between in- and out-group members become very important to in-group members; in short, in-group members use the similarities to strengthen their social bonds. Furthermore, research on group dynamics by Hogg (1996), Hogg and Abrams (1988), Hogg, Terry, and White (1995), and Fielding and Hogg (1997) suggest that the members of the in-group—those who best embody the values and features of the group—expect their leader to possess a “fuzzy set of features describing ideal attributes of in-group membership” (Fielding & Hogg, 1997, p. 40).

When taken together, it would appear that the follower in a military setting is more likely to trust a leader who is from the same military service (e.g., leader and follower are both in the Navy), and this likelihood may be bolstered in a swift trust context. Simply being a ranking member of the military may suffice, but this will vary from follower to follower. In contexts where there is a leader–follower service mismatch, the trust decision is also likely to be moderated by the follower’s previous experience with other leaders from that service.

EXPERTISE

One would expect a follower to be more likely to trust a leader with expert knowledge in solving a problem set. According to Bass (2008, p. 273), expert power “may be manifest in information, knowledge, and wisdom; in good decisions; in sound judgment; and in accurate perceptions of reality.” Returning to the least-effort principle (Petty, Cacioppo, & Schuman, 1983), followers may choose to *assume* expertise due to the leader’s stature because, as Moskowitz (2005, p. 203) points out, “the default [mental] processing strategy will be the one requiring the least amount of effort and usurping the least amount of capacity.”

Stated another way, the follower may assume a leader’s expertise merely by accepting that the leader was put in charge for a good reason. Or, the follower could use visual cues to infer expertise. For example, every branch of the U.S. military allows its members to wear symbols of their expertise and experiences on their uniform—these symbols are ribbons, medals, badges, and tabs, and each is symbolic of some sort of professional accomplishment.

Here again, the swift trust context plays a key role in how important these visual cues are in follower trust decisions. For example, one may heuristically assume that an officer who wears aviator’s wings can fly an aircraft, and therefore rapidly trust the officer to do so. Insert the same officer into a context where he or she must lead a ground convoy through a sector of a city known for violence, and the follower will probably want more information before conferring trust upon the leader.

REPUTATION

As with any organizational context, there are few substitutes for success in the military—that a leader has reputation for, and history of, success is likely to influence followers’ trust decisions. While there is little empirical support for this notion in the leadership literature (Lester, 2006), some support is found in the virtual team literature. For example, Jarvenpaa, Knoll, and Leidner (1998) found a positive relationship between ability and trust in group members *after* members of the group successfully completed team-building tasks. While this finding is promising, we note that it is less pertinent to our discussion because the swift trust context is characterized by a group of people who probably have not worked together before.

Yet reputation may be all the more important in a military setting due to the high stakes. It is not uncommon in the military for the reputation of a leader play an important role in setting the initial expectations of followers. Though the size of the U.S. military recently exceeded 1.4 million members in the Active, National Guard, and Reserve components (U.S. Department of Defense, 2010b), the military often moves leaders to different assignments as part of their professional development, thereby exposing the leaders to more and more followers over time. Given the easy access to electronic information over the internet and the explosion of social network platforms, it is not hard to imagine that a follower could easily find *someone* who would be willing to share information about the leader, especially if the leader was fairly senior. Though the swift trust context is one that is short on time, this information could be gathered and disseminated amongst the team within seconds given the speed of modern search engines.

Follower Characteristics

PROPENSITY TO TRUST

While trust is largely conceptualized as a relational construct between people that is developed over

time by repeated interaction and interdependence, it is also influenced by fairly stable traits, such as propensity to trust (Lester, 2006). According to Rotter (1967), propensity to trust is an individual difference likened to a global expectation that a person has about the general trustworthiness of others. Clearly, this propensity to trust is informed by the follower's history of leader–follower trust relationships. If a follower has a history of positive, trusting relationships, he or she would be more likely to trust again in the future; the opposite could be equally said for those who have had their trust repeatedly violated. The military swift trust context may ameliorate the negative impact of a follower's having a low propensity to trust, given exigent circumstances, especially if the other factors described in this chapter are overwhelmingly in favor of the leader.

APPROACH MOTIVATION

An additional individual difference the leader faces is the approach motivation of the follower. “Approach motivation,” also referred to as “need for achievement” in some literatures, is a person's disposition to actively seek to attain goals and demonstrate abilities (Atkinson & Feather, 1966; Herman, 1990). In short, people with high approach motivation want to be challenged and want to succeed. A follower with high approach motivation is likely to be more trusting of a leader because the follower may recognize that the leader serves as a control for his or her goal attainment. Stated another way, the leader serves as the initial pathway for the follower's goal attainment because, at least in a military context, the leader controls what role the follower plays during the mission.

Conclusions: The Static Factors

In this section of the chapter, we examined several factors that will influence the follower's decision to confer trust upon the leader within a military swift trust context. First, we explored how followers would use a leader's rank and authority, military service affiliation, expertise, and reputation in forming rapid decisions about trusting the leader. Second, we described how two individual differences—propensity to trust and approach motivation—would also serve as forces that shape follower swift trust decisions. In a swift trust context, leaders can do little to control or change how followers use these static factors in making trust decisions, but leaders should nonetheless know that these factors exist, and leverage them when possible. We next

turn our attention to the dynamic factors—the leader's behaviors and decision-making skills—and show how military leaders can rapidly develop trust in swift trust contexts.

The Dynamic Factors: Accelerating Swift Trust

Though static factors serve as forces that shape followers' trust perceptions, dynamic interpersonal factors also shape followers' trust perceptions. Here, leaders can take the initiative by employing positive leadership behaviors and including followers in decision making. Below, we narrow our attention to three areas: Participative decision making, transformational leadership behavior, and positive attitude toward mission completion.

Participative Decision Making

A leader can quickly signal his or her desire to form a trusting relationship with a follower by actively inviting and allowing the follower to take part in the decision-making process. Participative decision making indicates that the leader has confidence in the follower's decision making skills, and research has shown that sharing and delegating control leads to trusting relationships (Dirks & Ferrin, 2002; Whitener et al., 1998). Other research shows that trust can be developed via participative decision making even when the leader chooses not to accept the follower's recommendations (Alexander & Ruderman, 1987). Here, the mere fact that the leader asks for input matters. Participative decision making probably matters even more in a military swift trust context because a follower would be likely to want to have some part in the decision making, given that lives are at risk, including his or her own.

Transformational Leadership Behaviors

Transformational leadership theory and its link to developing trust is well established in the leadership literature (for a review, see Bass, 2008). Transformational leader behaviors generally fall into four categories: Individualized consideration, idealized influence, inspirational motivation, and intellectual stimulation. While it is accepted that transformational leadership behavior's effects on followers and performance is significant, its deeper impact—to transform followers into leaders—probably takes time, and extends beyond most swift trust contexts. Rather than delve into this, below we narrow our focus to the desired end-state of developing swift trust, and therefore explore how a leader can leverage each transformational leadership category to do so.

INDIVIDUALIZED CONSIDERATION (IC)

According to Avolio and Bass (1988, p. 34), a leader shows individualized consideration when he or she “delegates projects to stimulate and create learning experiences, pays personal attention to followers’ needs—especially those who seem neglected—and treats each follower with respect and as an individual.” Research supports the notion that IC has an impact on trust relationships—Podsakoff, MacKenzie, Moorman, and Fetter (1990) found a strong relationship between IC and trust. Within a military swift trust context, we would expect to see a leader quickly assess a follower’s strengths and put those strengths to good use. This signals to the follower that he or she is a valued member of the team and that each follower provides a unique contribution to mission success and is likely to tap into his or her approach motivation.

IDEALIZED INFLUENCE (II)

A transformational leader tends to be admired, respected, and trusted by followers because he or she shows a penchant for leading by example (Bass & Riggio, 2006), and this oftentimes leads to followers who do the same. This becomes all the more important in a military swift trust context because the military culture calls for leaders to “lead from the front” (U.S. Department of the Army, 2001). Conversely, a leader who is unwilling to place him- or herself in harm’s way, yet at the same time expects followers to risk their lives, is not likely to be trusted by anyone. This is not to say that leaders should engage in foolhardy behavior or act outside their stated role, but rather that they should be willing to act courageously when required (Lester et al., 2010).

INSPIRATIONAL MOTIVATION (IM)

Transformational leaders inspire their followers by transmitting a positive message and reaching for the best in people, which in turn paves the way for followers to envision attaining a worthy goal (Bass, 2008). Given a military swift trust context, the leader may use the exigency of the situation and the high stakes to illuminate the gravity of the task at hand—General Patton’s speech to the Third Army in World War II, or the Saint Crispin’s Day speech from Shakespeare’s *Henry V* are often-used examples of how historical military leaders have inspired their followers.

INTELLECTUAL STIMULATION (IS)

Transformational leaders challenge followers by asking for creative solutions to complex problems, then trust their followers to solve the problem

(Bass & Riggio, 2006). That a leader would ask a follower to solve a particular part of a problem creatively without micromanagement transmits that the leader trusts the follower—by asking for help, the leader shows vulnerability and also communicates that interdependence is required. This top-driven trust may nudge the follower to reciprocally trust the leader. The impact of IS in military swift trust contexts is especially germane, given that each member of the group ostensibly can contribute to completing mission by employing their unique skills.

Positive Emotions

Beyond inspirational motivation, leaders’ generally positive attitudes are likely to influence their followers’ trust in them, and general positivity may prove crucial in military swift trust contexts. A growing body of literature suggests that positive emotions can impact growth and resilience in oneself and in others (Algoe & Fredrickson, 2011; Fredrickson & Losada, 2005). While we previously suggested that inspirational motivation would have a direct effect on followers’ swift trust decisions, here we suggest that an overall positive outlook may indirectly affect trust decisions. Some initial evidence supports this notion—Dunn and Schweitzer (2005) found that study participants who were in a positive affective state (i.e., they were generally happy) tended to be more trusting than those in a negative affective state. By extension, we suggest that those followers who could be guided by the leader into a positive affective state may in turn be more willing to trust the leader. Humor (Hughes, 2009) has been shown to have similar effects, and such levity may ease tension and engender follower trust during tense military contexts calling for swift trust.

Conclusions: The Dynamic Factors

In this section we focused on leader behaviors and decision-making processes that may foster followers’ swift trust. We explored how leveraging participative decision making, transformational leadership behaviors, and general positivity not only transmits vulnerability and a willingness to trust followers, but how they also signal to followers that the leader wants to be trusted, and that the follower’s trust is valued. We next turn our attention to implications for future research.

Implications for Research

Our goal in this chapter was to expand the theory of swift trust and extend it to the military context.

Though Lester (2006) found some initial support for what was discussed in this chapter, much more work on swift trust is ahead of us. It is almost certain that the science is far behind practice, especially when one considers that the U.S. military has been involved in the Global War on Terror for over a decade. These static and dynamic factors should be studied in both lab and field settings, and if possible in combat, as that is when the stakes are highest; and the theory should continue to evolve as contexts change. If history is our guide, the U.S. military will probably undergo a significant transition when the current conflict ends, suggesting that the military may become more “joint” than it is currently. Such change may clear the way for further opportunities to study swift trust in a military context.

References

- Alexander, S., & Ruderman, M. (1987). The role of procedural justice and distributive justice in organizational behavior. *Social Justice Research, 1*, 1401–1420.
- Allport, G. W. (1954). *The nature of prejudice*. Cambridge, MA: Blackwell.
- Algoe, S. B., & Fredrickson, B. L. (2011). Emotional fitness and the movement of affective science from lab to field. *American Psychologist, 66*(1), 35–42. doi: 10.1037/a0021720
- Atkinson, J. W., & Feather, N. T. (Eds.). (1966). *A theory of achievement motivation*. New York: John Wiley and Sons.
- Avolio, B. J., & Bass, B. M. (1988). Transformational leadership, charisma and beyond. In J. G. Hunt, B. R. Baliga, H. P. Dachler, & C. A. Schriesheim (Eds.), *Emerging leadership vistas* (pp. 29–50). Lexington, MA: Lexington Books.
- Bass, B. M. (2008). *The Bass handbook of leadership: Theory, research, and managerial applications*, 4th ed. New York: Free Press.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*, 2nd ed. Mahwah, New Jersey: Lawrence Erlbaum & Associates.
- Bruner, J. S. (1957). On perceptual readiness. *Psychological Review, 64*, 123–152.
- Chaiken, S., Liberman, A., & Eagley, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 212–252). New York: Guilford Press
- Dawes, R. M. (1994). *House of cards: Psychology and psychotherapy built on myth*. New York: Free Press.
- Deutsch, M. (1960). *The resolution of conflict: Constructive and destructive processes*. New Haven, CT: Yale University Press.
- Dirks, K. T. (2000). Trust in leadership and team performance: Evidence from NCAA basketball. *Journal of Applied Psychology, 85*, 1004–1012.
- Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: Meta-analytic findings and implications for research and practice. *Journal of Applied Psychology, 87*, 611–628.
- Dunn, J. R., & Schweitzer, M. E. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology, 88*, 736–748.
- Fielding, K. S., & Hogg, M. A. (1997). Social identity, self-categorization, and leadership: A field study of small interactive groups. *Group Dynamics: Theory, Research and Practice, 1*, 39–51.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist, 60*(7), 678–686.
- French, J. R. P. & Raven, B. (1959). The bases of social power. In D. Cartwright & A. Zander (Eds.), *Group dynamics*, 3rd ed. (pp. 259–269). New York: Harper & Row.
- Garamone, J. (2010, August 9). Gates puts meat on bones of Department efficiencies initiative. *American Forces Press Service*. Retrieved on January 30, 2011, from <http://www.defense.gov/news/newarticle.aspx?id=60348>.
- Herman, W. E. (1990). Fear of Failure as a distinctive personality trait measure of test anxiety. *Journal of Research and Development in Education, 23*, 180–185.
- Hogg, M. A. (1996). Social identity, self-categorization, and the small group. In E. H. Witte & J. H. Davis (Eds.), *Understanding group behavior: Vol. 2: Small group psychology of intergroup relations and group processes* (pp. 227–253). Mahwah, NJ: Erlbaum.
- Hogg, M. A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London: Routledge.
- Hogg, M. S., Terry, D. J., & White, K. M. (1995). A tale of two theories: A critical comparison of identity theory with social identity theory. *Social Psychology Quarterly, 58*, 255–269.
- Hughes, L. W. (2009). Leading with levity: Effects of a leader’s humor delivery on followers’ positive emotions and creative performance. *Journal of Behavioral Management, 10*(3), 415–432.
- Jarvenpaa, S. L., Knoll, K., & Leidner, D. E. (1998). Is anybody out there? Antecedents of trust in global virtual teams. *Journal of Management Information Systems, 14*, 29–64.
- Lester, P. B. (2006). Swift trust: Examining the development and acceleration of follower trust in leaders in a temporary group context. Unpublished dissertation, University of Nebraska–Lincoln.
- Lester, P. B., Vogelgesang, G. R., Hannah, S. T., & Kimmey, T. (2010). Developing courage in followers: Theoretical and applied perspectives. In C. L. S. Pury & S. J. Lopez (Eds.) *The psychology of courage: Modern research on an ancient virtue* (pp. 23–45). Washington, D.C.: American Psychological Association.
- Lewicki, R., & Bunker, B. (1996). Developing and maintaining trust in work relationships. In R. Kramer & T. Tyler (Eds.), *Trust in organizations* (pp. 114–139). Thousand Oaks, CA: Sage.
- Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social Forces, 63*(4), 967–985.
- Luhman, N. (1988). Familiarity, confidence, trust: Problems and alternatives. In D. Gambetta (Ed.) *Trust: Making and breaking cooperative relations* (pp. 94–108). New York: Basil Blackwell, Ltd.
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal, 38*(1), 24–59.
- Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift trust and temporary groups. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166–195). Thousand Oaks, CA: Sage.

- Moskowitz, G. (2005). *Social cognition: Understanding self and others*. New York: The Guilford Press.
- Petty, R. E., Cacioppo, J. T., & Schuman, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, *10*, 135–146.
- Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, *1*(2), 107–142.
- Rempel, J. K., Holmes, J. G., & Zanna, M. P. (1985). Trust in close relationships. *Journal of Personality and Social Psychology*, *49*(1), 95–112.
- Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality*, *35*, 651–655.
- Rotter, J. B. (1971). Generalized expectancies for interpersonal trust. *American Psychologist*, *26*, 443–452.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, *23*, 393–404.
- Schein, E. (2010). *Organizational culture and leadership*, 4th ed. San Francisco: John Wiley & Sons.
- Shapiro, D., Sheppard, B. H., & Cheraskin, L. (1992). Business on a handshake. *Negotiation Journal*, *8*(4), 365–377.
- Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 94–109). Monterey, CA: Brooks-Cole.
- Turner, J. C. (1985). Social categorization and the self-concept: A social cognitive theory of group behavior. In E. J. Lawler (Ed.), *Advances in group processes: Theory and research*, Vol. 2 (pp. 77–122). Greenwich, CT: JAI Press
- Uniformed Code of Military Justice (UCMJ) (2005), Title 10, Subtitle A, Part II, Chapter 47. Retrieved on January 29, 2011, from http://www.law.cornell.edu/uscode/10/usc_sup_01_10_10_A_20_II_30_47.html.
- U.S. Army Training and Doctrine Command (2008). TRADOC Pamphlet 525-3-7-01, *The U.S. Army Study of the Human Dimension in the Future: 2015–2024*.
- U.S. Department of the Army (2001). Field Manual (FM) 7–22.7: The Army noncommissioned officer guide. Retrieved January 24, 2011, from <http://www.hqsareur.army.mil/NCOoutlook/Documents/FM%207-22-7.pdf>.
- U.S. Department of Defense (2010a). Armed forces strength figures for November, 2010. Retrieved on January 29, 2011, from <http://siadapp.dmdc.osd.mil/personnel/MILITARY/ms0.pdf>.
- U.S. Department of Defense (2010b). Joint operations. Retrieved on January 29, 2011, from http://www.fas.org/irp/doddir/dod/jp3_0.pdf.
- Whitener, E. M., Brodt, S. E., Korsgaard, M. A., & Werner, J. M. (1998). Managers as initiators of trust: An exchange relationship framework for understanding managerial trustworthy behavior. *Academy of Management Review*, *23*(3), 513–530.

Leader Development in a Natural Context

Gerry Larsson

Abstract

The chapter focuses on leader development that “just happens” as part of the everyday social interaction between a young officer and his or her soldiers, peers, and superiors. The first part summarizes findings from a recent multinational study of military leaders’ development in natural context. Important aspects include observing role models, practical training, receiving feedback, having realistic and challenging exercises, coping with responsibility and changes, being part of the military culture and lifestyle, and taking part in sharp military missions. The second part is more analytical and tries to relate the findings to a theoretical framework; the developmental leadership model. This model can be described as an adaptation of the transformational leadership model to the Scandinavian context. Finally, some implications for planned leadership development efforts are discussed.

Keywords: Leadership, leader development, natural context, developmental leadership, grounded theory

There are many approaches to leader development. This chapter focuses on leader development that “just happens” as part of the everyday social interaction between a young officer and his or her soldiers, peers, and superiors. This interaction takes place in particular organizational contexts (e.g., a military academy, a national regiment, or an international mission), which in turn are part of a broader national and cultural context.

The chapter has two parts. The first is mainly descriptive and rests on a recent multinational qualitative study of military leaders’ development in natural context (Larsson et al., 2006). The second part is more analytical and tries to relate the findings from the study of the natural developmental process to a leadership theory framework.

Think about the following—what do we humans do when we find ourselves in a social context that is new to us? Most of us handle it by observing those who appear to be more experienced in this kind of situation, and then trying to do what they are doing. This raises an interesting question—can a beginner,

for example, a new cadet, quickly “read” which of the older colleagues have a higher level of skill and which are less professional? Research in the health care sector shows that patients, who could be assumed to have a wide knowledge gap between themselves and their medical doctors, can differentiate fairly accurately between “good” and “bad” doctors (Peters, McManus, & Hutchinson, 2001). Given this, it seems like a reasonable hypothesis that the newly employed early on can make good judgments on who are favorable or less favorable role models.

Research among military officers on what the natural developmental process might entail is sparse. One of the existing studies was performed by Packard (1999). He followed a great number of cadets in the U.S. Air Force during their first four years. His research focus was on the importance of the peer group on individual leader development. Packard observed that the norms that were emphasized by the organization were interpreted and applied in different ways by different peer groups. He also found

that the dominant leadership behaviors within a peer group had a strong influence on the individuals' development as leaders. A plausible explanation is provided by Topping and Ehly (1998), who claim that it is easier to identify with a friend at the same level as oneself than with, for instance, an older teacher who is typically also an officer.

Ideal-Typical Description of Officers' Natural Development as Leaders *A Multinational Qualitative Study*

Within the scientific society European Research Group on Military and Society (ERGOMAS), there is a working group entitled "Morale, Cohesion and Leadership." In 2002, this working group initiated a project that aimed at identifying important conditions for leadership development in young military officers. At the onset of the project, ten countries showed an interest, and at the end the following five remained: the Netherlands, Norway, Slovenia, Sweden, and the United States.

Ten officers from each country participated. Data were collected using semi-structured interviews. They consisted of open-ended questions and individually adapted follow-up questions. Participants were asked to report on their military experiences since being commissioned, and to discuss any experiences or events that they recalled as particularly important or developmental for them as leaders. Follow-up questions focused on the following themes: Experiences and career milestones, officer development and training, strengths and weaknesses (in their own leadership), and contribution to effectiveness and satisfaction. The analysis followed the guidelines of the "constant comparative" method (Glaser & Strauss, 1967). A summary of the results is presented in the next section. Interested readers are referred to the original publication for further details (Larsson et al., 2006).

A process-oriented model of leader development in young military officers was presented. It began with a starting position; that is, how the officer saw him- or herself at the onset of the military career. This was followed by two qualitatively different descriptions of processes during the early years. It ended with a resulting position; that is, where the officer stood a few years later. The presentation has an ideal-typical character; real-world issues such as individual differences are left out to gain clarity.

Starting Position

A number of conditions that could be regarded as antecedents of the officers' development as leaders

were identified in the ERGOMAS interviews. Some of these were individual-related, and some were of a contextual character. Thus, in meta-theoretical terms, the model rests on a person-by-situation interactional paradigm (Endler & Magnusson, 1976).

INDIVIDUAL CHARACTERISTICS

The young officer enters the military academy with a certain set of abilities and experiences. The aspects that were mostly emphasized by the interviewed officers were personality and early leadership experiences. A couple of narrative illustrations:

"I guess I'm pretty calm. Yes, it's mainly my calmness. I seldom get stressed and this makes you think more about what you're doing." (Sjöberg, Danielsson, Johansson, & Larsson, 2004, p. 10, my translation)

"Well, I've been a leader since I was very young, a scout leader, and I have had judo groups and things like that." (Larsson et al., 2006, p. 75)

CONTEXTUAL CHARACTERISTICS

Systems and conditions vary between countries. An example of this is that, at the time of the study, Norway and Sweden had a compulsory military service for the male part of the population. The other countries had an all-volunteer force. One of the interviewed Swedish officers claimed that he had no thought of becoming an officer when he began his compulsory military service. This is how he described how he changed his mind:

"It was partly that I liked it, I liked it very much. And then I had no other better alternative as well. I wasn't too keen about the defense, and becoming an officer was something you did if you had nothing better to do. That was how I viewed it at that time. But this suited me perfectly. I got good grades and a receipt that I was a good leader. One was accepted by those above, as a well as those below, yourself." (Sjöberg et al., 2004, p. 11, my translation).

THE TYPICAL STARTING POSITION

Larsson et al. (2006) write:

The young officer has little formal power and lacks inner security. He or she may seek to compensate for this by publicly behaving in an over distanced way toward the soldiers. The professional identity as a military officer is weak. In contrast, significant superior role models are perceived as having formal power, being secure and able to flexibly adapt their overt behavior on an under distanced—over distanced

continuum according to situational demands, and to have a firm professional identity. In summary, a gap exists between the young officer and his or her significant role models in all these respects (p. 74).

I conclude this part with a couple of new illustrations that reflect the inner insecurity experienced by new cadets (from Larsson et al., 2006, pp. 74–75):

“I was a student in the school. I did not consider myself a leader. I wasn’t the stick [group] leader. I was just there as a student.”

“How I viewed myself? I did not view myself as a leader, and when I realized or when it was pointed out to me that my actions impacted others then it really had a significant meaning.”

Process Description 1: The Educational and National Regiment Context

The typical storyline was summarized as follows, by Larsson et al. (2006):

At the core of the everyday interaction in military schools and national training regiments are, from the perspective of the young officer, seeing significant role models (superiors and peers) do something, then doing it themselves, and then getting feedback. It is assumed that the overt behavior toward subordinates will gradually become more flexibly distanced, and the inner security and the sense of a professional identity will grow. The significant others at all levels will respond positively to this. Similarly, if the young officer does not proceed with the socialization process along this path, the significant others will respond negatively, and the individual will experience social anxiety. Events contributing to process are promotion in rank (more formal power), successful role transitions (sometimes planned, sometimes random), and being part of a military culture and way of life also when off duty. Compared to the situation at the onset, the young officer had moved his position in a favorable direction on all these characteristics. (pp. 75–76)

FOCUS ON EVERYDAY SOCIAL INTERACTION

Three everyday praxis aspects were highlighted in the interviews. The first and most frequently mentioned was *observing role models*. A typical illustration:

“I have several role models at my company; for example, my captain. He does a lot of good things I try to copy in my leadership. So my colleagues are my models, even those I have studied together with. You see them do good stuff, and then you try to do the same. My captain for example, before he solves a

problem, he sits down and analyzes it first, instead of just doing something directly. So I have learned to calm down, and think for a while, before I do something.” (Larsson et al., 2006, p. 76)

Another everyday aspect that appears to contribute strongly to leader development is gaining one’s *own practical training*. It is when you practice leadership yourself that this ability is tested. In the words of one of the Swedish officers:

“It’s this I said about the theoretical leadership lessons, you can never say what is right and what is wrong. Where do I come into the picture then? What shall I say then and then? You learn a lot of theories and leadership principles. But its really only when you practice it yourself that you can say what is right and wrong.” (Sjöberg et al., 2004, p. 13, my translation)

A third social interaction aspect is *receiving feedback*. To give and receive feedback was described as a natural part of being an officer. By receiving feedback one develops one’s leadership. You learn from your mistakes. But sometimes it can be difficult for the young officer to notice his or her own mistakes. Feedback can fill an important gap in these cases. Another Swedish illustration:

“Well, I remember that just before I left, I asked the soldiers to give me written feedback on me as a person, pluses and minuses, you know. And I received a lot of comments on things that I had never thought about. And this caused me to reflect a lot, because, to develop, is about asking for feedback.” (Sjöberg et al., 2004, p. 14, my translation)

FOCUS ON ORGANIZATIONAL ASPECTS

Three organizational conditions were also mentioned as highly important to individual leader development. One was the impact of *realistic and challenging exercises*. In the words of one of the informants:

“Both leadership exercises and the winter exercise—where I learned how to handle and lead people in different situations. That’s absolutely something I’ve had use for later. Those exercises made me see both myself and others that I perhaps had an idea of. For my own sake, just to learn that you can take on so unbelievably much more than you think. How strong you get, even when you feel that you’ve reached bottom there is incredibly much more left to give.” (Larsson et al., 2006, p. 76)

A second aspect could be labeled *high responsibility and continuous changes*. Increased work load,

organizational changes and unexpected events sometimes influence individual leader development. A new illustration:

“The platoon commander I had down there (*Kosovo*), he did not live up to the expected standards. And then I got more responsibility than I had expected when I applied for the deputy position. It ended by me taking over the position as platoon commander.” (Sjöberg et al., 2004, p. 15, my translation)

A third organizational aspect that influences young officers’ development as leaders is *culture and lifestyle*. To be an officer means that you become part of a specific culture or lifestyle. Several officers mentioned that the choice of profession not only affected their working life but also their private life. A couple of illustrations from Sjöberg et al. (2004):

“I have lived together with my girlfriend for eight years. That’s rather unique here because this job puts a lot of strain on your relationship. You’re away from home quite a lot. It’s a way of life.” (p. 15, my translation)

“I spend much of my spare time together with other officers. You talk a lot about job issues. It’s a way of life.” (p. 15, my translation)

In summary, the young officer’s development as leader in the educational and national regiment context appears to depend on the following aspects in the everyday social interaction: observing role models, his or her own practical training, and receiving feedback. Important organizational aspects include realistic and challenging exercises, coping with responsibility and continuous changes, and being part of the military culture and lifestyle.

Process Description 2: The Real-World (“Sharp”) Military Mission Context

Taking part in real-world (“sharp”) military missions is the second key process in the leadership development of young officers. Larsson et al. (2006) summarize the typical story line as follows:

Despite the favorable development process previously described, there is an important thing lacking in the professional officer identity. This reflects a difference between military officers and, possibly, all other professional groups. A physician, for example, begins to treat real patients after leaving medical school. The situation for military officers is different. After leaving the military academy, they tend to work in a teacher role at national military regiments. The problem with this, from a professional identity perspective, is that they are not tested in the very core

activity of their profession: the real-world or “sharp” military mission. Thus, it is only after the completion of one or more such missions that the leader development process moves to a qualitatively higher level. Typical comments were “I finally got a confirmation” and “Now I know I can handle the stress of military leadership.” A confirmation of the professional identity—positive or negative depending on how they responded to the leader role during a mission—takes place. (p. 77)

I illustrate this aspect of leader development with a couple of interview excerpts from the Larsson et al. (2006) study. Both illustrations appear to capture experiences of great importance to the respective informants.

“The war experience, where I had to command the reservists without enough knowledge, led to my increasing motivation for military education. Now I feel more knowledgeable and better prepared for the job, although war has left an important experience in me: I changed my relation towards the subordinates, now I respect them more, I listen to them. Because I understand how much I am (I was in war) responsible for all of them and to all of them and their families. I value life much higher than before the war.” (p. 77)

“I have noticed a difference in my own attitude when I came home from the peacekeeping mission. I’ve seen what we are educated for, and that was the hardest point before I went. To motivate the soldiers for something I had no idea of why we were doing [it], but now I know, and I can stand up for it. Today I educate the soldiers in a different way. For example, I don’t think it’s so important to know what a mine weighs, but it’s important that the soldiers can handle it.” (p. 78)

It should be noted that the comparison with physicians was relevant in the four smaller participating countries at the time the interview study was performed. In the U.S. Army, officers are deployed over and over again after leaving the military academy. Recently, the situation in the Netherlands, Norway, Slovenia, and Sweden has also become more and more like this.

Resulting Theoretical Position

In the favorable case, the process described earlier implies that, after a few years, the young officer had developed into the position held by his or her significant superior role models at the onset (at least according to the perception of the new officer). Now he or she has more formal power, their inner

world is more secure; their overt behavior is flexible, and their professional identity as a military officer is well established (Larsson et al., 2006).

Typical of this resulting position is, among other things, a developed ability “to read” other people. I end this process-description with a couple of interview excerpts illustrating this (from Sjöberg et al., 2004, p. 20, my translation):

“You’ve got to have the ability to read others, in order to get along with everybody. If you have it, you’ve got a good starting point.”

“Yes, I’m pretty good with the soldiers. You need to have a little bit of *‘fingerspitzegefühl[intuition]’*. You can’t be, well, so hard on them all the time. You have to try to take them for what they are. All do not have the same capacity. You try to make the best of what you have.”

Theoretical Analysis of the Presented Leader Development Process

This part of the chapter will be devoted to an attempt to relate the description above of young officers’ leader development in a natural context to existing theoretical frameworks. Three different themes will be addressed. First, the presented model will be discussed in a narrower sense—some immediate theoretical connections will be suggested. Secondly, the process model of leader development in a natural context will be systematically related to an established leadership model. Finally, some implications for *planned* leader development will be discussed.

The Natural Leader Development Process—Some Theoretical Connections

Let me emphasize right up front that the presented model of military officers’ leader development as leaders is based on a limited number of self-reports. Thus, little is known about the generalizability of the model. However, this was not the goal of the qualitative study. In the general terms of Glaser and Strauss (1967): “Partial testing of theory, when necessary, is left to more rigorous approaches (sometimes qualitative but usually quantitative)” (p. 103). Thus, further studies are needed to develop, formalize, and evaluate the utility of the presented model.

This being said, the model suggests that leader development in young military officers appears to entail two concurrent processes. One is inner or private, and is characterized by a gradual strengthening of the feeling of security. The other is overt or public, and consists of a gradual change from overly distant

behavior toward subordinates to a flexible adaptation along an under distanced–over distanced continuum according to situational demands. Two main determinants of these processes were identified. First, the everyday social interaction between the young officer and his or her significant others (soldiers, peers, and superiors) is crucial. Observing role models and getting feedback were mentioned as important sources of influence in all countries. Second, taking part in real-world military missions strongly contributes to a confirmation of the officer’s professional identity (Larsson et al., 2006).

From a work-socialization perspective this indicates that learning and actual work are closely intertwined. This is consistent with social constructivist writings and also fits in a broader symbolic interactional paradigm (e.g., Berger & Luckman, 1966; Lave & Wenger, 1991). Weibull (2006) describes the learning of officers as a learning through apprenticeship. She writes: “Learning is not something that is accomplished only by means of school organization, teachers or pedagogical skills. Learning is an approach where the will to learn depends on the whole context, which actions, organization, and people shape” (p. 327, my translation).

However, the presented model also shows that the social-constructivist approach to work socialization is not sufficient to understand military officers’ natural development as leaders. One important part is missing. Entering military schools and learning on the job after these schools is not enough. The core of the professional identity is not confirmed until the officer has experienced real-world (sharp) military missions. Larsson et al. (2006) write: “The different stressors in such missions and the way they are appraised and coped with make significant contributions to the individual leader development process. This finding appears to fit nicely with the psychological stress psychological model of Lazarus (1991, 1999)” (p. 79).

The Natural Leader Development Process—How Does It Fit with an Established Leadership Theory?

This part of the theoretical analysis consists of a comparison of the presented model of leader development in its natural context with an established leadership model. The model I chose was the developmental leadership model (Larsson, 2006a, 2006b; Larsson et al., 2003). In 2003, the Supreme Commander of the Swedish Armed Forces decided to accept this model as the prevailing model. The model is summarized in the next section.

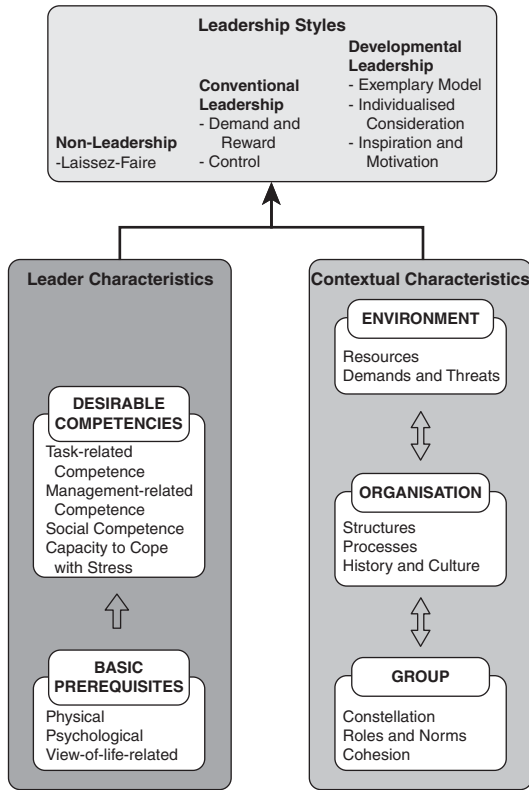


Fig. 15.1 The Developmental Leadership model (adapted from Larsson et al., 2003).

THE DEVELOPMENTAL LEADERSHIP MODEL

According to the developmental leadership model (Figure 15.1), leadership can be understood against the background of several interacting factors. The interplay between leader and contextual characteristics shapes leadership behaviors. This implies that the model rests on an interactional person-by-situation paradigm (Endler & Magnusson, 1976). Empirical support for the validity of the model, and the reliability of an instrument designed to measure its concepts, is reported by Larsson (2006a).

Two main classes of leader qualities are identified: basic prerequisites and desirable competencies. The more favorable basic prerequisites a leader has, the greater their potential to develop the desirable competencies, and vice versa. The model also implies that a favorable combination of these two characteristics is a necessary condition for successful leadership. However, neither of them is sufficient in itself. They do not constitute a guarantee of successful leadership because this is also affected by environmental conditions.

The environmental characteristics shown in Figure 15.1 should be regarded as *examples* of these

kinds of conditions. The illustration shows that groups and organizations influence each other. The same holds true for organizations and the external world. There is a great deal of literature on these aspects, and they will not be elaborated on further here.

Also, the leader qualities labeled “basic prerequisites” will only be briefly mentioned here, for the same reason. Somewhat simplified, these aspects include individual characteristics such as physical fitness, intelligence, creativity, personality, and view-of-life (see e.g. Yukl, 2005).

Leading models in the fields of personality and view-of-life are hierarchical (see, e.g., Eysenck, 1990). In the present leadership context, the same idea has been adopted regarding desirable competencies and leadership behaviors. In the most elaborate cases, four levels can be identified. The *dimensional* or *leadership style* level is the top level, and an example would be “developmental leadership.” The *factor* level is second highest and can be illustrated by “individualized consideration.” The *facet* level comes next, “support” being an example. The fourth and lowest level is the *indicator* level. Here, you find traits that can be empirically observed; for instance, a questionnaire item such as “takes time to listen.”

The model includes three basic types of leadership styles: developmental leadership, conventional leadership, and non-leadership. This part is heavily influenced by the writing on transformational leadership (Avolio, 1999; Bass, 1998; Bass & Bass, 2008). However, some alterations have been made to the original American model. The three most important changes are the hierarchical approach mentioned above, a reduction of the number of factors in the transformational (or developmental) domain, and an elaboration of what Bass (1998, 2008) labels “transactional leadership.” Within each of the two factors included here in the developmental leadership model, both a positively and a negatively toned facet are identified (Larsson et al., 2003).

COMPARISON METHOD AND OUTCOME

The comparison takes its point of departure in the existing, formally accepted writings on the developmental leadership model (Larsson 2006a, 2006b; Larsson et al., 2003). The lowest conceptual level, the so-called *part-factor* or *facet* level, will be used here as point of departure (not fully shown in Figure 15.1; see the original sources). Given this, an evaluation was made of whether each of the concepts in the developmental leadership model could be traced in the qualitatively developed model of military officers’ development as leaders in natural

Table 15.1 Comparison of the developmental leadership model with the theoretical model of leader development in natural context

Conceptual point of departure in the developmental leadership model	Occurrence in the natural development model		Conceptual point of departure in the developmental leadership model	Occurrence in the natural development model	
	Obvious	Doubtful/ not at all		Obvious	Doubtful/ not at all
Developmental leadership			<i>Social competence</i>		
<i>Exemplary model</i>			Flexible	X	
Value base	X		Balanced	X	
Good example	X				
Responsibility	X		<i>Capacity to cope with stress</i>		
<i>Individualized consideration</i>			Problem-focused coping		X
Support	X		Emotion-focused coping		X
Confront	X				
<i>Inspiration and motivation</i>			Basic prerequisites		
Promote participation	X		Physical	X	
Promote creativity	X		Psychological	X	
Conventional leadership			View-of-life-related		X
<i>Demand and reward</i>			Environment		
Seek agreements	X		Resources	X	
If, but only if, reward	X		The organization		
<i>Control</i>					
Take necessary measures	X		Threats	X	
Overcontrol	X		Structure	X	
Non-leadership			Processes	X	
Laissez-faire	X		History and culture	X	
Desirable competences			The group		
Task-related competence		X	Structure	X	
<i>Management-related competence</i>			Processes	X	
Intra-organizational		X			
Extra-organizational		X			

(adapted from Vrbanjac & Larsson, 2006)

context (Vrbanjac & Larsson, 2006). The outcome of the comparison is presented in Table 15.1.

Table 15.1 shows that most concepts in the developmental leadership model can be found in the natural leadership developmental model. The exceptions are the two facets of management-related competence, the two facets of the concept “capacity

to cope with stress,” and the basic individual prerequisite concept, view-of-life.

The fact that the two management-related facets did not occur clearly in the narratives on natural leader development may be explained by the fact that most of the informants were young officers. Thus, they had mainly experienced direct, face-to face leadership,

and not organizational management through subordinate commanders. The lack of support for the two stress-related coping facets and the view-of-life component are more difficult to explain. These kinds of aspects are frequently observed in studies focusing on military leadership in severely demanding situations (see, e.g., Britt, Castro, & Adler, 2006; Kolditz & Brazil, 2005). One possibility is that it reflects the content of the interview scheme—it focused on leader development experiences rather than on coping with highly stressful situations.

The overall impression of the comparison is the high degree of overlap between the two models. It could probably be argued that this partly can be attributed to the fact that both models are formulated in a fairly general form; they are “context-free,” to use Blair’s and Hunt’s (1986) terminology. Thus, further research with a stronger context-specific approach is needed.

To conclude, a couple of arguments that can be seen as supporting the trustworthiness of the presented model of leader development in the natural context will be added. The first is empirical: the fact that similar kinds of responses were obtained in five different countries is comforting. Or, to put it differently, it would have been a problem if the five countries had shown quite divergent patterns. The second argument is theoretical: the presented model appears to fit quite well with established frameworks such as symbolic interactionism, cognitive-phenomenological stress theory, and a transformational leadership-like a model of leadership.

The Natural Leader Development Process—Some Implications for Planned Leader Development

The literature on planned leader development is extensive (see, e.g., Gardner, Avolio, & Walumbwa, 2005). Therefore, I will limit my concluding discussion to three aspects that can be directly related to the model of natural leader development.

The first aspect to be addressed is *selection*. There is an increasing amount of evidence that suggests that bad leadership gives more negative consequences than good leadership gives positive (Larsson, Fors, & Nilsson, in press). Despite this, I venture to guess that the majority of all planned leader-development efforts are devoted to making already reasonably good and well-motivated leaders even better. There is obviously nothing wrong with this. However, being inspired by the already classical literature review “Bad is stronger than good”

(Baumeister et al., 2001), I see a need for further research on the darker sides of leadership (see e.g. Einarsen et al., 2007; Hogan & Hogan 2001; Skogstad et al., 2007). Given the high importance of positive and negative role models found in the study on natural leader development, an elimination of unsuitable role models seems to be important.

A second class of argument deals with planned leader development in the form of *education and training*. Drawing on the “bad is stronger than good” argument above, a challenging question is, to what degree it is possible to develop leaders who are less good? particularly leaders who frequently employ the leadership styles “if, but only if, reward,” “overcontrol,” and “laissez-faire,” to use the developmental leadership model terminology (see Figure 15.1). The first-mentioned style is the negative facet of the Demand and Reward factor. It has a negative tone and can be summarized as, “I will be good to you if, but only if, you are good to me.” Overcontrol needs no explanation, and laissez-faire can be described as non-leadership. Typical behaviors include being absent when needed, avoiding responsibility, being ignorant, etc. (Larsson et al., 2003). Developing less-good leaders into good ones overnight may be to ask too much. However, an interesting question for further research is if education and training can at least make them reduce or even stop the use of purely destructive leadership behaviors. Referring to the importance of role models once again, this could have a favorable effect on the everyday social interaction and on natural leader development.

My third and concluding comment deals with the classical organizational conflict between *differentiation* and *qualification*. Differentiation includes the evaluation and reward or punishment of individuals. This is done in a top-down fashion in virtually every organization when it comes to salary negotiations, when someone shall be selected for promotion, and so on. Qualification is about learning and development; for example, within the framework of a leader development program.

The conflict is best illustrated by an example. Suppose that the top management of Organization X emphasizes the importance of managers’ actively encouraging the participation of their subordinates in the development of new, improved activities (qualification). However, “at the moment of truth,” when new salary levels are to be decided, the top management makes another evaluation and regards this participatory leadership behavior as a sign of

weakness (differentiation). This management behavior is a powerful signal. It most likely means that the top management will be little trusted in the future when they urge increased participation again.

In my experience, the outcome of planned leader development efforts will be strictly limited if the criteria for “goodness” and “badness” are different in the differentiation and the qualification contexts, respectively. In the Swedish Armed Forces an interesting attempt to avoid this conflict is currently being implemented. The basis of this attempt is that the theoretical model developmental leadership (see Figure 15.1) will serve as platform for the evaluation, as well as the development, system. If it works out well it could provide a sound basis for the combination of planned and natural leader development throughout the officers’ entire careers.

References

- Avolio, B. J. (1999). *Full leadership development: Building the vital forces in organizations*. Thousand Oaks, CA: SAGE Publications.
- Bass, B. M. (1998). *Transformational leadership: Industry, military, and educational impact*. London: Lawrence Erlbaum.
- Bass, B. M., & Bass, R. (2008). *The Bass handbook of leadership: Theory, research & managerial applications*. New York: The Free Press.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, 5, 323–370. doi:10.1037/1089-2680.5.4.323
- Berger, P., & Luckman, R. (1966). *The social construction of reality: A treatise in the sociology of logics*. London: Penguin Books.
- Blair, J. D., & Hunt, J. G. (1986). Getting inside the head of the management researcher one more time: Context-free and context-specific orientations in research. *Yearly Review of Management*, 12, 147–166. doi:10.1177/014920638601200202
- Britt, T. W., Castro, C. A., & Adler, A. (Eds.) (2006). *Military life: The psychology of serving in peace and combat. Vol. 1: Military performance*. Westport, CT: Praeger Security International.
- Einarsen, S., Schanke Aasland, M., & Skogstad, A. (2007). Destructive leadership behaviour: A definition and conceptual model. *Leadership Quarterly*, 18, 207–216. doi:10.1016/j.leaqua.2007.03.002
- Endler, N. S., & Magnusson, D. (1976). Toward an interactional psychology of personality. *Psychological Bulletin*, 83, 956–979. doi:10.1037/0033-2909.83.5.956
- Eysenck, H. J. (1990). Biological dimensions of personality. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 244–276). New York: The Guilford Press.
- Gardner, W. L., Avolio, B. J., & Walumbwa, F. O. (Eds.) (2005). *Authentic leadership theory and practice: Origins, effects and development*. Amsterdam: Elsevier Jai.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Hogan, R. J., & Hogan, J. (2001). Assessing leadership: A view from the dark side. *International Journal of Selection and Assessment*, 9, 40–51. doi:10.1111/1468-2389.00162
- Kolditz, T. A., & Brazil, D. M. (2005). Authentic leadership in extremis settings: A concept for extraordinary leaders in exceptional situations. In W. L. Gardner, B. J. Avolio, & F. O. Walumbwa (Eds.), *Authentic leadership theory and practice: Origins, effects and development* (pp. 345–356). Amsterdam: Elsevier Jai.
- Larsson, G. (2002). Cigars, whiskey, and winning: A qualitative analysis of Kaltman’s analysis of General Ulysses S. Grant’s leadership. *Leadership and Organization Development Journal*, 23, 45–53. doi:10.1108/01437730210421186
- Larsson, G. (2006a). The Developmental Leadership Questionnaire (DLQ): Some psychometric properties. *Scandinavian Journal of Psychology*, 47, 253–262. doi:10.1111/j.1467-9450.2006.00515.x
- Larsson, G. (2006b). Ledarskapsteori [Leadership theory]. In G. Larsson & K. Kallenberg (Eds.), *Direkt ledarskap* [Direct leadership] (pp. 30–55). Stockholm: Försvarsmakten.
- Larsson, G., Bartone, P. T., Bos-Bakx, M., et al. (2006). Leader development in natural context: A grounded theory approach to discovering how military leaders grow. *Military Psychology*, 18(Suppl.), S69–S81. doi:10.1207/s15327876mp1803_6
- Larsson, G., Carlstedt, L., Andersson, J., et al. (2003). A comprehensive system for leader evaluation and development. *Leadership and Organization Development Journal*, 24, 16–25. doi:10.1108/01437730310457294
- Larsson, G., Fors, M., & Nilsson, S. (in press). Destrudo-L: Development of a short questionnaire designed to measure destructive leadership behaviors in a military context. *Leadership & Organization Development Journal*.
- Larsson, G., Johansson, A., Jansson, T., & Grönlund, G. (2001). Leadership under severe stress: A grounded theory study. In R. Lester & A. G. Morton (Eds.), *Concepts for Air Force leadership* (pp. 441–447). Maxwell, AL: Air University.
- Lave, W., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: University Press.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. London: Free Association Books.
- Packard, G. (1999). *Longitudinal study of the social network influences on the leadership and military development of cadets at the U.S. Air Force Academy*. Chapel Hill, NC: University of North Carolina.
- Peters, J., McManus, I. C., & Hutchinson, A. (2001). Good medical practice: Comparing the views of doctors and the general population. *Medical Education*, 35(Suppl. 1), 52–59. doi:10.1046/j.1365-2923.2001.00007.x
- Sjöberg, M., Danielsson, E., Johansson, E., & Larsson, G. (2004). *Unga officerares ledarutveckling: En kvalitativ studie* [Young officers’ leader development: A qualitative study]. (ILM Serie I:13), Försvarshögskolan Institutionen för Ledarskap Och Management.
- Skogstad, A., Einarsen, S., Torsheim, T., Schanke Aasland, M., & Hetland, H. (2007). The destructiveness of laissez-faire leadership behavior. *Journal of Occupational Health Psychology*, 12, 80–92. doi:10.1037/1076-8998.12.1.80
- Topping, K., & Ehly, S. (1998). *Peer-assisted learning*. Mahwah, NJ: Lawrence Erlbaum.
- Vrbnjac, A. & Larsson, G. (2006). *Hur stämmer unga officerars faktiska ledarutveckling med Försvarsmaktens ledarskapsmodell Utvecklande ledarskap?* [Does young officers’ leader

- development fit with the Swedish Armed Forces' leadership model Developmental leadership?]. (ILM Serie T:33), Försvarshögskolan Institutionen för Ledarskap och Management.
- Weibull, A. (2006). Att utvecklas som ledare: Organisationsnivå [To develop as leader: The organizational level]. In G. Larsson, & K. Kallenberg (Eds.), *Direkt ledarskap* [Direct leadership] (pp. 324–339). Stockholm: Försvarsmakten.
- Yukl, G. (2005). *Leadership in organizations. Sixth ed.* Upper Saddle River, NJ: Prentice-Hall.

Cognitive and Non-Cognitive Factors in Soldier Performance

Michael D. Matthews*

Abstract

In attempts to improve soldier training, adaptation, and performance, military psychologists have traditionally focused on cognitive processes such as situation awareness and decision making. Recent developments in psychology, however, point to the interaction between cognitive and non-cognitive factors in influencing training, adaptation, and performance. This chapter describes contemporary research in cognitive and non-cognitive processes that combine to influence soldier performance. Cognitive processes examined include situation awareness and intuitive decision-making. Personality, character, and other non-cognitive factors now known to affect soldier training, adaptation, and performance are explored in depth. Implications for force selection, training, and sustainment are evaluated.

Keywords: Situation awareness, decision making, intuition, attention, character, personality, performance

If you know your enemy and know yourself, you need not fear the result of a hundred battles.

—*Sun Tzu, ca. 500 BC*

Introduction

Sun Tzu provided a keen insight into the conduct of warfare. Knowing one's enemy *and* knowing oneself are keys to successful military operations. In contemporary terms, this "knowing" may be interpreted as understanding cognitive processes, such as situation awareness (knowing the enemy's location, strength, intent) as well as knowledge of non-cognitive processes, such as self-insight (of personality, character, affect). Moreover, military psychology may play a more important role in contemporary warfare than ever before. It has been argued (Scales, 2009) that each war beginning with World War I was fundamentally changed by an advance in science. These scientific advances have been called "amplifiers"

(Scales, 2009). The amplifier for World War I was chemistry. For World War II, physics played a decisive role in the outcome of the war. The Cold War, referred to by Beyerchen (see Scales, 2009) as "World War III," was heavily influenced by information science research. The amplifier for the Global War on Terror (GWOT), or World War IV, are the behavioral and social sciences. If this view is correct, then military psychology is a vital player in the outcome of twenty-first century armed conflict.

A complete accounting of psychological factors that affect soldier training, adaptation, and performance must focus on both cognitive and non-cognitive factors. The purpose of this chapter is to review major areas of research and development

* The views presented in this chapter do not necessarily represent those of the U.S. Army or the U.S. Department of Defense.

within each of these domains, and to explore how they may interact to influence soldier behavior. Major topics reviewed within the cognitive domain include situation awareness (SA) and intuition as they affect decision making. Within the non-cognitive domain, the role of certain personality factors, including character, hardiness, and mortality salience, are described. Finally, implications for soldier training are considered. The focus of this review is on factors thought to improve the adaptation and performance of soldiers. Factors that predict psychological maladaptation are not covered. Such factors have been well documented in the clinical psychology literature (e.g., Adler, Castro, & Britt, 2006).

Cognitive Factors **Situation Awareness**

MODELS OF SITUATION AWARENESS

A key cognitive process in understanding decision making involves the construct of situation awareness (SA). "Situation awareness" refers to a person's ability to accurately assess the elements of a situation, retrieve memories or scripts for how to react to that situation, and to then decide the optimal course of action for that specific situation. More formally, Endsley (1995) defines situation awareness as "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future." Implicit in this definition is the notion that SA consists of three levels: Level 1, *perception*, involves the accurate identification of the key features of a situation. Understanding what these elements mean, or *comprehension*, defines Level 2 SA. Level 3 SA involves the ability to use lower levels of SA to *make accurate projections* about what is likely to occur in the near future in a given situation. An excellent review of the Endsley model may be found in Wickens (2008).

This and other SA models must take into account, not only the cognitive architecture of SA, but also the specific mission, environment, and tasks that are unique to that domain. Thus, while the core cognitive components of SA are stable and can be generalized across domains (e.g., aviation, infantry, nuclear power plant control, etc.); other factors that are vital to developing SA vary substantially across domains. For example, Endsley and colleagues (2000) developed an infantry-centric model of SA, designed to describe the fundamental cognitive structures and processes that underlie military decision-making for soldiers involved in ground operations. But contrasted to, for example, understanding the SA of nuclear power

plant employees, the infantry SA model must take also into account the impact of sleep deprivation, loud noise, extreme physical demands, and the very real threat of severe bodily injury or death. These task and environmental factors interact in important ways with a soldier's ability to sense, interpret, and predict events on a battlefield.

The fundamental cognitive processes that underlie SA are consistent with those in other models of information processing and cognition such as the adaptive control of thought, or ACT-R model (Anderson, Budiu, & Reder, 2001) or the information-processing model described by Wickens (1984). These processes include attention, sensation, perception, working memory, and long-term memory. In assessing situations, domain experts learn where and when to allocate attentional resources, to accurately sense and perceive stimuli critical to a situation and to disregard those that are not, and to comprehend the meaning of what they sense. Moreover, they are able to quickly pattern-match between the current situation and memories of previous situations stored in long-term memory, in order to activate appropriate response sequences that are optimally matched to the current situation.

In addition to Endsley's (1995) model of SA, several others models exist (Adams, Tenney, & Pew, 1995; Fracker, 1988; Maggart & Hubal, 1999; Salas et al., 1995; Smith & Hancock, 1995, Taylor & Selcon, 1994). The models vary in specificity or relevance to particular domains, how relevant they are to understanding team SA, the implications they suggest for measurement, and their relevance to military psychology. Shattuck and Miller (2006) offer an alternative model that more explicitly addresses the interplay between technologically sophisticated military command-and-control systems and the perceptual and cognitive systems (i.e., attention, memory, etc.) common to other models of SA. This approach, referred to as the "dynamic model of situated cognition," seems especially germane to understanding SA at higher military echelons (for the Army, battalion-level and above) where decision makers are inundated with masses of information that is often poorly filtered or presented.

DEVELOPING SA MODELS FOR SPECIFIC MILITARY DOMAINS

As suggested earlier, SA models are inherently domain-specific, and in order to be useful must be explicitly linked to the unique conditions for a given domain. That is, while the basic cognitive structures and processes that comprise SA are constant across

domains, the information requirements, operational environment, and task conditions vary widely across domains. Most fundamental in tailoring an SA model to a specific domain is identifying the information requirements necessary for that domain. My colleagues Strater and Endsley and I (2004) report the development of a situation-awareness-requirements analysis for infantry platoon leaders. As we point out, early SA research focused on domains where operators functioned in relatively constrained environments, such as power plants and aviation flight control towers. The infantry platoon, in contrast, functions in a dynamic and dangerous environment, and must respond to an intelligent and adaptive enemy who will intentionally attempt to deceive members of the platoon. In contrast to the situation awareness requirements of pilots, who work alone or in very small teams (within the cockpit, that is), the infantry platoon is a highly organized unit consisting of 30 or more soldiers, non-commissioned officers, and the platoon leader, who is usually a lieutenant.

Thus, in order to accurately model SA for infantry platoon leaders, it was necessary to thoroughly dissect and identify the information requirements unique to this domain. My colleagues and I (Matthews et al., 2004) conducted a series of detailed interviews with six infantry subject matter experts (SMEs), and employed a goal-directed task analysis methodology (Endsley, 1993; Endsley & Rodgers, 1994) to extract SA requirements for a mission aimed to “attack, secure, and hold” terrain. This process yielded seven primary goals: Avoid casualties, negate enemy threat, move toward the objective, assault through the objective, hold the objective, provide stability and support operations, and function in a team environment. In turn, these primary goals were further divided into 22 sub-goals, each of which in turn was broken into its constituent components. For example, the primary goal of “avoiding casualties” included five sub-goals, including “avoiding enemy detection.” This sub-goal was further divided into three component goals (“project enemy behavior,” “avoid danger areas,” and “utilize available cover and concealment”); then a detailed series of SA elements pertaining to perception, comprehension, and projection was developed for each of the component goals. It can readily be seen that a full and complete SA requirements involves a staggering degree of detail expressed in goals, sub-goals, components, and tiered SA requirements.

Redden (2002) reports a similar approach to identifying mission-critical information requirements, in this case for infantry platoon leaders performing

missions in urban terrain. Redden developed a comprehensive list of candidate SA requirements through interviews with a panel of infantry SMEs, then had participants rate each item on a seven-point Likert scale with respect to its importance to the mission. Through this process, SA requirements (referred to by Redden as “critical information requirements”) for platoon-level missions in urban terrain were specified. If a universal list of possible SA requirements could be developed for a given domain (e.g., infantry operations in general), then ratings on the relevance of each of the candidate items on the master list could be obtained for specific types of missions within the domain, such as conducting a patrol, defending an objective, delivering supplies to a location, and so forth.

Identifying SA requirements specific to missions is not a trivial business, because such an analysis forms the basis for developing psychometrically sound SA metrics. As will be discussed below, SA metrics range from subjective ratings of one’s own or others’ SA, to very sophisticated metrics gathered under highly controlled settings. Since the very concept of SA involves the idea that individuals must perceive and understand elements of the environment that may influence the outcome of their decisions, it suggests that metrics based on an accurate assessment of what those elements actually are should be more likely to yield a valid measure of the construct.

SITUATION AWARENESS METRICS

It is always easier to develop a complex construct than it is to develop psychometrically strong metrics to assess it. Situation awareness is no exception. However, extensive efforts over the past 15 years have yielded a variety of approaches to assessing SA. A complicating factor is that a given metric may be valid in one setting but impractical to use in others. Endsley and colleagues (2000) describe four general approaches to measuring SA. These are process indices, direct measures, behavioral measures, and performance measures. Each has advantages and disadvantages.

Evidence clearly suggests that some people are more adept at developing high SA than others (Endsley & Bolstad, 1994). Comparing those with high SA skills to those with low SA skills may reveal certain behavioral processes that differentiate the two groups. Thus, process indices of SA are based on observable behavioral differences that differentiate SA skill level among people. Examples include eye movements and communication and verbal

behavior patterns. Level 1 SA, *perception*, involves detecting stimuli that are critical to building SA in a given situation. Persons with higher SA skills, then, may show distinct visual search patterns compared to novices or those with lower SA skills (Endsley et al., 2000). Similarly, Level II SA, or the ability to *comprehend* what is perceived, may be indexed by the effectiveness of verbal communications. Recent research that analyzes radio communications among infantry small-unit leaders supports this notion. Christ and Evans (2002) analyzed radio transmissions of infantry small unit leaders, and from this derived items that differentiated those with high, medium, or low SA performance. They then used these items to develop two communications-based process indices of SA, the Radio Communications Checklist of Leader Awareness (RCCOLA), and Future Expectations of Likely Leader Awareness (FELLA).

While process indices correlate certain behaviors with SA, direct measures probe individuals for their current knowledge of their environment. These direct measures fall into two types: objective and subjective. Objective direct measures include post-test queries, online probes, and “freeze-action” probes. Subjective direct measures include self-ratings and observer ratings of SA. As we shall see, it is possible under some circumstances that the different types of measures may yield different estimates of SA. This increases the importance and complicates the issue of selecting the optimal SA measure for a given domain or mission.

Perhaps the most widely used direct objective measure of SA is the Situation Awareness Global Assessment Technique (SAGAT; Endsley, 1995). The SAGAT involves developing an inclusive set of information requirements for a given domain and developing probe questions based on that analysis. Results from this SA requirements analysis (e.g., Matthews et al., 2004) could form the basis, then, for SAGAT probe questions. Once these probe questions are developed, individuals may be queried at different points in a mission to compare their perception with the actual conditions of the mission. Typically, this is done by stopping the action periodically and randomly during a mission or session, and at that time selecting a small number of probe questions randomly from the full set of questions to present to the operator. Strater, Endsley, Pleban, and I (2001) used the SAGAT in this way to compare the SA of experienced and novice platoon leaders operating in a virtual, immersive battlespace. Besides assessing SA, the SAGAT also revealed that

experienced platoon leaders sought out different types of information than did their inexperienced counterparts. For instance, experienced platoon leaders were more enemy-focused. Interestingly, my colleagues and I (Shattuck, Talcott, Matthews, Clark, and Swiergosz, 2002) reported a similar bias among experienced battalion commanders compared to officers who had not served in that capacity.

Other direct and objective measures of SA are used. Post-test queries, given at the completion of a mission or simulation, are less intrusive than SAGAT and do not disrupt the tempo of the mission. Online queries involve embedding queries into a task and have the advantage of minimizing memory problems that may occur with post-test queries. However, online queries may distract from one’s current task performance, increase the workload, or alter SA by refocusing one’s attention. In comparison, SAGAT has the advantage of assessing global SA (that is, all three levels), is relatively objective, avoids memory distortion through the stop-action probes, and can be utilized in realistic, dynamic settings. On the negative side, the SAGAT requires stopping the action and thus interrupting the flow of a mission or simulation, and the action stoppage may be unacceptable to trainers, especially in field settings.

According to Endsley (1996), direct subjective measures include self-rating and observer ratings of SA. There are many self-rating measures available, including the Situational Awareness Rating Scales (SART; Taylor, 1990), the SA-Subjective Workload Dominance (SWORD) metric (Vidulich & Hughes, 1991), the Mission Awareness Rating Scale (MARS; Matthews, Beal, & Pleban, 2002), and many others (for example, see French, Matthews, & Redden, 2004). Unlike SAGAT, these measures tend to be more general in nature, and thus to avoid the need for costly (in time and money) tailoring to specific missions and conditions. Moreover, they are more user-friendly and can be used both in the laboratory and the field. For example, my colleagues and I (2002) report the development of MARS. This measure, modeled after the Crew Awareness Rating Scale (CARS; McGuinness & Foy, 2000), but adapted to the infantry context, consists of two subscales: one to assess SA content, and the other the SA workload. The content subscale queries respondents on how well they can identify, comprehend, predict, and decide in a given mission. The workload subscale asks the respondent to estimate how much mental effort is required to identify, comprehend, predict, and decide in the given mission.

My colleagues and I (Matthews, Beal & Pleban, 2002) found that MARS differentiated among four different methods for simulating night fighting in a virtual combat simulator. In another context, Eid and I (Matthews & Eid, 2003) used MARS to assess SA among Norwegian Army and Naval Academy cadets during a summer field training exercise. For SA content, prediction was rated as significantly more difficult than identifying, comprehending, or deciding. For SA workload, comprehension and deciding were rated as requiring the highest workload. Moreover, for SA workload, an “assault an objective” mission was rated as more taxing cognitively than either a search and rescue or a Prisoner of War mission. In a field study of West Point cadets engaged in an infantry training exercise, Beal and I (Matthews and Beal, 2002) found that squad and platoon leaders rated their SA higher than did subordinates for both content and workload. My colleagues and I (Eid, Matthews, Johnsen, & Meland 2005) found that MARS ratings correlated with dispositional optimism.

The other class of direct subject measures as defined by Endsley (1996) is observer ratings. Strater and colleagues (2001) describe the development of the Situation Awareness Behaviorally Anchored Rating Scale (SABARS). Based on an SA requirements analysis conducted on infantry platoon missions (Matthews, Pleban, Strater, & Endsley, 2000), SABARS consists of 27 behaviors and leader actions linked to SA in an urban tactical environment. Experienced and inexperienced platoon leaders conducted four missions in a virtual environment, while expert observer/controllers (O/Cs) monitored and rated their actions. Results indicated that SABARS differentiated SA as a function of the platoon leader’s experience, with experienced platoon leaders showing significantly higher ratings than inexperienced platoon leaders. In a field test of SABARS, Beal and I (Matthews & Beal 2002) found SABARS did not distinguish SA between leaders and subordinates, but their subjects were relatively inexperienced West Point cadets engaging in their first training mission in an urban setting. However, the global SABARS SA rating was highly predictive of the leaders’ ability to make good decisions, communicate effectively with their subordinates, and their overall mission performance. And the O/Cs rated SABARS as being easy to use and providing valuable feedback to participants engaged in the exercise. Finally, my colleagues and I (Matthews, Eid, Johnsen, Meland, & Talcott, 2004) developed a SABARS instrument appropriate to

missions conducted during summer training at the Royal Norwegian Military Academy. We found in that context that SABARS predicted the squad leaders’ decision making, communication effectiveness, and overall SA.

An advantage of expert observer’s ratings of SA is that the raters are typically highly experienced within their domain (infantry, aviation, etc.) and thus possess deeper and broader knowledge about a given domain than the participants themselves. However, instruments used to rate SA must be carefully developed to include observable behaviors that are conceptually linked to the construct of SA. For instance, SABARS includes items such as “The leader communicates effectively with subordinates” and “The leader posts scouts to obtain information.” These are actions taken by a participant whom an O/C can readily observe. The observers must also be highly experienced, or they may lack the ability to focus on key actions and behaviors displayed by the participants. And if large numbers of participants are involved, multiple O/Cs may be necessary to capture the SA for all key participants.

A particular weakness of self-ratings relates to the difficulty that inexperienced participants or those who may be stressed or sleep-deprived may encounter in rendering accurate appraisals of their own behavior. This was illustrated in a recent study (Matthews et al., 2005) we conducted with Norwegian Army and Naval Academy cadets during a field training exercise that involved considerable stress and sleep deprivation. Cadet squads engaged in an eight-day-long series of exercises that involved a variety of missions and difficult environmental conditions. Moreover, the participants received fewer than four hours of sleep for the entire period and were allowed very little food for the duration of the exercise (the mean weight loss over the period of the exercise was approximately 20 pounds per cadet). In this study, highly trained and experienced Norwegian army and naval officers used the SABARS developed by my colleagues and I (2004) to rate cadet squad leader SA following missions involving assaulting an objective. A parallel version of the instrument was developed, and each squad leader rated his or her own SA using the SABARS instrument following the mission. Perhaps not surprisingly, the cadets rated themselves significantly higher than did the O/Cs. Moreover, and this is important because it illustrates a weakness in using subjective self-assessments, there was little correlation between self- and expert-observer ratings. This suggests that self-ratings of SA may be unreliable

under stressful conditions and sleep-restriction. Since these factors tend to characterize military training and operational settings, this study clearly suggests that self-assessment of SA may be of limited value in these contexts.

Endsley (1996) describes two additional SA-measurement approaches. These are behavioral measures and performance measures. The former involve systematically assessing and recording behaviors on specific subtasks that subjects may be expected to display in given contexts. Possible measures include response latency, making correct or incorrect choices at key points in a mission, and (sometimes at least) assessments of decision making. Advantages of behavioral measures include the fact that they are observable and often non-obtrusive. Disadvantages include the fact that they are based on assumptions about what behaviors provide the most valid index of SA, and that the behavior may reflect other, underlying processes that are not related to SA. For instance, in an infantry setting, making the correct choice to set up an ambush site could result from high SA, or it also could have been arrived at for extraneous reasons, such as convenience or luck. Behavioral measures are most appropriate where their validity, as indexes of the underlying construct of SA, can be established; where the behaviors can be operationally defined, specific, and task-relevant; and where other independent measures can also be employed to offer further validation of the behavioral measures.

“Performance measures” refers to success on specific tasks, such as rifle marksmanship (hitting the target, engaging the correct target) that are inherent to the mission being studied. Their advantage is they are easily observable and usually non-obtrusive. However, their construct validity is questionable. Global performance measures (e.g., number of kills in a battle) are often as much influenced by extraneous factors (luck, weather, the enemy) as they are by SA. Thus, performance measures should be used only when other SA metrics are available to serve as validating criteria for the performance measure. Similar to behavioral measures, they should be specific and task-relevant and should be clearly and explicitly linked to subtask performance outcomes. Global performance measures (“winning the battle”) provide little insight into SA.

In summary, the decision of how to measure SA is dictated by the setting the data are to be collected in (laboratory or field), the degree of experimental control the researcher may exert in a situation, and the ability to identify specific task-relevant goals

and subgoals for a given domain. In simulations and highly scripted field training settings, the researcher may know the “ground truth” of the situation. That is, the researcher will know exactly where the enemy is located, where they will be in the near future, where obstacles and landmines may be, and so on. With this knowledge, it is relatively easy to develop a set of probe questions, like those used with SAGAT, and to then validly assess a participant’s perception, comprehension, and projection of future actions. The experimenter may freeze the action or otherwise solicit real-time responses from participants. In contrast, assessing SA during most field exercises requires a much less obtrusive approach. The experimenter may not know the “ground truth” because the “enemy” is free to respond and react in innovative ways to the actions of the friendly force. Or, the researcher may want to assess the SA of all members of a unit. For an infantry platoon, it would be difficult to devise a valid way to ask SAGAT style probes of all 30 or more soldiers involved in the operation. So in these instances, a direct subjective measure may have to do. In the end, it is fair to recognize that SA is a subjective construct and is difficult to measure. Where possible, opt for more objective measures (SAGAT or SABARS) and/or multiple measures in order to obtain the most valid assessments.

TEAM SA

It is important to recognize that in military organizations (squads, platoons, flights, squadrons, etc.) optimal SA is dependent on group or team processes. Moreover, ways of building team SA will vary by echelon. The smallest infantry units—fire teams and squads—may rely most heavily on direct interpersonal communication, hand signals, and direct observation of the environment. At higher echelons of command, intricate and complicated organizational roles and technologies have evolved to detect, filter, and direct information to the right person at the right time in order to allow optimal decisions to occur. Furthermore, the time to establish SA and make decisions is directly proportional to the level of the echelon. At the tactical, small-unit level, the unit may have only seconds to perceive, understand, project, and then take an action. At division level, assessment of information and planning may occur over hours, days, or even weeks. So a full understanding of the dynamic team processes needed for optimal SA is heavily influenced by echelon.

Endsley (1995) defines team SA as “the degree to which every team member possesses the SA required

for his or her responsibilities.” Military strategists refer to the concept of a “shared common operating picture” of the battlefield. Inherent in the concept of team SA is that it is an emergent phenomenon, dependent on individual members of the team doing their job and clearly communicating their observations through distinct channels. Endsley and colleagues (2000) point to four components of team SA: shared SA requirements, shared SA sources, shared SA mechanisms, and shared SA processes. Collectively, these four components sum to create team SA. This is not to imply that every member of the team has exactly the same awareness of the situation. The leader will integrate information from all sources; a scout may only be concerned with signs of enemy in the approach lanes; the radio telephone operator (RTO) may focus only on radio or digital communication from other units, and so forth.

As French and colleagues (2004) point out, team SA is part of the larger picture of effective teamwork. While extensive research has been conducted on teamwork and team SA (see Garbis & Artman, 2004; Salas & Cannon-Bowers, 2000; Vidulich, Bolia, & Nelson, 2004), relatively little work has been reported within the non-aviation military domain, perhaps because of the complexity of the team composition and the dynamic and fluid nature of military operations.

TECHNOLOGY AND SA

Ironically, advances in information technology may complicate the ability of military personnel to develop accurate SA. With potentially hundreds of information sources and the ability of high-echelon commanders to know in nearly real-time terms the location and activities of all of their subordinate units—even down to the smallest or even individual level—designing command, communication, and control systems that present the right information at the right time to the right person poses a difficult challenge. Moreover, sophisticated information technologies are pushing into ever lower echelons, even to the level of the individual soldier. For example, the Army’s Land Warrior system was designed to provide real-time digital maps (showing friendly and enemy locations), digital and radio communication capabilities, GPS route finding, and high tech target engagement systems to the individual soldier. In theory, it would be possible for a private to dial up the same view of the battlefield as the commanding general. It would also be possible for the commanding general to focus on the activities of individual or small units of soldiers. Clearly, this

could overwhelm the private, and lead the general away from thinking operationally or strategically. Thus, it behooves designers of military command, control, and communications technologies to work closely with military subject-matter experts to design systems that will facilitate the flow of information and build SA.

SUMMARY OF SITUATION AWARENESS

Situation awareness is really a model of information processing that explicitly links component cognitive processes (perception, comprehension, projection) to decision making in specific training or operational contexts. As such, it provides a useful model to guide researchers and trainers in identifying critical elements of the environment, what these elements suggest for understanding, and how to leverage these processes toward predicting likely outcomes. Successful soldiers and leaders develop these skills in a haphazard manner, so delineating the constituents of a mission context can lead to quicker and more effective ways of developing expertise for that mission or domain.

Moreover, many psychometrically sound metrics exist for SA, and each can be selected based on the nature of the mission or setting where SA is to be assessed. Subjective measures may be complemented by relatively objective measures such as SAGAT. In short, an SA measure may be found to match almost any given domain.

Future research may begin to focus on the neurological substrate of SA. For example, what brain areas are most involved in the three stages of SA? How do the brains of experts respond compared to the brains of novices or soldiers who lack well-developed SA skills? Is it possible to develop pharmacological or other neurological tools to facilitate SA? Additional research needs to be completed on how to most effectively train SA in novice soldiers and leaders. Can systematic SA training protocols be developed that more quickly establish high SA skills, compared to the unsystematic approach that currently exists? To what extent is SA trainable, and how malleable are individual differences in SA? The answers to these questions may lead to ways to quickly and bloodlessly train soldiers and leaders and thus improve their effectiveness in combat and other challenging missions where their decisions will affect their own lives and those of others.

Intuition and Tactical Decision-Making

The roles of automatic cognitive processing and so-called intuitive decision-making are becoming

increasingly apparent in understanding decision making under tactical conditions characterized by high stress with little time available to process information in a controlled manner. In contrast to SA, these processes appear more difficult to operationally define, nor has a widely accepted lexicon been adopted to capture the underlying construct. From the military psychologist's perspective, the notion of "intuitive decision-making" refers to the ability of experienced soldiers and leaders to quickly, and often under stressful conditions, make appropriate decisions with relatively little purposeful, effortful, or conscious thinking. Individuals may, after an incident, claim they were not aware of why they made their decisions. Decision making of this sort is more likely among experienced personnel responding in high-speed, tactical situations, where little time is available for a logical and orderly evaluation of alternative courses of action. Examples include the decision to shoot or not to shoot, where and how to direct fire, or whether to believe information provided by a local informant. This contrasts with the military decision-making process (MDMP; see U.S. Department of the Army, 2005). The MDMP involves a systematic mission analysis and the generation of a series of courses of actions (COAs) from which the leader derives a decision. Clearly, this sort of decision-making process is more amenable to conditions where there is time to bring to bear staff and intelligence resources to fully analyze a situation.

Research that addresses intuitive decision-making comes from two streams of inquiry. First, academic cognitive psychologists conduct research on basic cognitive processes that affect problem solving and decision making. Interestingly, a review of the tables of contents of several recent cognitive psychology textbooks revealed that only one (Sternberg, 2009) included "intuition" explicitly. And in that case, intuition was discussed in the context of artificial intelligence systems. Instead, academic cognitive psychology focuses on other concepts that may form the basis of intuitive decision-making. So in order to understand factors that may affect intuitive decision-making, it is necessary to review basic research from these areas.

For example, attention (along with sensation, perception, and memory), is held to be a fundamental component in general models of cognition and information processing (e.g., Wickens, 1984). Furthermore, the degree to which attention must be intentionally applied to a cognitive process may differentiate—from a molar perspective—conscious

(MDMP) versus unconscious (intuitive) decision-making. From this perspective, it is assumed that attention is a limited resource. That is, to say we "pay" attention suggests an economics-based model where there is an inverse relationship between the cognitive resources devoted to attention and the amount left for other operations (e.g., Schneider & Shiffrin, 1977). This can result in powerful limitations to perception and other cognitive processes. For example, in a shoot–don't shoot situation, police officers may focus so intently (i.e., pay so much attention) to the primary target, they become functionally blind to other potential targets that may exist nearby. So police trainers teach officers, after discharging their firearm, to step back and visually search 60 degrees to the left and right of the original target to look for additional threats. Repeated hundreds of times on the firing range in practice, this response becomes automatic and aids in officer survival.

Sternberg (2009) reviews the distinction between *automatic processes* and *controlled processes*. The former occur with relatively little conscious effort and result in little drain on attention or other cognitive resources. Controlled processes, in contrast, are effortful and rapidly deplete the ability of the actor to invoke other perceptual or cognitive processes or to react quickly to extraneous input. A good example is that of novice versus expert drivers. When first learning to drive, maximal effort is needed to maintain the vehicle at the right speed and direction while simultaneously monitoring other traffic and deciding what route to follow, and so on. It may take years of practice before basic driving skills become automated to the extent that the driver can safely perform higher-order tasks while driving. It is for this reason that inexperienced drivers are so vulnerable to distractions and resultant vehicle accidents. With greater experience, the task of maintaining speed and lane position may become so automatic that drivers may not even remember driving to their current location. Sternberg maintains that the automatic processes representative of experienced drivers reflect parallel processing, and that the controlled processes shown by inexperienced drivers reflect serial processing.

Automatic versus controlled processes may be differentiated along a number of dimensions. Sternberg (2009, p. 132) contrasts them along the following dimensions: amount of intentional effort, degree of conscious awareness, use of attentional resources, type of processing, speed of processing, relative novelty of tasks, level of processing, difficulty

of tasks, and processes of acquisition. Contrasted with controlled processes, automatic processes require little or no intentional effort, little or no conscious awareness, consume few cognitive/attentional resources, are performed in parallel, are relatively fast, are typically displayed in the context of familiar and highly practiced tasks, require relatively low levels of cognitive processing, initially involve simple tasks but with practice can apply to quite complex ones (e.g., driving a car), and may require substantial amounts of practice to become fully automated, depending on the complexity of component actions that make up the overall task.

Automatic processing, then, seems to be a fundamental component of intuitive decision-making. Remember, the construct of automatic processes extends beyond attention to include other basic cognitive processes. An experienced platoon leader displays the characteristics of automatic processes detailed above. He or she can quickly size up a situation with little conscious awareness or conscious effort. With little drain on general cognitive resources, the platoon leader is free to invoke these resources on higher-order tactics. This ability to parallel process—that is, to relegate certain processes to automatic responding while simultaneously employing cognitive resources on other tasks—is vital to quick and decisive decision-making in many situations. Automatic processes may be so well ingrained, indeed, that respondents may not be able to clearly articulate what they saw or thought when making decisions in certain situations.

Considerable research has been reported on the manner in which controlled processing is shifted to automatic processing. This has substantial implications for military training. Two different explanations may apply to this process of automatization. One approach focuses on breaking the overall task into its component subtasks, training on the subtasks, and then integrating the subtasks back into the whole (Sternberg, 2009, p. 133). Basic rifle marksmanship, for instance, requires basic tasks of sight picture, breath control, and trigger pull. At first, novice shooters must pay close attention to each component. With time and practice, these component behaviors are integrated into a fluid sequence of actions that can occur rapidly and in the manner characteristic of automatic processes described above. An alternative approach (Sternberg, 2009, p. 133) may be thought of as more rule-based. Sternberg gives the example of a child learning basic arithmetic skills. First, basic skills like addition and subtraction are learned through the use of a general

process like counting. With experience this basic approach is stored in the form of memory that can be more quickly applied to a specific question. “These experiences form a knowledge base from which a person can retrieve specific procedures for responding to specific stimuli” (p. 133).

It is fair to point out that while increased automatization increases speed and efficiency of decision making, it does not always yield more effective or even correct decisions. A substantial literature exists on topics of errors that are associated with automatic processes (e.g., Norman, 1988; Reason, 1990). Once an automated process is launched, then there is sometimes a failure to monitor changing conditions or other factors that influence the appropriateness of the behavior. Reason (1990) categorizes errors or what he terms “slips” that occur during automatic processes. These include capture errors, omissions, perseverations, description errors, data driven errors, associative-activation errors, and lost-of-activation errors. These errors, while quite common and usually innocuous in daily life, may have more serious consequences in combat or other settings where lives are on the line. For instance, perseveration errors occur when the actor repeats an action, even though the automatic procedure may have been completed. For example, a soldier may continue to fire his or her weapon after the threat has been eliminated, thus inflicting “collateral damage” or even causing fratricide.

Another area of basic cognitive psychology that informs our understanding of intuitive decision-making is the literature on insight. With insight, a solution to a perplexing problem is suddenly apparent. Insight seems more common when dealing with unstructured or ill-defined problems. There are various explanations of insight, ranging from those stemming from Gestalt psychology (e.g., Kohler, 1927) to more contemporary accounts based on more sophisticated experimental models, including models emerging from state-of-the-art brain-imaging technologies (Kounios & Beeman, 2009). For instance, Davidson (2003) makes a distinction between three types of insights. Selective-coding insights involve the ability to discriminate between relevant and irrelevant cues or information. Selective-comparison insights involve integrating new information in novel ways with existing information. Selective-combination insights involves sampling bits or streams of pertinent information and constructing them into new concepts.

In all cases, experience or domain expertise would seem to be an important condition necessary

to increase the probability of insightful behavior. In the problem-solving literature, this relationship between expertise and effective problem solving is seen in the classic studies of memory for the pattern of chess pieces on a board reported by Chase and Simon (1973). Chess experts were no better than novices in remembering the location of randomly placed chess pieces, but were much more adept at remembering the location of pieces set in meaningful patterns. Using SA terms, chess experts were better at perception (Level I) and understanding (Level II) of any given pattern of pieces, and were also better able to project (Level III) future likely outcomes, compared to novices. Some chess players become so expert they can play several games simultaneously. This can only happen because fundamental cognitive processes of attention, perception, and memory coding have become automatic.

Complementing the basic cognitive-psychology approach is research stemming from research conducted in the military or other dangerous contexts that focuses on how incumbents make decisions in dangerous, high-speed contexts. Interestingly, little of this research is covered in academic cognitive psychology. The best-known exemplar of this approach is the concept of “naturalistic decision-making” (NDM, e.g., Zsombok & Klein, 1997). Naturalistic decision-making focuses on oftentimes dangerous operational environments that are volatile, uncertain, complex, and ambiguous. Much of this work stems from Klein’s studies of firefighters (Klein, Calderwood, & Clinton-Cirocco, 1986; Calderwood, Crandall, & Klein, 1987), later generalized to military settings (Klein & Crandall, 1996). According to this view, in naturalistic decision-making actors build a complex library of scripts that can then be matched to given stimulus conditions. Once built and extensively practiced, the actor may automatically process a complex situation and pattern-matches the situation to an appropriate action script. This process, called “recognition-primed decision-making,” allows people behaving and making decisions in difficult and dangerous situations to quickly bypass lengthy controlled processing and arrive at an effective solution. This sort of decision making is critical in these circumstances because if actors relied on slow, controlled processing, they might be dead or injured, or else the situation would have changed before they could make a decision. Since the inception of NDM theory, it has been tested extensively in many contexts. Ross, Shafer, and Klein (2006) provide an extensive recent review of this literature.

The constructs of SA and NDM are closely linked. In their infantry-centric model of SA, Endsley and colleagues (2000) emphasize the development of scripts and action sequences activated by pattern matching, similar to that as described by Klein and others in their description of recognition-primed decision-making. If taken literally, then the effectiveness of a decision maker will be enhanced but at the same time limited by the number and complexity of relevant scripts that comprise his or her experience base. Effective decision-making demands that scripts relevant to a specific stimulus context exist in sufficient number and complexity. This raises a possible limitation to this approach, which is that, lacking the appropriate script, the decision maker may inevitably be faced with making a wrong decision or reverting to slow, controlled processing that may result in the critical time-window for the decision being closed. Because people often make good decisions in relatively novel situations, then the processes reviewed above that take into account insight and perhaps creativity must be considered for a complete picture of how people arrive at decisions in challenging operational contexts.

Another related stream of relevant research deals with the process of *schematization* (Sternberg, 2009). Schema are frameworks for representing knowledge. There is a close link between schematization and automatization. In contrast to the latter, “schematization” refers more to the development and storage of, and ready access to, complicated knowledge structures. Novices must rely on highly taxing utilization of attentional and working memory resources to solve problems. This can lead to errors and is time-consuming. Experts, in contrast, may more quickly and accurately retrieve schema that are appropriate for a given situation. Sternberg (2009, p. 465) points out several differences in schema development. Compared to experts, novices have “impoverished schemas” representing less detailed knowledge, have poorly organized schemas, require more time to search for and activate an appropriate schema (if it even exists), possess schemas with relatively little procedural knowledge (i.e., may know “what,” but not know “how”), and are more likely to focus on irrelevant or superficial aspects of a situation in searching for or activating schemas. The point is that knowledge representation can be developed and organized in such a way that experts can quickly and accurately activate appropriate schemas as well as behavioral strategies for solving a problem or reaching a decision.

The importance of intuition in decision making is not limited to the military. Cuellar (2008) surveyed managers in a large aerospace corporation. They were queried about their use of intuition in reaching decisions. Findings showed that the managers felt that intuition was an important and common tool that served to augment the quality of decisions made. Most respondents believed the use of intuition provided an edge in their competitive free-market domain. Tussey (2007), employing a quasi-experimental design, studied law-enforcement trainees in order to identify the role of intuition in solving law-enforcement-relevant problems. In conditions where emotional arousal was experimentally enhanced, respondents felt intuitive processes were more important, in contrast to low-emotional-arousal conditions. The participants also indicated, in response to an associated survey, that intuition was an important cognitive skill in the law-enforcement domain.

It is clear from this review that intuition can be studied empirically and that explicit strategies for training it may be devised. Seligman and Kahana (2009) suggest that intuition is a form of recognition memory that can be built through the “brute force” of multiple iterative experiences as well as through verbal teaching protocols. This may occur naturally through trial and error. But for some skills, such as surgery or leading soldiers in combat, the costs associated with the inevitable mistakes that accompany trial and error are tallied in lives lost. Seligman and Kahana suggest that realistic virtual simulations may allow “bloodless learning” of intuition in such cases: “A sufficient number of simulations with enough variations to allow a buildup of the mental model will result in a commander or surgeon who has ‘seen it before’ virtually and will take life-saving action at zero prior costs in blood when confronted with the situation in real life.” They go on to suggest that speed of acquisition of intuition skills in such virtual simulations could also be used as a selection criterion in picking persons to lead or perform in dangerous, mission-critical positions.

Kahneman and Klein (2009), in a very interesting and important paper, compared and contrasted naturalistic decision-making with the “heuristics and biases” (e.g., Kahneman & Frederick, 2002; Tversky & Kahneman, 1974) perspective. At first glance, the two perspectives appear contradictory. Naturalistic decision-making looks at the performance of domain experts and focuses on instances where rapid, intuitive decision-making is accurate. The heuristics and biases approach, in contrast,

looks mostly at decision making in controlled, experimental laboratories and focuses on conditions that promote failure of intuition and the advantage of objective computational models for arriving at decisions. This is a vitally important distinction for military psychologists studying decision making in high-risk contexts. Completely different training implications stem from whether one believes that intuition may be accurate and trainable (naturalistic decision-making approach) or that intuition is fundamentally flawed and perhaps resistant to training (heuristics and biases approach)

In their comparison of these two approaches, Kahneman and Klein (2009) ultimately conclude that both perspectives may be correct. They agree that intuitive judgment represents a “genuine skill” but, depending on the circumstance, may be impeded by faulty heuristics and biases. “High validity” environments, such as firefighting and tactical military situations, are more prone to support accurate intuition because it is possible to develop an extensive set of mental representations over time (through experience and training) that can be matched to a given situation. Expert firefighters or combat leaders may not be able to articulate why they chose a given course of action, but were able to do so because of the “library” of scripts they possess from years of experience. Other situations, described as “low validity,” are characterized as so complex that no reliable and valid set of mental representations may be effectively built. For instance, predicting the value of individual stocks is best left to formal statistical models. While the professional stockbroker certainly will have “hunches” about the future value of a given stock, these are seldom better over time than statistical models.

Kahneman and Klein (2009) agree with Seligman and Kahana (2009) that extensive exposure to relevant cues and systematically replicated experience is necessary for the formation of reliable intuitive judgment. They point out that Chase and Simon (1973), in their study of expert chess players, found that chess masters commonly build up to 10,000 hours of experience in order to attain their level of skill. What about a platoon leader? It would take over two years of full-time practice (at eight hours per work day) to build that many hours of experience. Kahneman and Klein observe, however, “Fortunately, most of the skills can be acquired with less practice . . . the experienced fireground commander has experienced numerous fires and probably imagined many more, during years of thinking and conversing about firefighting.” Based on the

conclusions of both Kahneman and Klein (2009) and Seligman and Kahana (2009), an approach including extensive live and virtual mission practice combined with verbal training protocols should allow the development of effective protocols to rapidly train intuition skills in military personnel.

Perhaps the most exciting contemporary research into intuition involves identifying its neurological substrate. Kuo and colleagues (2009), for example, conducted functional magnetic resonance imaging (fMRI) scans of the brains of participants engaged in tasks associated with controlled (intentional/conscious) processing and tasks associated with fast and emotional (intuitive) processing. Their results indicate that tasks requiring controlled processing were associated with relatively higher activity in the middle frontal gyrus, the inferior parietal lobule, and the precuneus. Activity was higher in the insula and the anterior cingulate cortex for intuitive tasks. Another recent study (Frank, O'Reilly, & Curran, 2006) examined the role of the hippocampus in mediating controlled processing. Temporary deactivation of the hippocampus through administration of a benzodiazepine resulted in "profound explicit memory deficits" but at the same time enhanced participants' performance in implicit tasks. The authors suggested that "disengaging" the hippocampus, then, may facilitate implicit learning. While it is beyond the scope of this chapter to offer a full review of the neurobiological substrate of cognition, work of this sort illustrates what one of the pioneers of cognitive psychology, Herbert Simon, emphasized when he maintained that cognitive processes including intuition are based on known or knowable architectures, and need not be viewed as mystical or somehow independent of biopsychological laws (Frantz, 2003).

In summary, intuition and related processes are viewed by experts who operate in challenging and sometimes dangerous environments as an important component of decision making, especially in high-stakes settings where time is limited. It is also clear that these phenomena need to be better understood so that effective strategies for training intuition in novices can be developed.

Non-Cognitive Factors

There is growing recognition that a robust account of soldier performance requires that cognitive factors be viewed in the context of non-cognitive factors such as affect or personality (Böhm & Brun, 2008). This may be particularly true in the military, where decisions are often made under extremely

challenging conditions, including sleep deprivation, high physical workload, stress, circadian disruption, and fear of death or severe bodily harm (Kornguth, Steinberg, & Matthews, 2010). These situations result in both acute and chronic physiological effects of stress for both the individual soldier and for their leaders (Ness, Jablonski-Kaye, Obigt, & Lam, 2011). In addition, certain personality traits may predispose soldiers toward poor adaptation and decision making (Maugen, Suvak, & Litz, 2006), or predict high levels of adaptation, performance, and decision making (Matthews, 2008). Finally, an emerging area of research focuses on characteristics of those who lead others in dangerous contexts and through their actions modulate the adaptation and decision making of subordinates (Kolditz, 2007).

A good illustration of the importance of non-cognitive factors in soldier performance was reported by my colleagues and I (Duckworth, Peterson, Matthews, & Kelly, 2007). We introduced a measure known as "Grit." This scale was designed to assess the tendency for people to identify and relentlessly pursue long-term goals. In one study, Grit was administered to all 1,200 members of the 2008 incoming class at the U.S. Military Academy (West Point). The scale was administered the day after the Class of 2008 arrived for their first day of training at West Point, before substantial socialization could have occurred. This cohort of cadets was then followed through cadet basic training (CBT), a six-week-long exposure to military customs, discipline, and physical training. Cadets find this experience to be extremely challenging, and historically five to ten percent of new cadets drop out before completing the training. The relationship between grit and a host of aptitude, leadership, and physical fitness indexes and the completion of CBT revealed that grit was both a significant and substantial predictor of successful completion of the training. Indeed, cadets who were one standard deviation or more higher than average in grit were more than 60 percent likelier to complete the rigorous summer training. Grit also contributed to the prediction of academic and military performance in the academic year following basic cadet training.

The importance of this study is more evident when one considers the population and context looked at in the Duckworth and colleagues (2007) study. West Point is a highly selective institution of higher education, as evidenced by being ranked as the top college in the United States in 2009 by *Forbes* magazine (Alberts, 2009). The average SAT verbal plus quantitative score of the Class of 2008

was in excess of 1250; many graduated first or second in their high school class; all demonstrated leadership in sports or club activities; and all had passed a rigorous physical fitness test before being admitted to West Point. Moreover, once they arrived, they were exposed to the physically, cognitively, and emotionally challenging environment of West Point CBT. This training involves rising at an early hour each day, learning military customs and courtesies, practicing at drill, exposure to soldier skills including basic rifle marksmanship and first aid, continuous and challenging physical activities, and a field-training segment characterized by heavy physical workload and sleep restriction. Cadets are isolated, for many for the first time in their lives, from friends and family. Basic cadet training is both a socialization into military culture and a significantly challenging ordeal. Two things about the role of cadet grit were remarkable. First, the Grit scale significantly predicted completion of training, whereas the whole-candidate score (a weighted composite measure based largely on academic indicators such as high school grade point average and SAT scores) did not predict completion at all. Second, grit was not correlated to academic measures such as SAT scores ($r = -.05$) or high school class rank ($r = -.04$). Thus, grit and its underlying construct seem to be orthogonal to cognitive factors as reflected in traditional academic indicators.

In short, cognitive measures simply did not predict performance in this challenging military training experience. Instead, only the non-cognitive measure of grit was successful in predicting who would complete or fail in this training. This lends credence to the notion that a full understanding of soldier performance in training and presumably operational settings must include appropriate measures of non-cognitive components.

Military doctrine (U.S. Department of the Army, 2006) has long emphasized the importance of personal character strengths and values in successful adaptation and performance. Despite being valued, relatively little psychological theory or empirical evidence exists to reinforce this doctrine. Recently, however, a new paradigm has emerged that provides a systematic conceptual basis as well as the groundwork for an empirical assessment of the role of character strengths in military adaptation and performance. This paradigm is referred to as “positive psychology” (Seligman & Csikszentmihalyi, 2000). Positive psychology focuses on positive states, positive traits, and positive institutions. I (Matthews 2008) have argued that the military is

a “natural home” for positive psychology. The military consists of relatively young and pathology-free individuals, and the institution itself is positive in the sense of devoting significant resources toward the morale and welfare of its members.

A significant part of positive psychology involves the scientific analysis of human character strengths. Peterson and Seligman (2004) describe the origin and development of a classification of such strengths. Based on a systematic review of psychological literature, as well as past and present religions and philosophies, Peterson and Seligman propose a classification scheme of 24 character strengths and virtues they assert are universally valued in human beings. The strengths are grouped into six core moral virtues (Peterson & Seligman, 2004, pp. 29–30). The six moral virtues and their subordinate character strengths are *wisdom and knowledge* (creativity, curiosity, open-mindedness, love of learning, and perspective); *courage* (bravery, persistence, integrity, and vitality); *humanity* (love, kindness, and social intelligence); *justice* (citizenship, fairness, and leadership); *temperance* (forgiveness and mercy, humility, prudence, and self-regulation); and *transcendence* (appreciation of beauty and excellence, gratitude, hope, humor, and spirituality). Moreover, Peterson and Seligman also describe the development and psychometric characteristics of a measure of the 24 character strengths, the Values-in-Action Inventory of Strengths (VIA-IS).

In the past five years, a series of studies has been conducted to look at how character strengths as assessed by the VIA-IS are related to soldier performance. My colleagues and I (Matthews et al., 2006) compared the VIA-IS-assessed character strengths of a sample of West Point cadets with two comparison groups: a sample of U.S. citizens aged 18–21 with some college completed, and Royal Norwegian Naval Academy cadets. West Point cadets, who represent a very select subsample of American college-aged people in terms of aptitude and character, scored significantly higher than the American comparison sample on 12 of the 24 strengths. This was especially evident for character strengths that military doctrine holds to be vital to soldier adaptation and performance, such as teamwork, honesty, persistence, and bravery. Because of cultural differences, a comparison of mean differences between the American and Norwegian samples was problematic. However, rank-ordered correlation coefficients yielded an interesting finding. West Point cadets were far more similar to their Norwegian counterparts ($r = 0.82$) than they were to the American

comparison group ($r = 0.61$). This suggested that military culture overshadowed nationality in influencing what character strengths most represented the samples.

But what is the relationship between these character strengths and soldier performance? Employing a research design similar to that of Duckworth and colleagues (2007), Peterson, Kelly, and I (Matthews, Peterson, & Kelly 2006) had all incoming members of the West Point Class of 2009 rate themselves, on a five-point scale, on each of the 24 character strengths. These cadets were followed through CBT and into the following academic year. At the end of CBT, 1,235 cadets remained at West Point, and 73 had resigned or otherwise left. Comparing the mean self-ratings for each of the 24 strengths, we saw that cadets who successfully completed CBT and were thus retained at West Point rated themselves significantly higher than those who left on nine strengths: bravery, zest, fairness, honesty, persistence (a trait related to and highly correlated with grit), optimism, leadership, self-control, and teamwork. A factor analysis was then performed on the 24 strengths, and five factors emerged. Collectively, these five factors were a significant predictor of retention. Factor 1, comprising the strengths of leadership, teamwork, and bravery, contributed most robustly to this prediction. Two things are worth noting that add to the importance of these findings. First, as with Duckworth and colleagues (2007), the ratings were obtained on the day following the arrival of the cadets at West Point; thus socialization to the institution or the military was minimal. Second, these nine traits are among those that military doctrine underscores as vital to soldier performance. For instance, Army doctrine explicitly identifies seven “Army values” (U.S. Department of the Army, 2006). These are loyalty, duty, respect, selfless service, honor, integrity, and personal courage. The overlap between these Army values and the nine character strengths related to successful completion of West Point CBT is evident.

My colleagues and I (Kelly, Matthews, Peterson, & Park, 2009) extended our earlier study (Matthews et al., 2006) by obtaining full VIA-IS measures of the 24 character strengths on the West Point Class of 2011. All incoming cadets ($N = 1298$) were given the VIA-IS one day after arriving for CBT. After they completed CBT and their first full semester at West Point, military performance scores (MPS) were obtained for all remaining cadets. These scores reflect each cadet’s military performance, such as wearing the uniform, knowing and using appropriate military

customs and courtesies, and so forth. They are based on a four-point scale, similar to that of traditional academic grade-point averages. The focus of this study was on the relationship between the 24 character strengths and MPS scores. A regression equation including the 24 strengths plus whole-candidate score (defined earlier in this chapter) was used to predict first-term MPS. The results indicated that the whole-candidate score predicted MPS, but the addition of the character strengths of self-regulation, humility, social intelligence, and kindness yielded a significant increment in predictive power over whole-candidate score alone. This underscores once again the role of non-cognitive factors in predicting military-relevant outcome criteria.

What is the impact of an intense military training experience, like CBT, that involves both physically and mentally challenging tasks as well as a culture shift from civilian life to a military way of life on character strengths? We (Kelly, Matthews, & Peterson, 2008) administered the VIA-IS to all members of the incoming West Point Class of 2011 the day after they arrived for CBT. Approximately three months later, as part of an online survey of CBT experiences, 842 (70%) cadets who had successfully completed CBT and were then enrolled in fall term academic courses completed a short form of the VIA-IS designed to assess change in character strengths. The short form consisted of short definitional descriptions of the 24 character strengths with response options anchored by *decreased a very great degree* to *increased a very great degree*. The strengths assessed at entry were compared to perceived increases or decreases in strengths. The largest increases were reported for the instrumental and relational strengths of teamwork, love of learning, gratitude, kindness, capacity to love, perseverance, bravery, and self-regulation. The smallest increases were found for creativity and curiosity. Interestingly, there were no strengths with perceived decreases in magnitude, perhaps reflecting the upward response bias often seen in surveys. It is impossible to determine from this research design if the CBT experience was causally related to actual increases or decreases in character strengths. Nonetheless, the strengths that cadets perceived had increased do map to important skills necessary in a military life and are congruent with other findings reported by this research group.

I have presented data (Matthews, 2007) that further illustrate the relationship between character strengths and the performance of West Point cadets. I administered the Grit scale, a hardiness inventory

(Bartone, 1995), and three scales of the VIA-IS (persistence, capacity to love, and optimism) to all incoming members of the Class of 2009. Then, for each of the five scales, I identified the top 100 cadets (“eagles”), the middle 100 cadets (“mid-packers”), the bottom 100 cadets (“turkeys”), and also those who had left West Point (“goners”). Next, I gathered the following scores for all groups: academic grade-point average, military performance score, and physical performance score. All three scores are based on a four-point system, similar to GPA at most institutions of higher education. For all three dependent measures, eagles scored significantly higher than goners, except for capacity to love. And in general across the three dependent measures, mean scores decreased from eagles, to mid-packers, to turkeys, to goners. This reinforces the notion that important military educational and training outcomes are related to personality constructs.

A number of field studies have been completed that link character strengths to a variety of aspects of soldier adaptation and performance. Eid and I (2005) administered the Grit survey to 92 Royal Norwegian Naval Academy cadets four weeks prior to their embarking on a ten-week mission aboard the *Satsraad Lehmkuhl*, a three-masted barque (tall ship). The mission involved a lengthy separation from family and friends, required the cadets to engage in physically challenging tasks, and required 24-hour operations in maintaining course and speed. At the conclusion of the mission, the following self and peer ratings of six dimensions of adaptability and performance were collected: resiliency, sociability, productivity, flexibility, creativity, influenceability, and responsibility. Grit showed high reliability (0.78), and the Norwegian cadets showed relatively high grit scores. In this context, grit was significantly correlated with self-ratings of influenceability and responsibility, although it did not predict any peer ratings.

Eid, Johnsen, and I (Eid, Matthews, & Johnsen, 2004) also studied the relationship between the 24 character strengths as assessed by the VIA-IS and shipboard adaptation and performance. Similar to our later study (Eid & Matthews, 2005), the VIA-IS was administered to Royal Norwegian Naval Academy cadets prior to setting sail on a mission similar to that described above. Rolling the individual strength scores up into their corresponding moral virtues (i.e., wisdom and knowledge, courage, humanity, justice, temperance, and transcendence), it was found that the moral virtues collectively were marginal ($p < 0.15$) predictors of self-ratings of

productivity, self-confidence, and influenceability; as well as of peer ratings of influenceability.

In a particularly interesting study, Park (2005) performed a content analysis on the narratives accompanying Congressional Medal of Honor citations for 123 recipients of America’s highest military award. The analysis looked for the 24 character strengths defined by Peterson and Seligman (2004). Recipients included members of all military services, a wide range of ages and ranks, and from several different wars. Since bravery is the defining characteristic for awarding the Medal of Honor, it was not surprising that 100 percent of the citations included references to it. In order, the next-most-cited character strengths were self-regulation (80% of citations), persistence (67%), leadership (49%), teamwork (39%), and creativity (18%). In the face of deadly enemy fire, the ability to self-regulate emotions such as fear is crucial to successful performance. Persistence, a VIA-IS character strength that is similar to Duckworth et al.’s (2007) concept of grit, seems especially pertinent to situations where “gutting it out” are critical. Leadership and teamwork are inherent in most military operations. It was interesting to note a unifying theme across the citations was the role of humility and selfless service. Collectively, Medal of Honor recipients seemed to be almost universally focused on the welfare of others at the expense of their own safety and well-being.

Character strengths may be especially important in understanding how soldiers adapt to particularly challenging situations. Eid and colleagues (2008) looked at the relationship between the 24 character strengths as measured by the VIA-IS and the adaptation and performance of 56 Norwegian Naval Academy cadets during a prisoner of war (POW) exercise. In addition, they also assessed dissociative state using the Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., 1998). The CADSS was given under a low-stress condition (in a classroom setting prior to the exercise), and moderate stress setting (during pre-exercise training), and in a high-stress condition (during the POW exercise itself). The data showed the CADSS to be sensitive to the three levels of stress, with increasingly higher CADSS scores associated with the low-, medium-, and high-stress conditions.

Eid and colleagues (2008) then used character strengths, assessed in a low-stress classroom environment prior to the exercise, to predict dissociation as measured by CADSS in each of the three stress conditions. For the low-stress condition, the character strengths of appreciation of beauty

($r = 0.28$) and hope and optimism ($r = 0.25$) were statistically significant predictors of dissociation. It is interesting to note the direct relationship with appreciation of beauty, a character strength associated with the moral virtue of transcendence (Peterson & Seligman, 2004). Perhaps those with high transcendence strengths are more prone to dissociation under low-stress conditions. It is also interesting to note that higher hope and optimism were associated with lower levels of dissociation in the low-stress condition. In the medium-stress condition, only the cadets higher in the character strength of industry and perseverance ($r = -0.26$) were found to be lower in dissociation as measured by the CADSS. In the high-stress condition, bravery was inversely associated ($r = -0.34$) with dissociation.

Eid and colleagues (2008) collected two measures of performance during the POW exercise itself. One consisted of ratings of cadet performance collected by the POW interrogation teams who conducted the exercise. The other measure was total interrogation time. For the latter measure, shorter interrogation time reflected less information being divulged by the “prisoner” and thus was a marker of good performance. For total interrogation time, the character strength of bravery ($r = -.34$) was the only statistically significant predictor. Cadets higher in bravery spent less time in interrogation, perhaps because they could hold up to the pressure exerted on them by their interrogators to divulge information beyond that allowed by military policy. No character strengths were statistically linked to overall ratings of performance.

Sweeney and colleagues (2009) studied West Point cadets engaged in a challenging and stressful infantry-based summer training exercise. Similar to Eid and colleagues (2008) they were interested in the relationship between the VIA-IS character strengths of trust, and performance. Unlike other studies, however, Sweeney et al. included an analysis of leader versus follower strengths in their analysis of 286 cadets engaged in the training exercise. They reported that bravery (0.13), capacity to love (0.16), and perspective (0.20) all correlated significantly with the trust that followers had in their leaders. The data suggest that leaders earned their followers’ trust by defusing stress through humor, providing a sense of hope, facilitating good interpersonal relationships, and in general being authentic and honest in their interactions with subordinates.

Two studies exist that have looked at how character strengths as assessed by the VIA-IS contribute to the performance of soldiers deployed in actual

combat conditions. First, Erwin, Brazil, and I (Matthews, Brazil, & Erwin 2009) surveyed 42 Army officers deployed in combat settings. We presented the officers with a short description of each of the 24 character strengths and asked them to indicate on a five-point scale the degree to which each strength was important to them in how they helped their subordinates succeed in combat operations. Note that they were not asked which strength was most characteristic of them, but rather which ones they actually used to achieve leadership goals. The five strengths most often mentioned as relevant to leading soldiers in combat were bravery, teamwork, persistence, social intelligence, and honesty/integrity. Each participant also was asked to write a paragraph describing a critical leadership incident and how they used “inner strengths and traits” to deal with it. A content analysis showed that the following characteristics were most important: social intelligence, sense of duty, motivation/morale, teamwork, and critical thinking. These strengths map closely to those prescribed by Army doctrine as important to leadership (U.S. Department of the Army, 2006).

I later (Matthews 2009) surveyed 121 Army officers who had recently returned from combat tours in Afghanistan or Iraq. Employing an approach similar to the study I conducted with colleagues in the same year (Matthews et al., 2009), in this study I asked the participants to complete two ratings. First, they rated on a five-point scale how important each strength was to them personally in dealing with a critical incident such as the death of a member of their unit. Second, I asked them to reflect on their most recent combat deployment and rate the degree to which each character strength increased or decreased as a result of that experience. These experienced combat officers rated the following strengths as most important to dealing with critical incidents: teamwork, bravery, capacity to love, persistence, honesty/integrity, and judgement.

Reflecting on how their character strengths may have changed as a result of their personal combat experience, the officers rated teamwork, capacity to love, bravery, gratitude, honesty/integrity, persistence, and perspective as having grown the most. This is an especially interesting finding because adverse reactions to combat such as post-traumatic stress disorder (PTSD) and depression garner the majority of both research and public attention. The notion that people who experience life-threatening challenges may *grow* from the experience is known as post-traumatic growth (PTG). Excellent reviews

of PTG based mostly on civilian studies are found in Ong, Bergeman, Bisconti, and Wallace (2006) and Bonanno (2004). There is evidence that combat exposure may, for most veterans, ultimately be viewed as a stimulus for personal growth. Aldwin, Levenson, and Spiro (1994) studied 1,287 combat veterans from World War II, Korea, and Vietnam. This sample of veterans reported more positive effects of combat than negative ones, including an enhanced sense of mastery, self-esteem, and coping skills. It is critical to better understand the mechanisms of PTG among combat soldiers and to explore how PTG may be leveraged to diminish adverse effects such as PTSD and depression.

In 2008 (Matthews, 2008) I reviewed other non-cognitive components of soldier adaptation and stress, including hardiness and mortality salience. Hardiness represents a sort of resilience characterized by one's ability to respond favorably with relatively few adverse effects on performance or adaptation (e.g., Maddi, 2007). This construct has been explored substantially within military contexts and seems positively related to a variety of positive outcomes among active-duty soldiers (Bartone, 1999); and, more recently, among West Point cadets (Maddi et al., 2010). "Mortality salience" (Matthews, 2008) refers to an enhanced sense of personal mortality that people experience as a result of exposure to dangerous situations. Interestingly, increases in mortality salience are associated with a variety of positive outcomes, including higher self-esteem, esprit de corps, spirituality, and task motivation (Matthews, 2008). Concepts such as hardiness and mortality salience, therefore, add further to our understanding of non-cognitive factors that mediate both performance and adaptation in challenging and dangerous contexts.

Summary of Non-Cognitive Contributors to Military Performance

Cognitive and non-cognitive factors interact to affect decision making, performance, and soldier adaptation. Decision-making strategies acquired in the military schoolhouse or relatively safe field-training conditions may be modulated by the emotions generated in "hot" situations of battle. Moral reasoning or intuition (Haidt, 2001) may be impacted by character and moral virtues. Accessibility to strengths of character or personal memory for "right or wrong" may have tremendous strategic and political implications in military operations (e.g., Abu Ghraib). It may be that the biggest gains to be made in the next decade in military psychology may be unpacking the complex relationships

between cognitive and non-cognitive components of soldier performance and adaptation.

Conclusions and Future Directions

When I first thought of writing this chapter, I intended to focus only on traditional cognitive parameters of soldier decision-making and performance. Situation awareness, intuition, attention, and related processes and constructs have been thoroughly researched; represent critical determinants of decision making and performance; and have important implications for selection, assignment, training, and development of soldiers and their leaders. But military operations are not a game played in a classroom, laboratory, or other "cool" environment. Rather, under the *in extremis* situations described by Kolditz (2007), other factors must inevitably be taken into account in order to begin to offer a full description of soldier adaptation and performance. I leave the reader with the following conclusions:

1. Cognitive and non-cognitive factors interact multiplicatively in ways yet to be fully understood, to influence decision making, task performance, and soldier adaptation in operational settings. This needs to be addressed both conceptually and empirically in future research.
2. This interaction becomes more evident under operational conditions where tangible threats to life and limb exist for oneself or others. Under these "hot" conditions, the cognitive, affective, and moral substrates of behavior may interact in unique ways to determine choices made and actions taken (e.g., Kolditz, 2007; Campbell, Hannah, & Matthews, 2010). Hannah, Campbell, and I (2010) address this deficiency and identify fruitful areas for future research.
3. Innovative training strategies that incorporate the latest developments in cognitive and behavioral science with state-of-the-art virtual simulations must be developed. This approach will be the cornerstone for shortening and steepening the learning curve for tactical decision-making and pave the way for "bloodless learning" of tactical decision-making among military personnel. Additional research is needed to develop valid and cost-effective ways for delivering this vital training.
4. Technology is an amplifier for both training and tactical operations. Systems that augment cognition by providing key information while assuming important parts of the cognitive load will improve the situation awareness of tactical leaders. In order for this to be effective, however,

engineers and cognitive scientists must work together so that the technology facilitates performance, rather than impedes it. Future research in this area must by definition be multidisciplinary and integrative.

5. Though not discussed in this chapter, cultural considerations (see Chapter 9) are of paramount importance in twenty-first-century warfare. As hard experience has taught us, destroying targets with superior kinetic force is easy compared to the skills needed to rebuild nations and form functional coalitions. Effective ways of teaching soldiers and their leaders at the tactical level about cultural nuances will prove to be important components of overall strategic success. There is a host of individual, collective, and organizational issues that require future research in this domain.

Glossary and List of Abbreviations

Military Decision Making Process (MDMP). A series of deliberate steps involved in decision making taught to U.S. Army soldiers. Implies deliberate and controlled processing.

Mission Awareness Rating Scales (MARS). A subject scale for rating SA, useable in situations where more objective measures are inappropriate.

Naturalistic Decision Making (NDM). Decision making that occurs in real-world, natural contexts.

Post-Traumatic Growth (PTG). An enhancement of personal and social values following exposure to a traumatic event.

Post-Traumatic Stress Disorder (PTSD). A psychiatric disorder caused by exposure to a traumatic event characterized by prolonged and excessive anxiety, sleep disruptions, intrusive thoughts and memories, and other maladaptive behaviors and feelings.

Situation Awareness (SA). Ability of an operator to perceive and understand critical aspects of the operational environment and to successfully predict near-future events.

Situation Awareness Global Assessment Tool (SAGAT). A frequently employed method for assessing SA.

Values in Action Inventory of Strengths (VIA-IS). A 240-item questionnaire that assesses 24 universally acknowledged character strengths.

References

Adams, M. J., Tenney, Y. J., & Pew, R. W. (1995). Situation awareness and the cognitive engagement of complex systems. *Human Factors, 37*, 85–104.

- Adler, A. B., Castro, C. A., & Britt, T. W. (Eds.) (2006). *Military life: The psychology of serving in peace and combat: operational stress*. Westport, CT: Praeger Security International.
- Alberts, H. R. (2009, August). America's best college: How West Point beats the Ivy League [Special Report: America's Best Colleges 2009]. *Forbes Magazine*. Retrieved from <http://www.forbes.com/forbes/2009/0824/colleges-09-education-west-point-america-best-college.html>.
- Aldwin, C. M., Levenson, M. R., & Spiro, A., III. (1994). Vulnerability and resilience to combat exposure: Can stress have positive effects? *Psychology and Aging, 9*, 34–44. doi:10.1037/0882-7974.9.1.34
- Anderson, J. R., Budson, R., & Reder, L. M. (2001). A theory of sentence memory as part of a general theory of memory. *Journal of Memory and Language, 45*, 337–367. doi:10.1006/jmla.2000.2770
- Bartone, P. T. (1995, June). *A short hardiness scale*. Paper presented at the Seventh Annual Convention of the American Psychological Society, New York, NY.
- Bartone, P. T. (1999). Hardiness protects against war-related stress in Army reserve forces. *Consulting Psychology Journal, 51*, 72–82. doi:10.1037/1061-4087.51.2.72
- Böhm, G., & Brun, W. (2008). Intuition and affect in risk perception and decision making. *Judgment and Decision Making, 3*, 1–4.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*, 20–28. doi:10.1037/0003-066X.59.1.20
- Bremner, J. D., Krystal, J. H., Putnam, F. W., et al. (1998). Measurement of dissociative stress with the Clinician-Administered Dissociative States Scale (CADSS). *Journal of Traumatic Stress, 11*, 125–136. doi:10.1023/A:1024465317902
- Calderwood, R., Crandall, B., & Klein, G. A. (1987). *Expert and novice fireground command decisions* (KATR-858D-87-02F). Yellow Springs, OH: Klein and Associates.
- Campbell, D. J., Hannah, S. T., & Matthews, M. D. (Eds.). (2010). Leadership for military and other dangerous environments. *Military Psychology, 22*(Suppl. 1), S1–S14.
- Christ, R. E., & Evans, K. L. (2002). *Radio communications and situation awareness in infantry squads during urban operations* (Technical Report No. 1131). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences.
- Cuellar, B. L. (2008). Leadership and intuition in a large-scale aerospace corporation. *Dissertation Abstracts International* (68, 12-A), p. 5128.
- Chase, W. G., & Simon, W. A. (1973). The mind's eye in chess. In W. G. Chase (Ed.), *Visual information processing* (pp. 215–281). New York, NY: Academic Press.
- Davidson, J. E. (2003). Insights about insightful problem solving. In J. E. Davidson & R. J. Sternberg (Eds.), *The psychology of problem solving* (pp. 149–175). New York, NY: Cambridge University Press.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long term goals. *Journal of Personality and Social Psychology, 92*, 1087–1101. doi:10.1037/0022-3514.92.6.1087
- Eid, J., & Matthews, M. D. (2005, August). *Character strengths and virtues and military training*. Paper presented at the 113th Annual Convention of the American Psychological Association, Washington, D.C.

- Eid, J., Matthews, M. D., & Johnsen, B. H. (2004, July). Human strengths and adaptation to a radically changed context. Paper presented at the 112th Annual Convention of the American Psychological Association, Honolulu, Hawaii.
- Eid, J., Matthews, M. D., Johnsen, B. H., Laberg, J. C., & Bartone, P. T. (2008, August). *Character strengths and resilience during a POW exercise*. Paper presented at the 116th Annual Convention of the American Psychological Association, Boston, MA.
- Eid, J., Matthews, M. D., Johnsen, B. H., & Meland, N. (2005). Dispositional optimism and self-assessed situation awareness in a Norwegian military training exercise. *Perceptual and Motor Skills*, *100*, 649–658. doi:10.2466/PMS.100.3.649-658
- Endsley, M. R. (1993). A survey of situation awareness requirements in air-to-air combat fighters. *International Journal of Aviation Psychology*, *3*, 157–168.
- Endsley, M. R. (1995). Toward a theory of situation awareness in dynamic systems. *Human Factors*, *37*, 32–64.
- Endsley, M. R. (1996). Situation awareness measurement in test and evaluation. In T. G. O'Brien & S. G. Charlton (Eds.), *Handbook of human factors testing and evaluation* (pp. 159–180). Mahwah, NJ: Lawrence Erlbaum.
- Endsley, M. R., & Bolstad, C. A. (1994). Individual differences in pilot situation awareness. *International Journal of Aviation Psychology*, *4*, 241–264.
- Endsley, M. R., & Rodgers, M. D. (1994). *Situation awareness information requirements for en route air traffic control* (DOT/FAA/AM/94–27). Washington, D.C.: Federal Aviation Administration, Office of Aviation Medicine.
- Endsley, M. R., Holder, L. D., Leibrecht, B. C., Garland, D. J., Wampler, R. L., & Matthews, M. D. (2000). *Modeling and measuring situation awareness in the infantry operational environment* (Research Report 1753). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Fracker, M. L. (1988). A theory of situation assessment: Implications for measuring situation awareness. *Proceedings of the Human Factors Society 32nd Annual Meeting*, pp. 102–106.
- Frank, M. J., O'Reilly, R. C., & Curran, T. (2006). When memory fails, intuition reigns: Midazolam enhances implicit inference in humans. *Psychological Science*, *17*, 700–707. doi:10.1111/j.1467-9280.2006.01769.x
- Frantz, R. (2003). Herbert Simon: Artificial intelligence as a framework for understanding intuition. *Journal of Economic Psychology*, *24*, 265–277. doi:10.1016/S0167-4870(02)00207-6
- French, T., Matthews, M. D., & Redden, E. (2004). Infantry situation awareness. In S. Banbary & S. Tremblay (Eds.), *A cognitive approach to situation awareness: Theory, measures, and application* (pp. 254–274). Aldershot, UK: Ashgate.
- Garbis, C., & Artman, H. (2004). Team situation awareness as communicative practices. In S. Banbary and S. Tremblay (Eds.), *A cognitive approach to situation awareness: Theory, measures, and application* (pp. 275–298). Aldershot, UK: Ashgate.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, *108*, 814–834. doi:10.1037/0033-295X.108.4.814
- Hannah, S. T., Campbell, D. J., & Matthews, M. D. (2010). Advancing a research agenda for research in dangerous contexts. *Military Psychology*, *22*(Suppl. S1), S157–S189.
- Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attributional substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 49–81). New York: Cambridge University Press.
- Kahneman, D., & Klein, G. A. (2009). Conditions for intuitive expertise. *American Psychologist*, *64*, 515–526. doi:10.1037/a0016755
- Kelly, D. R., Matthews, M. D., & Peterson, C. (2008, Aug.). *Perceived changes in character strengths following cadet basic training*. Paper presented at the 116th Annual Convention of the American Psychological Association, Boston, MA.
- Kelly, D. R., Matthews, M. D., Peterson, C., & Park, N. (2009, Aug.). *Character strengths and military performance at West Point*. Paper presented at the 117th Annual Meeting of the American Psychological Association, Toronto, Canada.
- Klein, G. A., & Crandall, B. (1996). *Recognition primed decision strategies* (ARI Report No. 96–36). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Klein, G. A., Calderwood, R., & Clinton-Cirocco, A. (1986). Rapid decision making on the fire ground. *Proceedings of the Human Factors Society 30th Annual Meeting*, pp. 576–580.
- Kohler, W. (1927). *The mentality of apes*. New York: Harcourt Brace.
- Kolditz, T. A. (2007). *In extremis leadership: Leading as if your life depended on it*. San Francisco, CA: Jossey-Bass.
- Kornguth, S., Steinberg, R., & Matthews, M. D. (Eds.). (2010). *Neurocognitive and physiological factors during high-tempo operations*. Aldershot, UK: Ashgate.
- Kounios, J., & Beeman, M. (2009). The Aha! moment: The cognitive neuroscience of insight. *Current Directions in Psychological Science*, *18*, 210–216. doi:10.1111/j.1467-8721.2009.01638.x
- Kuo, W., Sjostrom, T., Chen, Y., Wang, Y., & Huang, C. (2009). Intuition and deliberation: Two systems for strategizing in the brain. *Science*, *324*, 519–522.
- Maddi, S. R. (2007). Relevance of hardiness assessment and training to the military context. *Military Psychology*, *19*, 61–70.
- Maddi, S. R., Matthews, M. D., Kelly, D. R., Resurreccion, N., & Villarreal, B. (2010, Aug.). *The relationship between hardiness and performance in challenging environments*. Paper presented at the 118th Annual Meeting of the American Psychological Association, San Diego, CA.
- Maggart, L. E., & Hubal, R. (1999). A situation awareness model. In S. E. Graham & M. D. Matthews (Eds.), *Infantry situation awareness: Papers from the 1998 infantry situation awareness workshop* (pp. 19–28). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Maguen, S., Suvak, M., & Litz, B. (2006). Predictors and prevalence of post-traumatic stress disorder among military veterans. In A. B. Adler, C. A. Castro, & T. W. Britt (Eds.) (2006). *Military life: The psychology of serving in peace and combat: operational stress* (pp. 141–169). Westport, CT: Praeger Security International.
- Matthews, M. D. (2007, Aug.). *Where eagles soar: Positive character and success at West Point*. Paper presented at the 115th Annual Convention of the American Psychological Association, San Francisco, CA.
- Matthews, M. D. (2008). Toward a positive military psychology. *Military Psychology*, *20*, 289–298. doi:10.1080/08995600802345246
- Matthews, M. D. (2009). Character strengths used in combat. Unpublished data, U.S. Military Academy, West Point, NY.
- Matthews, M. D., & Beal, S. A. (2002). *Assessing situation awareness in field training exercises* (Research Report No. 1795). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

- Matthews, M. D., & Eid, J. (2003, Aug.). *Assessing situation awareness in a Norwegian naval training exercise*. Paper presented at the 111th Annual Convention of the American Psychological Association, Toronto, Canada.
- Matthews, M. D., Beal, S. A., & Pleban, R. J. (2002). *Situation awareness in a virtual environment: Description of a subjective awareness scale* (Research Report No. 1786). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Matthews, M. D., Strater, L. D., & Endsley, M. R. (2004). Situation awareness requirements analysis for infantry platoon leaders. *Military Psychology, 16*, 149–161. doi:10.1207/s15327876mp1603_1
- Matthews, M. D., Peterson, C., & Kelly (2006, May). *Character strengths predict retention of West Point cadets*. Paper presented at the 18th Annual Convention of the Association for Psychological Science, New York, NY.
- Matthews, M. D., Brazil, D., & Erwin, M. S. (2009, May). Character strengths and responding to leader challenges in combat. Paper presented at the 21st Annual Convention of the Association for Psychological Science, San Francisco, CA.
- Matthews, M. D., Pleban, R. J., Strater, L. D., & Endsley, M. R. (2000). Measures of infantry situation awareness for a virtual MOUT environment. *Proceedings of the Human Performance, Situation Awareness, and Automation Conference* (pp. 262–267). Savannah, GA: SA Technologies.
- Matthews, M. D., Eid, J., Johnsen, B. J., Meland, N. T., & Talcott, C. (2004). Situation awareness: Predicting small-unit leader performance during a combat fatigue course. *Proceedings of the Seventh Defense Analysis Seminar*. Washington, D.C.: Office of the Undersecretary of the Army (Ops Research).
- Matthews, M. D., Martinez, S., Eid, J., Johnsen, B. H., & Boe, O. C. (2005). A comparison of observer and incumbent rating of situation awareness. *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting*, 548–552.
- Matthews, M. D., Eid, J., Kelly, D. R., Bailey, J. K. S., & Peterson, C. (2006). Character strengths and virtues of developing military leaders: An international comparison. *Military Psychology, 18*(Suppl.), S57–S68. doi:10.1207/s15327876mp1803s_5
- McGuinness, B., & Foy, L. (2000). A subjective measure of situation awareness: The crew awareness rating scale. *Human performance, situation awareness and automation: User centered design for the new millennium*. Atlanta, GA: SA Technologies.
- Ness, J., Jablonski-Kaye, D., Obigt, I., & Lam, D. M. (2011). Understanding and managing stress. In P. J. Sweeney, M. D. Matthews, & P. B. Lester (Eds.), *Leadership in dangerous situations: A handbook for the armed forces, emergency services, and first responders* (pp. 40–59). Annapolis, MD: Naval Institute Press.
- Norman, D. A. (1988). *The design of everyday things*. New York: Doubleday.
- Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology, 91*, 730–749. doi:10.1037/0022-3514.91.4.730
- Park, N. (2005, Aug.). *Congressional Medal of Honor recipients: A positive psychology perspective*. Paper presented at the 113th Annual Convention of the American Psychological Association, Washington, D.C.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford.
- Reason, J. (1990). *Human error*. New York: Cambridge University Press.
- Reddon, E. S. (2002). *Virtual environment study of mission-based critical information requirements* (Technical Report No. 2636). Aberdeen, MD: U.S. Army Research Laboratory.
- Ross, K. G., Shafer, J. L., & Klein, G. (2006). Professional judgments and “naturalistic decision making.” In K. A. Ericsson, N. Charness, P. J. Feltovich, & R. R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 403–419). New York: Cambridge University Press.
- Salas, E., & Cannon-Bowers, J. A. (2000). The anatomy of team training. In S. Tobias & J. D. Fletcher (Eds.), *Training and retraining: A handbook for business, industry, government, and the military* (pp. 312–335). New York: Macmillan.
- Salas, E., Prince, C., Baker, D. P., & Shrestha, L. (1995). Situation awareness in team performance: Implications for measurement and training. *Human Factors, 37*, 123–136.
- Scales, R. H. (2009). Clausewitz and World War IV. *Military Psychology, 21*(Suppl. 1), S23–S35. doi:10.1080/08995600802554573
- Schneider, W., & Shiffrin, R. M. (1977). Controlled and automatic human information processing: I. Detection, search, and attention. *Psychological Review, 84*, 1–66. doi:10.1037/0033-295X.84.1.1
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5–14. doi:10.1037/0003-066X.55.1.5
- Seligman, M. E. P., & Kahana, M. (2009). Unpacking intuition: A conjecture. *Perspectives on Psychological Science, 4*, 399–402. doi:10.1111/j.1745-6924.2009.01145.x
- Shattuck, L. G., & Miller, N. L. (2006). Extending naturalistic decision making to complex organizations: A dynamic model of situated cognition. *Organizational Studies, 27*, 989–1009. doi:10.1177/017084060606065706
- Shattuck, L. G., Talcott, C., Matthews, M. D., Clark, J., & Swiergosz, M. (2002). Constructing battlefield understanding: A comparison of experienced and novice decision makers in different contexts. *Proceedings of the Human Factors and Ergonomics Society 46th Annual Meeting*, 443–447.
- Smith, K., & Hancock, P. A. (1995). Situation awareness is adaptive, externally directed consciousness. *Human Factors, 37*, 137–148.
- Sternberg, R. J. (2009). *Cognitive psychology* (5th ed.). New York: Wadsworth.
- Strater, L. D., Endsley, M. R., Pleban, R. J., & Matthews, M. D. (2001). *Measures of platoon leader situation awareness in virtual decision-making exercises* (Research Report 1770). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Sweeney, P. J., Hannah, S. T., Park, N., Peterson, C., Matthews, M. D., & Brazil, D. (2009, June). *Character strengths, adaptation, and trust*. Paper presented at the International Positive Psychology Association meeting, Philadelphia, PA.
- Taylor, R. M. (1990). Situation awareness rating (SART): The development of a tool for aircrew systems design. In *Proceedings of the AGARD AMP Symposium on Situational Awareness in Aerospace Operations* (AGARD-CP-478) (pp. 3/1–3/17). Neuilly Sur Seine, France: NATO-AGARD.
- Taylor, R. M., & Selcon, S. J. (1994). Situation in mind: Theory, application, and measurement of situational awareness.

- In R. D. Gilson, D. J. Garland, & J. M. Koonce (Eds.), *Situational awareness in complex settings* (pp. 69–78). Daytona Beach, FL: Embry-Riddle Aeronautical University Press.
- Tussey, C. M. (2007). The role of intuition in decision making among law enforcement officials. *Dissertation Abstracts International: Section B. Sciences and Engineering*, 68(3-B), p.1957–2076.
- Tversky, A., & Kahneman, D. (1974). Judgment and uncertainty: Heuristics and biases. *Science*, 185, 1124–1131.
- U.S. Department of the Army (2005). *Army planning and orders production*. (FM 5–0). Washington, D.C.: Department of the Army.
- U.S. Department of the Army (2006). *Army leadership: Competent, confident, and agile*. (FM 6-22). Washington, D.C.: Department of the Army.
- Vidulich, M. A., & Hughes, E. R. (1991). Testing a subjective metric of situation awareness. *Proceedings of the Human Factors Society 35th Annual Meeting*, 1307–1311.
- Vidulich, M. A., Bolia, R. S., & Nelson, W. T. (2004). Technology, organization, and collaborative situation awareness in air battle management: Historical and theoretical perspectives. In S. Banbary and S. Tremblay (Eds.), *A cognitive approach to situation awareness: Theory, measures, and application* (pp. 233–253). Aldershot, UK: Ashgate.
- Wickens, C. D. (1984). *Engineering psychology and human performance*. Columbus, OH: Merrill.
- Wickens, C. D. (2008). Situation awareness: Review of Mica Endsley's 1995 articles on situation awareness theory and measurement. *Human Factors*, 50, 397–403.
- Zsombok, C. E., & Klein, G. (Eds.), (1997). *Naturalistic decision making*. Hillsdale, NJ: Lawrence Erlbaum & Associates.

Uzi Ben-Shalom, Yechiel Klar, and Yitzhak Benbenisty

Abstract

This chapter explores characteristics of sense-making in actual combat. We begin by examining the “booting up” and “rebooting” metaphors. These concepts denote a process through which commanders understand that their notion of the fighting requires adaptation. In hectic and often desperate situations, involving intense emotions and confusion, they must realize that their original frame may no longer be valid. We then explore creativity in combat, as signified by constant and free thinking. Successful commanders were focused on both the immediate task and the overall context of a fight. Finally, we look at the detrimental consequences of failing to make sense, namely, lack of participation in combat, freezing, or the repetition of futile and harmful actions.

Keywords: Sense-making, combat behavior, performance under stress, emotions, counterinsurgency

Sense-Making

Sense-making is often described as sifting through large volumes of information and selecting the necessary bits. The process of sense-making involves retrospective thinking and facilitates the adoption of a new course of action. Sense-making may therefore be considered a prerequisite for action. According to a recent definition, it is “a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively” (Klein, Moon, & Hoffman, 2006, p. 70). The concept of sense-making is also used to study how people behave while in action (Weick, 1993). This is a narrower framework, which explores how people understand the gap between their conception of an action, and reality. A process like that encompasses their need to cope with emotions, and especially fear, which characterizes stressful events and may hinder the ability to think and act in an adequate manner (Janis, 1982). Ultimately, sense-making is a prerequisite for action or inaction (if it fails), as failure to act stems from “the astonishment

of the perceiver, and . . . inability to rebuild some sense of what is happening” (Weick, 1993). Stressful situations entail a multitude of psychological factors, and the clear-cut boundary between the realms of emotion and cognition is often blurred. It is reasonable to assume that their effects are interactive. Sense-making is studied in its relation to humans’ striving for meaning. Research have shown that the ability to create a sense of purpose and togetherness is essential for human well-being and coping with stress (Frankel, 1985; Pargament & Sweeney, 2011). Yet, immediate and acute stress focuses sense-making on a narrower framework that is immediately related to the stressful stimuli (Chajut & Algom, 2003). When sense-making fails, it may hinder important aspects of motivation and leave the individual in a state of “limbo,” not only in the cognitive sense but in absence of meaning and thereby of purpose and motivation.

Researchers have explored the decision-making process of fire-team leaders or intelligence officers, especially under stressful conditions or when circumstances necessitate quick decisions (Lipshitz

and Strauss, 1997). Klein and his colleagues (1993) suggest that the process of sense-making in action is triggered by the realization that a situation is no longer developing as expected and that consequently a new course of action must be adopted. This line of research stems from the “naturalistic decision making” framework, which seeks to understand how decisions are actually being made in real-life situations (Klein et al., 1993). Researchers have argued that the emergence of a gap prompts a cognitive process whose primary function is to establish a data frame that best fits the new situation (Sieck et al, 2007). Data frames are small scenarios that describe a situation and predict its probable outcome. Constructed on the basis of personal experience as well as classroom knowledge, these scenarios serve as a framework for interpreting reality and for acting on it (Klein, Moon, & Hoffman, 2006).

Sense-Making in the Military Context

A fundamental quality of warfare is the uncertainty emanating from the friction inherent to the deployment of force, a difficulty exacerbated by the opponents’ free will (Clausewitz, 1832/1976). Minimizing the effects of friction requires psychological preparation and training for soldiers and commanders. Training fosters common understanding, thereby contributing significantly to their ability to adapt to a combat environment (Driskell, Salas, & Johnston, 2006). Researchers have been using sense-making in the study of preparation for combat or following military missions rather than immediate actual combat. For example, sense-making served as theoretical guideline to the study of long-term processes of finding meaning during protracted military missions or upon returning from military missions that included traumatic events (Bartone, 2005, 2006).

Leedom (2004, p. 1) defined sense-making in the military context as “the multidimensional process of developing operational understandings within a complex and evolving battle space.” He divided this framework into four distinct dimensions: cognitive, operational, social, and organizational. The study of sense-making in combat should be understood within the context of military preparation for a fight and the way a certain fight develops. This fact inevitably calls for better understanding of non-cognitive dimensions of sense-making as resiliency and thereby functioning in combat (Scales, 2008; Matthews, 2008). It is the cognitive dimension in which “sense-making” is most often utilized in the military context, especially in the

decision-making process (Garstka & Alberts, 2004) and in advanced network-centric warfare (Brikner & Lipshitz, 2004). Scholars have also been examining the sense-making process employed by operators of advanced weapon systems and information systems (Singer, 2009) and higher headquarters (Klein et al., 2000). In one way or another, these issues focus mainly on the cognitive dimension of sense-making as performed by commanders. The Revolution in Military Affairs (RMA) serves as the context for a number of these studies, focusing scholarly attention on the technological dimensions of future warfare (Alberts, Garstka, & Stein, 1999). Other works examining sense-making in the military have explored how military personnel think about, and attach meaning to, their surroundings in everyday situations (Bartone et al, 2007). By and large, these studies implement the sense-making paradigm in training, force buildup, or post-deployment rather than in real-time operations and actual combat.

Sense-Making in Combat

In actual combat, sense-making is related to behaviors, emotions, and decisions relevant to the experience of fighting, such as: the decision to open fire, the forming of situation estimations, or the decision to take a risk. Thus, sense-making in combat is influenced by the smells, sights, and sounds aroused by the proximity to danger and the physical characteristics of the combat environment. The heat of battle evokes emotional, physical, and cognitive human responses, in contrast to the organized and detached qualities aroused by the high-tech digital human-machine interface. In the former, sense-making and creativity are likely to be disrupted because of the myriad contextual events and the failure to draw the necessary conclusions due to stress (Weick, 1993).

The very nature of warfare dictates that every combat situation is unique and susceptible to the influence of unpredictable factors. For example, there are unknown enemy plans, the timing of a skirmish, and the intensity, type, and direction of fire. All these are but common examples of being “one bullet away” from being hit (Fick, 2005). Hence, every combat situation inevitably requires of its participants a degree of adaptation and therefore involves the significant psychological dimension of the fear of death and mutilation. Historically, these psychological experiences were often labeled as *surprise*, *combat response* or “*shock*”; consequently, the psychological phenomenon was studied from

a negative point of view. A prime non-cognitive dimension of combat is the fear response (Dollard, 1943; Shalit, 1989) and the consequent need for certain human qualities such as a leader's character strength and his followers' trust (Sweeney, Thompson, & Blanton, 2009). Human behavior in combat is usually studied in relation to negative consequences and decrease in performance. Indeed, early military psychologists were interested in negative phenomena related to combat experience such as mental breakdown and other non-effective behaviors (Kellett, 1982). But when both positive and negative aspects of combat are studied, a stable pattern emerges. For example, Egbert and his colleagues (1957) have studied effective and ineffective combat soldiers in Korea. They found that effective fighters were characterized by their ability to give leadership, take aggressive action, exhibit a high degree of personal responsibility, and above all remain cool under fire. The ineffective fighters, on the other hand, exhibited behaviors such as withdrawal and nervousness. Under fire, the poor fighter becomes jumpy, remains passive, and imagines things. This pattern of results resembles that of other studies in different military contexts (Kawano, 1996; Dover, 2002). They point to the fact that war calls for specific human characteristics, such as determination or resilience. These non-cognitive dimensions have an impact on the sense-making process.

Both positive and negative aspects of behavior in combat are difficult to predict, partially due to the inherent uncertainty of war (Ben-Shalom, Weinstein, & Keren, 2008). In order to mitigate the negative psychological effects of stress in combat, military organizations devote considerable resources to preparing their soldiers for action (Driskell & Salas, 1991). Great efforts are made today as well as historically to foster common understanding and establish discipline through education and training (Keegan, 1976). Sense-making is often used in this vital process and in accordance with fundamental military procedures. For example, Garstka and Alberts (2004) applied sense-making to network-centric warfare through elements such as "awareness," "understanding," and "decision-making." These are strongly related to warfighting doctrine and similar to the component elements of situation estimation. However, this depiction of sense-making is cognitive in its emphasis and therefore does not encompass the full spectrum of qualities that characterize the experience of combat, such as surprise, confusion, and bewilderment; nor related emotions such as fear, joy, or numbness.

Training affords commanders the option of choosing between alternative operational procedures or drills. However, each instance of combat is unique as it is composed of a specific combination of elements. The commander is therefore required, not only to perform rehearsed prescriptions, but also to comprehend and evaluate developments and devise new solutions, all while under extreme circumstances. In this context, then, "sense-making" denotes an active effort to make sense during combat in addition to performing battle drills and executing pre-battle plans. Our contention is that this cognitive process is not restricted to seeking information, analyzing it, and deciding on a suitable course of action. The cognitive process is part of a more complex experience involving intense emotions (often fear but also joy), a physical dimension (fatigue, stress, and even empowerment) and a spiritual dimension (fear of annihilation and despair but also a sense of purpose and revelation). Thus, our aim in this chapter is to describe sense-making in actual combat situations, and by doing so to contribute to the use of the sense-making framework in military operations. The use of typical combat scenarios ensures its significance to current and near-future war scenarios in which Western militaries are currently involved.

The Current Study

This chapter is based on empirical evidence gathered among units of Israeli Defense Forces (IDF) during the years from 2000 to 2009. During this decade, fighting was usually executed by small tactical units, often in urban terrain (Ben-Shalom, Lehrer, & Ben-Ari, 2005). The typical land fighting during the major operations was conducted by units up to the battalion level, despite massive mobilization and a heavy reliance on artillery and aerial fire support (Shelah & Limor, 2007). The opponents of the IDF often used guerrilla warfare, emphasizing surprise attacks in order to compensate for their military weakness. Therefore much of the data collected concerned incidents such as night attacks on army camps, search and arrest missions, and patrols, as well as defense against infiltration, suicide attacks, and ambushes, often sprung in conjunction with improvised explosive devices (IEDs).

We used a "bottom up" approach in which we tried to study sense-making processes from interviews and analysis of debriefings. We incorporated results from selected other research to facilitate better understanding and examples to present our contentions. We used qualitative analysis of 50 interviews

with combatants who took active part in combat. Interviewees included noncommissioned officers (NCOs) and officers, regulars, and reservists describing first-hand combat situations. They did not relate experiences involving mundane decision making such as staff work or the conduct of situation estimations with subordinates. Our focus is therefore on combat situations at the squad and platoon level, typical to counterinsurgency operations. Characteristically, combat took the form of squad- or platoon-level skirmishes, raids, or patrols in urban and populated areas, using infantry tactics and employing small arms.

Booting Up

There are several critical moments in a combat. The first one is the sheer realization that one is in a fight, which requires a psychological *booting up* process. The realization that the battle has really begun is actually the first element of the sense-making process. No matter how expected was this entry into battle, or how physically and mentally one feels prepared for it, the realization of the battle is almost always a shocking moment, and therefore requires some adaptation. S. L. A. Marshall vividly described the moment of his entry into the battlefield: “The unit enters upon a battlefield and moves across ground within range of the enemy’s small arms weapons. The enemy fires. The transition of that moment is wholly abnormal” (Marshall, 1947, p. 47). The “booting-up” process that follows this moment involves a quick and sometimes improvised rehearsal of battle plans and procedures and some contingency plans. Our analysis reveals that the efficacy of this initial booting-up process is strongly influenced by the degree to which available battle plans, procedures, and contingency plans can be enacted in the evolving situation. Put simply, if plans or battle procedures are actualized as anticipated, then thinking—and consequently emotions and behaviors—is reasonably predictable; the required adaptation is lesser and shorter. If, on the other hand, one needs to react to enemy plans or to some unexpected deviation from the anticipated reality rather than execute prepared plans, there is a greater likelihood that the combatant will experience a booting failure. A gap is created between the combatant’s initial conceptions and the evolving reality: at this point, astonishment and need to rebuild some coherent sense of what is happening arises (Weick, 1993).

However meticulous and careful pre-battle plans may be, combat will probably develop differently

than expected. Therefore, combatants are often forced to reevaluate situations, since events develop differently than anticipated. Using a computer metaphor again, the combatant is forced to “reboot” by making new sense of the situation. But if this process fails or results in the construction of a frame that hinders the detection of significant clues, the combatant is left without a suitable understanding of the action he or she must adopt. For example, when we interviewed an infantry company commander about storming into a settlement infiltrated by terrorists, he said:

... I have three minutes driving in the vehicle during which I try to understand what is happening before I arrive at the fight. On the radio I talk with [the] scout who was there in the morning and he says that there was shooting there, near the palm tree, but the war room reports terrorists inside “Eley Sinay” [settlement] and not where he is saying. What’s running through my mind is that there are terrorists inside “Eley Sinay” and not where he said, and the incident two years ago when they entered this place and killed three civilians. . . . I then receive a battle report that there is one dead civilian and that our forces are in contact. . . . The only thought in your head is that you must end this and kill this terrorist. It is your responsibility, you don’t want to have casualties in your unit. At this moment I see the terrorist clearly. . . . I work according to the drill and assault to close in on the terrorist. The driver stays in the car . . . and my radio operator is running after me. I’m focusing on the terrorist and don’t understand that there fire directed into me. During all this the radio operator shouts “you’re under fire,” and then I see that the bullets near me are not from the terrorist but rather the other force and then, in a split second, I understand that I’m entering a fratricide, that the other force is firing and that we’re running directly into their fire. I then decided to go back to the Jeep, and advance from another direction, so as not to die from our fire. I arrive and both forces are throwing hand grenades. I’m calling the other force to stop and assault the terrorist and end this. . . .

This example demonstrates two processes of sense-making: Setting a frame (booting up) and changing a frame (rebooting). The first occurred immediately upon receipt of the initial notification. Using the computer metaphor, the actor was booting up using two iterations. He “loaded” a general and well-drilled scheme for dealing with such a situation, based on past experience. This scenario was then refined in accordance with reports streaming

in from the actual scene. The ability to make sense in a combat situation should not be taken for granted, as intense and horrific moments do not encourage deep, complex, or sophisticated thinking. Indeed, in one of our studies, we found that the ability to think during combat made the clearest distinction between good and excellent soldiers. More specifically, during the 2006 Lebanon War, we analyzed detailed evaluations of 405 combat soldiers taken from 33 combat arms platoon commanders just after the war ended. The analysis yielded several types of soldier prototypes: “excellent,” “good,” “medium,” and “poor.” Analysis of the behavioral descriptions provided by the platoon leaders of their soldiers revealed that excellent soldiers were as hardy and technically proficient as good soldiers but surpassed them in terms of their ability to understand the combat situation and their tendency to assume responsibility, which allowed them to adapt to circumstances (Ben-Shalom, Weinstein, & Keren, 2008). But excellent combatants were also able to enhance the performance of fellow soldiers by supporting and encouraging them. Personal motivation and emotional stability were related to a positive view of military undertakings (Ben-Shalom & Benbenisty, 2011).

Having adopted a frame that determined his goals and course of action, the company commander we have just quoted began to execute his plans. During this short span of time, seconds or moments, the frame partially blinded him to contradictory information. Through the initial frame he had viewed the battle as short and coordinated, and estimated the probability of taking enemy fire as a certainty. It took great effort from his radio operator to make him aware of data contradicting this frame. Only then did the “reboot” procedure begin and the process of sense-making began with a textbook frame, accepting the reality of “friendly fire.” The principal ideas governing a commander’s actions are his responsibility for the mission and his subordinates, and fear of inflicting further damage on non-combatants. The commander’s concern was to fulfill his mission. He was operating according to battle drills, which serve as a background for his decisions. It was the radio operator seated behind him in the armored vehicle who exhibited independent thinking. It was he who identified the new evidence and freed the commander from the frame that governed his perception of the scene.

At this point, we would like to elaborate on the nature of the mental process actors undergo in combat. It is complicated and often desperate.

Indeed, sense-making in combat is far from being clear-cut and is not performed with clinical detachment. The actors, actively participating in combat, must swiftly reevaluate the situation in order to close the gap between reality, their experience, and battle drills. Commanders must also convey their perception to their subordinates.

The process of sense-making, a consequence of the initial adaptation to the combat reality, is conveyed in the following short description: “When the first round is shot at you, you duck and everyone falls to the ground. But then you start thinking and understand that not every bullet will hit you. . . .” (Reserve battalion commander, 2009). In this short but meaningful sentence, the actor relates to the onset of thinking, or the process of understanding the nature of events in an unfamiliar and frightening tactical situation. In another case, a participant of operations told us:

We are advancing in the alley and after the sixth leap forward from nowhere came a kind of “poof.” I don’t mean that we didn’t hear firing until then. There was [some] experience[d] but not so close. And then I looked back because I didn’t know from where this fire was coming from. And this is inside an alley and there are echoes from all directions. And I see this big guy, like a falling tree, starts falling in my direction. He falls, unlike falling and blocking, but simply falls. In short, I sensed that something hit him but I didn’t understand [from] where. I looked down and saw a hole in the leg, now thousand[s] of things rushed through my mind in a second. I mean if I look forward that means he was shot from behind, but how could that be? My force is there and the hole in the leg comes from the front. I look to the right, perhaps he got it from the side. But the hole is in the front, so if it comes from there how did it get in here? But if it was shot from the front how didn’t it get me first? He was right behind me. He was very big so his hips are in the center of my body. I understood that he was shot from the front or above. . . . I shout on the net, “*Kodkod to mishne pazua*” (“CO [commanding officer] to XO [executive officer], we have a wounded man”). They understood that I was hit and a mess started on the net. It is a firefight and nobody really understands what is going on in a fight. I shout “evacuation procedure!” point to the front of the alley and shoot three rounds in that direction. They continue and I look at him and understand that I will not be able to carry him with the combat gear. I grab his body armor at the shoulders and drag him back (interview with platoon commander, 2004).

In this case, the commander was attempting to deal with the immediate problem of identifying the source of incoming fire while concomitantly changing his mission from advance of force to evacuation of wounded. He was operating according to a mixture of battle procedure and new impressions that were all being combined during his attempt to make sense of the situation. This task was performed in the confusing setting of dense urban terrain in which the platoon commander was advancing and cut off from the rest of the force and his direct commander. The proximity of the buildings prevented clear lines of sight and lines of communication, and the echo disrupted orientation. Common sense was directing him towards a proper understanding of events. His actions were also partially supported by pre-battle procedures.

This thinking process is different from the simple understanding that one is now in an actual combat situation and exposed to its perils. This process of disillusionment is reflected in the common saying, "Only when you see dead bodies do you understand that this is war." The current chapter focuses on sense-making as an active process, and not merely a passive and gradual understanding. Sense-making should be understood in the context of the efforts to direct behavior in combat through a combination of subjective experience, drills, pre-combat planning, and training. Collectively they form a proper frame of the situation, leading toward a proper response to the gap between anticipation and reality, and eventually resulting in adaptation. For example, a combat engineer platoon commander operating a heavy bulldozer stated:

... I receive an order to get four teams and go down to where the mortars were firing from. This incident happened when I was in the platoon for only three days. We are going there and I start working by the book with backup and protection and then I see that the bullet proof window in front of me is crushed. I gaze at the window, amazed. And then I see that this is accurate fire and that the window is being hit from a building about 400 meters away. But what can you do? This machine is very slow and you can't drive there. I asked the driver, what is this? And he answers: That's fire. And then I understand that this is it and that was my first experience of fire, and we just continued (interview with combat engineer platoon commander, 2004).

In this account the inevitable gap between experience and reality is very clear. The ability to form a suitable frame of the situation as a basis for a proper

emotional and behavioral response depends on a combination of personal experience and training. Due to the complexities of combat, individual sense-making is inevitable and cannot be set in advance into clear battle procedures. The gap between the anticipated progression of events and actual combat reality necessitates the development of some frame of reference that will explain what is going on and why. Failure to make sense of the situation is a common occurrence, often resulting from the adoption of irrelevant procedures, or paralysis. Surprise often follows when the operational plan is disrupted. This may occur as a result of enemy activity, such as an inadvertent activation of IEDs triggering an ambush. Usually, the reasons are more mundane: the disappearance of the enemy or the scattering of the unit, which separates a combatant from familiar and trusted leaders.

These examples reveal several features of sense-making that characterize combat situations. The first is the dependency on prepared frames delineating archetype situations. Due to the time constraints, mental strain, and physical danger, solutions must be presented quickly; hence, reliable solutions should be worked out in advance. The second is the loneliness experienced by commanders and other combatants in this process; the nature of combat situations often prohibits an orderly, joint sense-making process. The third feature is that preexisting frames (e.g., drills and previous battle plans) sometimes obstruct one's ability to perceive contradictory data, even when it appears to be so obvious that it is being "shoved down one's throat." The frame that is initially being set is very strong, often due to being drilled to the level of habit, and calls for a specific interpretation of reality. The actor strives to make sense of the chaotic situation and create a new and perhaps more appropriate frame (Klein, 1996) essential for functioning in the combat zone. This structure contains the specific information and sensory input, such as the direction and kind of incoming fire.

Dynamics of Flexible Thinking

Common descriptions of cognition in extreme stress situations refer to a "narrowing of attention" or "tunnel vision" (Chajut, & Algom, 2003). Behavioral scientists studying decision making often focus on the detrimental consequences of this cognitive functioning (Janis & Mann, 1977). Yet such a framework of thinking is both inevitable and appropriate, and combatants describe it as an excellent solution for the hazards of stress (Johnston, Driskell, & Salas, 1997). In addition, specific drills taught in military

training actually provide the basis for performance. However, from our point of view, this characterization falls short of the mark, since it does not encompass all the dimensions of functioning in combat. For example, it fails to explain long-term performance of combatants. Also, it does not explain the effective thinking, problem solving, or creativity that may indeed exist in combat. To better understand this issue, we studied the tactical decisions of successful combatants. Here is a notable example of constant contemplation in the words of a successful NCO:

You think all the time: What should I do next? What should I do next? What's the best thing I can do? There is no room for mistakes. . . . You turn inward and think. You think about the others, too: what is the right thing to do now, where should I aim, what should I bring, where's the best place? . . . You run contingency plans through your mind, what would happen if. . . . You do it constantly (interview with a first sergeant about the Second Lebanon War, 2006).

Part of the formal military training is directing commanders towards constant assessment of the situation. Their sense-making therefore directs them to assess and reassess the situation and come up with better solutions. These solutions are instantly created during a specific combat. When they are formed, the actor usually does not strive to change them but rather to execute the solution. Another example is the following extract describing a ferocious ninety-minute firefight:

. . . There were possible targets, shadowy figures, on the windows in that house but then we took sniper fire and an RPG [rocket-propelled grenade] blasted near our position and I was hit. . . . I had to decide if we should cross the field and charge the house or to try and guide fire from the rear. . . . I had talked to the armored company officer and my deputy . . . we tried sniper [fire] but it failed. My CO authorized us to outflank. He actually wanted us to do it, and also my soldiers, who were not experienced, were keen on the action. But I saw that they will kill us on the way and that if we fail to enter the house because breaching equipment was low they will nail us from the upper floors. I then decided to order an air strike. But then they said that they do not have the resources, but I was stubborn and eventually it did arrive (interview with a company commander about the Second Lebanon War, 2006).

In this scene, an experienced commander sought a solution based on his understanding and against

the express wishes of his superiors and subordinates. The frame that he was setting was not wholly conscious and directed him to calculate the odds. He then saw that the price of an assault was too great; consequently he chose a decision that was in accordance with his frame. Sense-making is oriented towards creating multiple frames for a variety of combat situations. This capacity was the source of his ability to alter the course of events. But thinking *creatively* in combat is more complex and intriguing. For example, a commander who received the Medal of Valor for his actions in the Yom Kippur War described his thinking during four hours of desperate fighting against a superior Egyptian force:

The preparations are made. The "moment of truth" has arrived. . . . I feel quiet and serene. The commotion of the battle, some background noises disappear. I am calm and focused. . . . One part of my brain was occupied by current operations, by whatever was happening at close range. My actions are almost automatic. However, routine actions are dangerous. Nothing is more dangerous than a smart enemy that can predict your next move. So I went out into the open, finger on the trigger. At the slightest sign of movement, a millimeter motion and I aimed, gauged the range and shot, to surprise. From time to time I changed the depth of my patrol, my shooting posture. . . . With all these fast operations, the other side of my brain was thinking about the broader picture, for instance: what is the most dangerous building? Can we take it?" (Asa Kadmoni, 1973; cited in Nevo & Ashkenazy, 2006; pp. 176–179).

Reviewing the description, we came to believe that extreme combat efficiency is related to a certain type of sense-making. The successful combatant or commander is not only a "performer," but rather a constant and flexible "thinker." In this case one can see the emphasis on "thinking" and the active search for information and solutions. Sense-making is not only about prescribed drills and refining the initial frame instilled in training.

In another case, a squad of five was trapped inside a burning house and under heavy fire during the Second Lebanon War. Hearing voices emanating from the body of a dead Hezbollah fighter, they searched and found his two-way radio. One of them thought to appropriate the radio, which could reveal enemy intentions and have a critical impact on the fighting:

At that time when we were not under direct fire, we were busy trying to understand what was going on

around us. We were less concentrated on the fire directed at us, which was less accurate. We heard the voices coming from the radio and we immediately realized that this would be critical. We thought about what they would have done to us, if they [Hezbollah] had been in our shoes. For sure they would have taken the radio (interview with a first sergeant about the Second Lebanon War, 2006).

Though under extreme duress, these combatants continued thinking the whole time. Their actions were governed by the need to analyze possible enemy actions and reactions. This deadly “game” of chess requires efficient, continuous, aggressive thinking. Their emotional state was not one of stress or fear. On the contrary, they reported having had a sense of calm and joy. One of them later said: “I even liked this fight a little.”

It is argued elsewhere that the ability to control emotion enables rational thinking and problem-solving (Lazarus & Folkman, 1984). More so, emotions have been presented as a block against sound decision-making (Janis, 1982). But the case study presented reveals more than peak combat performance, aggressiveness, and tough soldiering; it demonstrates creative problem-solving that we strive to describe as the ability to function and interpret the immediate combat situation and at the same time be able to see the greater picture in which your current battle position is only a part.

What are the antecedents of such creative problem-solving in these combat conditions? We tentatively suggest the following: First, despite the threat from enemy fire, the combatants felt relatively at ease, sufficiently to allow a continuous intake and assessment of data as well as consultation with subordinates. They did not foster illusions about the prospects of surviving, or seek an easy escape. Second, the actors thought offensively, attempting to “read” the situation like two simultaneous halves of a movie. Soaring high above their own position, these combatants saw the enemy and his possible actions. They asked not only: What are *we* doing? and What should *we* do? but also, What is the enemy doing? What is he attempting? The various parts of the puzzle only fit together in this type of bi-directional or joint framework.

It is common knowledge, and the study of combat thinking bears this out, that combat situations, especially severe combat situations, are not conducive to creative thinking. Indeed, generally speaking, they impede any productive and efficient thinking at all. The combination of confusion,

uncertainty, and the terror of death serves to obstruct any attempt to maintain an overriding objective view in the face of multiple smaller events. What can explain excellent performance in combat? Is it the result of intelligence or other dimensions of sense-making?

We have studied performance in intense combat during the 2006 Second Lebanon War. In the study (Ben-Shalom, Weinstein, & Keren, 2007) we collected platoon commanders’ numerical evaluations of 425 combatants immediately following actual fighting. We then correlated these indices on number of psychological measures, including pre-induction and training information. We found that pre-induction measurements, including intelligence measurement, were far less useful in predicting both actual functioning and command potential revealed during combat compared to peer ratings (*r* values were around 0.15 for cognitive measures as compared to 0.32 for peer ratings). These results are in line with recent studies, which stressed the importance of non-cognitive dimensions in the assessment of morale and functioning in stressful contexts (Dover, 2002; Matthews, Brazil, & Erwin, 2009).

Participation and Repetition

Behavior, including inaction, is preconditioned by sense-making (Weick, 1995). Therefore, action and inaction in combat, which may be appropriate or inappropriate, follow from the nature of the sense-making process. Two notable outcomes of the failure of sense-making are ineffective, repetitive behaviors and lack of participation—“freezing.” There are numerous examples of firefights and skirmishes in which an inefficient action was used repetitively, to the detriment of the combatants. Fundamentally, this behavioral pattern results from the failure of the sense-making process. Combatants then fall back onto known and therefore reasonable pre-battle plans or drills. An example of such behavior is a decision to storm a target repeatedly, regardless of the futility of such an action. Another ineffective pattern of behavior is extreme passivity during the battle. Often, combatant can choose to participate actively or passively; to assume command, await orders or wait for the situation to become clearer. For example: “. . . after the skirmish we pulled back into a yard. I vividly remember that I had to take all [the] men and change their roles. I simply picked those that were functioning, reorganized the entire platoon, and then we proceeded” (platoon commander interview, 2004).

The process of “combat self-selection” is a manifestation of an implicit social process resulting from the challenges and complexities of battle. For instance, an experienced commander arriving at the scene during an ongoing terrorist night attack stated:

. . . You don't understand where it is [the fight]; you can hear heavy bursts of fire and you don't know from where, and it's dark. Simply a mess, I simply don't know where to begin . . . trying to open an aerial photo and explain, it doesn't work, giving some situation assessment. I don't understand anything from what is going on there. . . . Just a mess, never seen a mess like that. . . . Something ought to be done, I just felt we need[ed] to do something. . . . I decided to outflank the source of fire and organized a team. I collected them, and some came from their own free will—people who wanted to come. There was a company commander from another battalion—a very aggressive paratrooper; he just came. And another, from the border patrol, just arrived. . . . I tell him, “You will come with me,” and then I take three other combatants from my battalion whom I know to be good infantry soldiers. . . . I know that company XO, he also comes. . . . I fixed the communication on the signals and then things are moving and then suddenly we were eight and we went. . . . (battalion commander interview, 2005).

This commander's decision to act was based on his understanding that things were going wrong and something different had to be done. His actions were based on his sense of competence and responsibility as well as the actions of others. He organized an ad-hoc team based on his selection, but most importantly by self-selection of combatants. In combat, there are actions that by themselves serve as cues for actions; yet taking a risk requires some level of understanding of the situation. Combatants and commanders will usually endeavor to understand the situation and only then decide whether and how to act. The ability to make sense out of the situation or the failure to do so leads actors to attempt action (sometimes it might be a calculated decision *not* to act at the moment) or to a state of limbo and paralysis regarding a tactical problem. Let us examine this thesis through the following testimony about a 2007 operation:

. . . I was lying on my belly. I turned around and looked over my shoulder. Started to explore the area again [with my night vision goggles]; suddenly I identified a figure dressed in uniform, with a vest and

a weapon but without a helmet. At first I didn't understand that this was a terrorist. So, I looked further right with the night goggles just to fix what I saw. And then, in a split second, we identified each other. I'm looking at him and he's looking at me from a distance of 30 feet. It was a crazy moment. Without thinking too much I stood and shouted to the force, “Leopard Procedure, nobody shoot!” meaning that a terrorist is inside the scattered force and no one fires, to avoid fratricide. I got up and in order to save time I charged alone. I charged with fire but after two or three rounds, about 12 feet away from him, my magazine suddenly went empty. I realized that I [made] a critical professional error: I didn't switch magazines after the first charge. . . . As I fired the last round I saw the terrorist ignite a spark. At that moment I was convinced it was IED belt that he was carrying on his waist. Instinctively, I ran to him and jumped on him. Grabbed him [by] the shoulders and pushed him from behind. He was leaping and I pulled him to his side, locked his elbows from behind pushed him to the ground and stuck to his back so that if his IED belt eventually blew, he would take the blow and serve as cover. It was like a movie that was screened fast-forward. As if you push the forward button on a DVD and everything just fast-forwarded quickly. You're saying “shit, I'm dying”; understand that now is your end. They say that before dying you see your entire life before your eyes. But I was thinking about two things: My family—wife and child—and how to save my soldiers. . . . (infantry company commander interview, 2007).

As in the previous examples, one can see the impact of pre-battle drills on the sense-making process. The use of code words enabled the commander to share his frame quickly with his subordinates, thereby saving time and coordinating their thinking. In an attempt to understand how armies direct the commander's sense-making process, two contradictory concepts must be examined. On one hand, each combat situation is unique and therefore cannot be anticipated or fully prepared for; on the other hand, the results of the sense-making process must be disseminated in order to facilitate and coordinate the sense-making processes of others.

These experiences of horrific moments occurring in the dark of night create for the reader a sense of the fusion of psychological elements that make up the delicate process of sense-making. Part of it is automatic; part of it not. Drills and formal training entangled here with individual perceptions evolving

during the operation on the ground. Though the interviewees appeared focused on instinctive decisions, they were actually directed by their own perseverance and feeling of responsibility for their subordinates. Both the formal and informal parts influence the decision making in situations that have a quality of unreal, dreamlike, and emotionally detached scenes. These testimonies led us to the conclusion that the nature behavior in combat cannot be taken for granted. Often, it deviates from expectations, especially in the case of inexperienced commanders.

Discussion

In this chapter we used the concept of sense-making to study behavior in combat by analyzing typical combat events. Characteristics of sense-making were initially described using the “booting up” metaphor, which describes the result of the initial realization that one is actually in the battleground in a situation that sharply deviates from normal life (even in the military). One needs to immediately “load” some practical notions (drills, plans, procedures) of how best to act in this battle situation. The making of this mental shift is in fact the mental entry into the battlefield. It greatly affects the ability and quality of one’s functioning in the ensuing combat. In the words of General Depuy:

Notwithstanding some American mythology to the contrary, there is very little initiative demonstrated on a battlefield. When the bullets start to fly the average man lies low. He stays that way until he is ordered to do otherwise. For example, the main difference between green and veteran units is that in green units it is customary for everyone to lie low waiting for the others to get up and do spontaneously what they have been trained to do for so long, and what our folklore tells us they will surely do—and this is often a long wait. In the veteran unit some man, who has learned the hard way that nothing happens unless someone takes measures of some sort, looks a few soldiers straight in the eye and orders them personally and individually to do some very specific task like, “Move up to that hedgerow”—“Throw a grenade in that window”—“Cross that field”—“Fire at that house.” Lacking such orders, the soldier does what comes naturally—nothing (Depuy, 1958p. 22).

Sense-making is a continuous process. Klein and his colleagues (2007) propose that the sense-making process takes place when the individual realizes that the situation is no longer developing according to expectations and that therefore a new course of

action must be adopted. We attempted to connect this approach with behaviors that are relevant and prevalent in combat scenarios that characterize current military operations. Sense-making was studied as a prerequisite for action and inaction in the hectic and intense context of combat. We have also probed the ability to think in a creative manner under these conditions.

As noted by Weick (1993), combat stress is likely to influence this process. Indeed, we also found that the concepts of “tunnel vision” or “narrowed attention” are often descriptive of combatants’ thought processes (Driskell, Salas, & Johnston, 2006). Yet this perspective does not, in and of itself, encompass the full dynamics of cognitive processes during combat, especially when evidence shows that some combatants have great presence of mind in these circumstances. Sense-making offers a wider and more flexible perspective that is also connected to non-cognitive dimensions. Overall it serves as a broad and promising perspective on the mind during combat.

Sense-Making Processes

Our aim in this chapter is to link sense-making concepts to processes identified in firsthand accounts of combat. Our contention is that sense-making in the military should be understood in the context of preparing for a fight and the way a fight develops. It seems that there is a need to distinguish between different kinds of sense-making according to the origins of the initial frame being used. The first, which is a basic or “normal” sense-making occurs whenever the initial frame is constructed in advance as a preparation for combat, either by formal military training or by some other source such as the local unit’s “way of doing things” or specific commanders’ understandings. Usually, it is formed through common drills and serves as the primary buffer against the detrimental consequences of stress. The sense-making process, on this level, involves choosing an option from a prescribed list. It begins with a set of frames prepared in advance that rely on shared terminology and dictate specific behaviors. These in turn enable others to conduct corresponding sense-making processes. But if normal sense-making fails, usually due to a substantial perceived gap between the initial frame and the evolving reality, this gap will not be bridged by prescriptive scenarios but rather through the ability of combatants or commanders to gain new sense out of the situation.

The second type of sense-making therefore occurs when the frame needs to be restored. This kind of

“restorative” sense-making is the process that is needed if the frame becomes inappropriate. The rebooting process in combat often initiates a process of restorative sense-making. It is accomplished through a combination of military skills, personal prowess, and knowledge. In this process, knowledge and skills acquired through military education facilitate alterations to operational plans. “Creative” sense-making is an additional type of reframing, typically employed in situations where military knowledge (training and education) is insufficient. In these situations the frame is based primarily on personal prowess or experience enabling an individual to devise a solution. Often, we concur, “freezing” or inaction in combat is to be expected; it represents a state of “limbo” resulting from the lack of sense or meaning. Adaptation to combat may explain some of the debates regarding bravery in combat. Latane & Darley (1969) pointed out that individuals decide whether to act or refrain from action on the basis of a situational assessment *vis-à-vis* ambiguity, the inaction of others, diffusion of responsibility, and perceived competence. Often, this assessment results in a “bystander effect” (Latané & Darley, 1969). A complementary line of thinking assumes that behavior is dictated, not by courage or cowardice, but by patterns of thinking or sense-making. Traditional socio-psychological concepts may add significantly to this understanding. The concept of the “bystander effect” was proved to be a vital factor in ethical decision making, including in a military setting (Pury & Lopez, 2009).

Non-Cognitive Dimensions

Current research points to the significance of sense-making for military undertakings and leadership. In order to lead, one must connect one’s sense of the situation to one’s followers’ sense of it, thereby ensuring their understanding, enhancing their motivation, and promoting their resilience. A sense of trust and togetherness are vital in stressful situations, and they result from the interaction of subordinates with their leaders. Leaders who manage to convey the outcome of their sense-making through explicit and implicit behaviors support their followers (Bartone, 2005, 2006). Yet combat prevents long-term processes and forces commanders to focus on the immediate action or mission at hand. Thus, a large part of recent sense-making research, which is focused on long-term consequences, becomes somewhat irrelevant in the face of an actual fight. A significant time span is needed to create meaning or spiritual reconstruction, and it is usually

done after a fight is completed (Pargament & Sweeney, 2011). The time span of combat is limited, and it focuses attention into more specific dimensions and sense-making processes. While in combat, the attention of a commander is on a certain tactical situation or mission. This is often a limit on developing sense-making in relation to broad psychological dimensions as emotions or well-being. Instead, the focus of sense-making in combat is the ability to understand a certain task and its corresponding emotional, behavioral, and social consequences. At the same time, we concur that sense-making in combat must be understood in the context of actual combat (Sweeney, 2010). As do other areas of military psychology, this field calls for more empirical studies (Hannah, Campbell, & Matthews, 2010).

One of the significant social processes related to sense-making in combat is “combat self-selection” or volunteering, in which actions are precipitated by successful or experienced combatants. Such “self-selected” combatants were marked not only by their decision to pursue a specific course of action but by their ability to perform and maintain free and effective thinking during a fight. Specifically, they were able to maintain flexible, offensive thinking while imagining their battle space. When commanders were involved in combat, their ability to make sense of the combat situation served their leadership role by enabling them to motivate and provide meaning for their fellow officers and subordinates.

At the opposite end of this continuum, we explored how combat was interpreted during a fight and learned that the inability to make sense of events left commanders or other combatants without a good frame. In a recent study (Ben-Shalom & Benbenisty, 2011), we studied 876 combatants who actively participated in intense combat during the year 2009. The study probed the correlation between motivation, coping, and stress. The results demonstrated that emotional coping (for example, expressing of emotions) in combat predicts a low level of adaptation to the combat environment and less combat motivation. On the other hand, a rational coping style (for example, thinking about how to solve a problem) was highly correlated with non-rational aspects such as sudden faith in God and the ability to repress emotions (Ben-Shalom & Benbenisty, 2011). These results point to the interaction between emotions and cognition during a combat, implying that one of the psychological antecedents of good functioning in combat is the ability to feel comfortable and calm of spirit.

In turn, this emotional quality supports cognitive processes and enables clear thinking, which are part of the successful sense-making process.

Implications

Preparation for combat is often based on meticulous planning intended to obviate the effects of surprise and foster a sense of self efficacy (Driskell & Salas, 1991). Its advantages notwithstanding, meticulous planning may lead commanders and combatants to perform a normal sense-making process in place of a more flexible approach. In other words, sense-making often occurs when planned behaviors are not applicable. In the general military literature, there is an understanding that one's pre-battle plan must be adapted due to the inevitable friction and disruption of communications, the "fog of war" (Holmes, 2007). This line of thinking is usually studied in the framework of military history or security studies rather than on the individual level, such as sense-making performed by commanders and combatants. When plans are disrupted, sense-making is needed, especially when pre-battle planning does not cover alternate solutions.

Weick (1995) noted that stress focuses one's attention on the perceived central elements of a task while "shutting out" peripheral cues that may actually enhance one's sense-making capabilities. This fact should be considered in training by leaders employing prescriptive models for desired behavior. Simply put, preparations for sense-making in combat should take into account that frames must often change. Although behavioral prescriptions are essential, commanders and combatants must also be empowered by being offered a conceptual framework of general ideas that serve as descriptive themes. This is a significant educational dimension of combat preparation, because it uses training to facilitate sense-making in combat. Our findings demonstrate the process of sense-making as conducted on the ground during combat. The ability to discuss the process of seeking a solution, during the actual sensory experiences of combat, may expand the frame through which challenges are evaluated, support reframing efforts, and inhibit the creation of tunnel vision. To further augment these efforts, the military manpower system may choose to actively search, identify, and support combatants and NCOs to assume leadership roles after they demonstrated an ability to think freely under duress (Ben-Shalom, Weinstein, & Keren, 2007).

Paralleling the importance of technology to modern warfare, sense-making is usually studied in

connection with sophisticated command-and-control systems or the decision-making processes of senior commanders (Alberts, Garstka, & Stein, 1999; Garstka & Alberts, 2004). Hence, there remain significant unexplored areas. For instance, while technology facilitates command and control from headquarters in the rear, combatants and commanders must perform local and independent sense-making processes at the scene. Most of our data were collected from situations where surveillance equipment was ready and available for commanders at HQ. However, these systems do not and cannot support the entire sense-making process in combat. The study of sense-making in combat conditions presents methodological challenges, which may be the reason why it was not often used. This is significant, since the current trend of full-spectrum operations and counterinsurgency (Chiarelli & Michaelis, 2005) emphasizes combat scenarios in which small-unit tactics will be frequent. Advance weapon and communication systems may prove less effective in these scenarios; hence, we need to explore methods of expanding the sense-making paradigm as means of enhancing the resiliency of combatants and commanders.

Limitations and Future Directions

This study was qualitative in nature and relied on diverse sources of information. Though this approach has clear limitations, it offers a new perspective on a long-intriguing and debated issue. Replicating this study may prove a challenge, but the framework presented could serve as a guide for further research in this field, the importance and relevance of which is on the ascent. Above all, it points once again to the fact that actual behavior in combat should be systematically explored. New and innovative research paradigms that explore the actual occurrences in the battlefield are needed to grasp the true nature of sense-making during combat.

References

- Alberts, D., Garstka, J., & Stein, F. (1999). *Network-centric warfare: Developing and leveraging information superiority*. Washington, D.C.: Command and Control Research Program.
- Bartone, P. T. (2005). The need for positive meaning in military operations: Reflections on Abu Ghraib. *Military Psychology* 17, 315-324.
- Bartone, P. T. (2006). Resilience under military operational stress: Can leaders influence hardiness? *Military Psychology* 18(Suppl.), S131-S148.
- Bartone, P. T., Snook, S. A., Forsythe, G. B., Lewis, P., and Bullis, R. C. (2007). Psychosocial development and leader performance of military officer cadets. *Leadership Quarterly* 18, 490-504.

- Benbenisty, Y., Ben-Shalom, U., & Ronel, Z. (2010). Combat motivation during "Cast lead" operation. *Maaracbot*, 430, 38–45 (Hebrew).
- Ben-Shalom, U., & Benbenisty, Y. (2011). Stress, coping and combat motivation in operation "Cast Lead"—The role of faith in coping. In R. Gal. (Ed.), *Religious conviction in the IDF*. Tel-Aviv: Modan (forthcoming – Hebrew).
- Ben-Shalom, U., Weinstein, M. & Keren, T. How to describe, evaluate and predict operational effectiveness of combat soldiers in irregular warfare. Pedagogy for the Long War: Conference Proceedings. 4; 2007 Oct 29- Nov 1; Quantico, VA.
- Ben-Shalom, U., Weinstein, M., & Keren, T. (2008). Studying the eye of the storm: How to study soldiers' effectiveness in irregular warfare. *Military Psychology—IDF*, 6, 169–208 (Hebrew).
- Ben-Shalom, U., Lehrer, Z., & Ben-Ari, E. (2005). Cohesion during military operations: A field study on combat units in the Al-Aqsa intifada. *Armed Forces & Society*, 32, 63–79.
- Brickner, M. S. and Lipshitz, R. (2004). *Pilot study: System model of situation awareness: "sense-making" and decision making in command and control*. Wright Patterson AFB, Ohio: U.S. Air Force Research Laboratory.
- Chajut, E. and Algom, D. (2003). Selective attention improves under stress: Implications for theories of social cognition. *Journal of Personality and Social Psychology*, 85, 231–248.
- Chiarelli, P. W., & Michaelis, P. R. (2005). Winning the peace: The requirement for full-spectrum operations. *Military Review*, 3, 4–17.
- Clausewitz, C. von (1832/1976). *On War*. M. Howard & P. Paret, translators. Princeton, NJ: Princeton University Press. (Originally published in 1832).
- Depuy, W. E. (1958). Eleven men, one mind. *Army*, 9, 54–60.
- Dollard, J. (1943). *Fear in battle*. New Haven, CT: Institute of Human Relations, Yale University.
- Dover, H. S. (2002). *The characterization and prediction of soldier performance during routine service and in combat*. U.S. Army Research Institute: Report number 2002–03.
- Driskell, J. E., Salas, E., & Johnston, J. H. (2006). Decision making and performance under stress. In T. W. Britt, A. B. Adler & C. A. Castro (Eds.), *Military life: The psychology of serving in peace and combat* (pp. 128–154). Westport, CT: Praeger.
- Driskell, J. E., & Salas, E. (1991). Overcoming the effects of stress on military performance: Human factors, training, and selection strategies. In R. Gal & A. D. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 183–193). New York: John Wiley & Sons.
- Egbert, R. L., Meeland, T., Cline, V. B., Forgy, E. W., Spickler, M. W., & Brown, C. (1957). *Fighter 1: An analysis of combat fighters and nonfighters*. Alexandria, VA: Human Resources Research Organization (HumRRO) Technical report no. 44.
- Fick, C. N. (2005). *One bullet away: The making of a marine officer*. Boston: Houghton Mifflin, Harcourt.
- Frankl, V. E. (1985). *Man's search for meaning*. New York: Washington Square Press.
- Garstka, J. J & Alberts, D. S. (2004). *Network-Centric Operations Conceptual Framework, Version 2.0*. U.S. Office of Force Transformation and Office of the Assistant Secretary of Defense for Networks and Information Integration. Vienna, VA: Evidence Based Research, Inc.
- Hannah, S. T., Campbell, D. J., & Matthews, M. D. (2010). Advancing a research agenda for leadership in dangerous contexts. *Military Psychology*, 22(Suppl.), S157—S189.
- Holmes, T. M. (2007). Planning versus chaos in Clausewitz's *On War*. *Journal of Strategic Studies*, 30, 129–151.
- Janis, I. A., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice and commitment*. New York: Free Press.
- Janis, I. L. (1982). Decision making under stress. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 69–87). New York: Free Press.
- Johnston, J. H., Driskell, J. E., & Salas, E. (1997). Vigilant and hypervigilant decision making. *Journal of Applied Psychology*, 82, 614–622.
- Kawano, H. (1996). A comparative study of combat organizations: Japan and the United States during World War II. Doctoral dissertation, Northwestern University.
- Keegan, J. (1976). *The face of battle*. London: Penguin.
- Kellett, A. (1982). *Combat motivation: The behavior of soldiers in battle*. Boston: Kluwer.
- Klein, G. (1996). The effects of acute stressors on decision making. In J. E. Driskell & E. Salas (Eds.), *Stress and human performance*. (pp. 49–88). Mahwah, NJ: LEA Publishers.
- Klein, G., Orasanu, J., Calderwood, R., & Zsombok, C. E. (1993). *Decision making in action: Models and methods*. Norwood, NJ: Ablex Publishing.
- Klein, G., Moon, B., & Hoffman, R.F. (2006). Making sense of sense-making: Alternative perspectives. *IEEE Intelligent Systems*, 21, 70–73.
- Klein, G., Schmitt, J., McCloskey, M. J., & Phillips, J. (2000). *Decision making in the Marine Expeditionary Force (MEF) combat operations center*. Proceedings of the Command and Control Research and Technology Symposium, 2000. Naval Postgraduate School, Monterey, CA, June 26–28.
- Latane, B., & Darley, J. M. (1969). Bystander "apathy. *American Scientist*, 57, 244–268.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Leedom, D. K. (2004). *The analytic representation of sense-making and knowledge management with a military C2 organization*. Final Report. Wright-Patterson Air Force Base, OH: Human Effectiveness Directorate.
- Lipshitz, R., & Strauss, O. (1997). Coping with uncertainty: A naturalistic decision-making analysis. *Organizational Behavior and Human Decision Processes*, 69, 149–163.
- Marshall, S. L. A. (1947). *Men against fire*. New York: William Morrow & Co.
- Matthews, M. D. (2008). Toward a positive military psychology. *Military Psychology*, 20, 289–298.
- Matthews, M. D., Brazil, D., & Erwin, M. S. (2009, May). *Character strengths and responding to leader challenges in combat*. Paper presented at the 21st Annual Convention of the Association for Psychological Science, San Francisco, CA.
- Nevo, B., & Ashkenazi, N. (2006). *Back from Serapeum*. Tel-Aviv, Israel: Maa'rive (Hebrew).
- Pargament, K. I., & Sweeney, P. J. (2011). Building spiritual fitness in the army: An innovative approach to a vital aspect of human development. *American Psychologist*, 66, 58–64.
- Pury, C. L. S., & Lopez, S. J. (2009). Courage. In C. R. Snyder & S. J. Lopez (Eds.), *Oxford handbook of positive psychology* (pp. 375–382). New York: Oxford University Press.
- Scales, R. H. (2008). Foreword. In P. A. Hancock & J. L. Szalma (Eds.), *Performance under stress* (p. xv). Cornwall, Bodmin, Great Britain: MPG Books.
- Shalit, B. (1989). *The psychology of conflict and combat*. New York: Praeger.

- Shelah, O., & Limor, Y. (2007). *Captives in Lebanon*. Tel Aviv, Israel: Yediot Aharonot (Hebrew).
- Sieck, W. R., Klein, G., Peluso, D. A., Smith, J. L., & Harris-Thompson, D. (2007). *FOCUS: A model of sense-making* (Technical Report No. 1200). Arlington, VA: United States Army Research Institute for the Behavioral and Social Sciences.
- Singer, P. W. (2009). *Wired for war: The robotics revolution and conflict in the twenty-first century*. New York: Penguin.
- Sweeney, P. J. (2010). Do soldiers reevaluate trust in their leaders prior to combat operations? *Military Psychology, 22*(Suppl.), S70–S88.
- Sweeney, P. J., Thompson, V., & Blanton, H. (2009). Trust and influence in combat: An interdependence model. *Journal of Applied Social Psychology, 39*, 235–264.
- Weick, K. E. (1993). The collapse of sense-making in organizations: The Mann Gulch disaster. *Administrative Science Quarterly, 38*, 628–652.
- Weick, K. E. (1995). *Sense-making in organizations*. Thousand Oaks, CA: Sage.

Military Engineering Psychology

Setting the Pace for Exceptional Performance

Gerald P. Krueger

Abstract

Since World War II, engineering psychologists have contributed immensely to the design of complex, sophisticated equipment and weapon systems to ensure that military personnel operate at optimum levels in training and combat. Engineering psychologists not only do superb human sciences research, but as practitioners, they serve as key consultants advocating for system users (soldiers, sailors, airmen, and marines) in the materiel systems engineering and development process. Human factors specialists bring in-depth appreciation of how human operators will perform on high-technology systems, under stressful working conditions, in harsh environmental extremes, often with information overload, in time-sensitive settings requiring quick, accurate decision-making, where failure is not an option. This chapter traces 65 years of researching and applying human engineering principles in military system design and operations. Projections for needed culture change are envisioned for future human-factors work with military forces.

Keywords: Human factors, human factors integration, human engineering, human systems integration, human performance, soldier performance, human systems design, military systems design, military psychology

Engineering Psychology by Any Other Name

Engineering psychology is a discipline of study that elucidates and predicts the human performance of individuals and teams while they carry out tasks on their job—usually operating equipment (e.g., vehicles, communications and computer systems, weapons, plant control centers, and more). Engineering psychologists possess good grounding in applied experimental psychology, cognitive engineering, experimental design and statistics. They usually conduct human experiments measuring performance in attempts to determine the best ways to design human-operated equipment and systems with a goal of optimizing human-system performance. As human factors practitioners, engineering psychologists invoke generalized human performance principles established through their experimental work, to advise project management designers about how

humans will perform in operating future systems still being developed.

The work of engineering psychologists often is done as part of interdisciplinary system-design team efforts. Teams may include people doing anthropometry, physiology, biomechanics, or job task analyses. They often work in collaboration with design engineers charged to consider all the human variables in their new systems. The work, all of it devoted to better design for humans, has taken on broader titles of “human engineering,” “human factors engineering,” “ergonomics,” “human factors,” and “human systems design.” There are subtle differences in the related and similar professional titles, with one seeming outlier appearing to be ergonomics.

The term *ergonomics* was adopted upon the formation of the Ergonomics Research Society (ERS) in Britain in 1949.¹ *Ergonomics* is derived from the Greek *ergon*, for “work” (in physics, the erg is a unit

of measurement indicating expenditure of energy), and from *nomos*, meaning “law.” Literally, ergonomics is “the study of the laws of mankind expending energy at work.” It is the scientific study of the relationship between man and his working environment (Murrell, 1965). Ergonomics brings together different research trends and researchers with different backgrounds in different sciences. The very name *ergonomics* was chosen because the discipline does not fully belong to any of the contributing disciplines.

Before World War II, in Europe, physiological, biomechanical, and anthropometric studies sought efficiencies of men at work. Soviet Russians sought to integrate labor safety and health factors to become part and parcel of machine design, to progress past safety engineering as an addition or an afterthought over to safe engineering design from the outset (Zinchenko & Munipov, 1979). Both trends helped pave the way for the post–World War II growth of ergonomics as a discipline. Whereas in the United States, a few human factors laboratories appeared as early as the 1930s (e.g., Bell Laboratories), such work really began in earnest during and immediately following World War II. U.S. engineering psychology studies in laboratories of the military, universities, and aircraft and aerospace industries mostly examined attributes of work, jobs, and equipment that involve sensation, perception, and cognitive information processing. This prompted advocates to say engineering psychology in the United States focused more on behavior from the neck up. In Japan, the term *human engineering* appeared in labor research institutes as early as 1921; but modern-day “industrial and product ergonomics” blossomed only after World War II, when Japan underwent industrial modernization. During the 65 years after World War II, the several professional communities crisscrossed the oceans and gradually merged some of their philosophies, so that practitioners today use combined titles, readily identifying themselves as “human factors and ergonomics specialists.” During the past two decades, human factors and ergonomics work in materiel acquisition settings has been largely subsumed into the larger context of “human systems integration” or HSI—an important part of systems engineering and management processes (Booher, 2003).

The unique contribution of engineering psychologists to system-engineering teams is that psychologists are trained to conduct experiments examining human performance. In particular, engineering psychologists are best equipped to guide multidisciplinary research teams in designing studies that

must account for the trickiest of human performance variables: (a) individual differences (people behave and operate differently); (b) learning and skill development (people improve with repetition, they learn over time, and they can be trained); (c) motivation (people are moved to action by different incentives, they become bored with monotonous work); and (d) people can and will work in teams, sharing a workload and supporting one another in accomplishing a mission. While holding unique roles in designing experiments, engineering psychologists who have compelling experimental data and who are persuasive often exercise leadership influence in development projects. They not only influence system-design decisions, they often take on key managerial roles for such multidisciplinary teams (Krueger, 2010).

Scholars differ in how far back the origins of engineering psychology should be traced. Durso, DeLucia & Jones (2010) suggest recognizable features in Frederick Winslow Taylor’s late nineteenth- and early twentieth-century field of scientific management of work forces; and they point to the work of Lillian and Frank Gilbreth in pioneering industrial and organizational psychology. Both of these influences were clear contributors to the early history of engineering psychology.

Military Engineering Psychology: Roots in World War

The history of military psychology (at least in the United States) traces its beginnings to America’s entry into World War I in 1917.² Some of the major contributions that psychologists working on the World War I war effort are best known for include development of mental tests for the selection, classification, and assignment of military personnel. Significant research efforts also were carried out on other psychological and physiological problems, including special considerations of vision in handling weapons and vehicles, especially at night and while flying aircraft; high-altitude effects for aviation applications; use of weapons trainers for ground and shipboard gun sighting and tracking systems; design issues for wearing gas masks, and others. Most notably, the design of experiments with equipment operators required the development of new performance measures for work being done in unusual or stressful working conditions brought about by the military challenges to newly selected and trained soldiers, sailors, airmen, and marines. Many of the studies were new conceptions involving innovative, clever designs. These efforts by psychologists doing military projects were especially

relevant in planting the roots of military engineering psychology (Alluisi, 1994). Alluisi wrote that Edward L. Thorndike identified the major contribution of engineering psychologists in World War I, and the primary root was the application of the scientific method to practical problems (in particular, people issues) of the Army and Navy during time of war (Thorndike, 1919). Between the two world wars, those World War I successes fostered further development and growth of all branches of applied psychology.

Military Impetus: The Influence of World War II

Human Factors Scientists Mobilized to Serve During World War II

The history of engineering psychology and “human factors,” especially as it pertains to the design, testing, and evaluation of military equipment systems, can be divided into two time frames: pre-modern era (prior to World War II) and the modern era (post-World War II). Prior to World War II, human factors research and testing focused on improving the production line and the “selection of personnel to fit the task” (Meister & O’Brien, 1996). World War II provided a significant impetus to interdisciplinary investigations aimed at finding optimal conditions for man’s activity and the limit of human possibilities. Complex military hardware and weapon systems often could not be put to effective use because they made excessively heavy demands on operating personnel, far beyond human psychophysiological capabilities (Zinchenko & Munipov, 1979). Rapid technical developments such as radar, sonar, and high-speed aircraft produced some situations in which no amount of selection and training could enable an operator to fully exploit the potential of his equipment. The demands of World War II military technology provided a unifying focus for engineering psychology and human factors work as it became necessary to “fit the job to the man,” to design equipment and systems with human potentials and limitations in mind. The subject matter of research was couched in terms of “adaptation of the machine to the man” and posed the question: Which human properties should be taken into account in building a machine for the man to operate?

A significant number of human scientists— anatomists, physiologists, and psychologists—were brought from their academic laboratories to work with engineers in War Department efforts during World War II (Welford, 1976). For the first time, research psychologists were employed in large

numbers (estimates range in the multiple hundreds) to assist in design of new military technology (radars, sonar, sophisticated instruments and equipment for aircraft, ship control rooms, etc.), the operation of which set new, enhanced standards for human performance. Investigations dealing with sophisticated technology systems, in which man performed the functions of control and operation, involved specialists with experience in experimental psychology. The study of the human factors that play essential parts in the efficiency and reliability of control systems gradually enriched and extended the range of research for engineering psychology.

After World War II ended, most military research psychologists left the Armed Services to return to academia or to other ventures. But their contributions to personnel testing, selection and classification, training and training devices, and the design and operation of equipment had made their impact on the conduct of the war and on the future directions of psychology. As the nation demobilized, the transition to “Cold War” efforts saw the U.S. government in-house engineering psychology programs grow dramatically, especially from 1946 to 1953. The newly formed U.S. Air Force (1947) benefited from the transfer in 1945 of Paul M. Fitts and a small group of psychologists to the Aero Medical Laboratory at Wright Field, near Dayton, Ohio. Fitts is credited with being the first to use the term “engineering psychology” in his influential chapter, “Engineering Psychology and Equipment Design,” in S. S. Stevens’ *Handbook of Experimental Psychology* (1951). The U.S. Navy established three engineering psychology units: one under the direction of Franklin V. Taylor at the Naval Research Laboratory (Anacostia, Washington, D.C.); a second under Leonard C. Mead at the Navy Special Devices Center (Port Washington, New York); and a third unit under Arnold M. Small at the Navy Electronics Lab (San Diego, California). The U.S. Army added its Human Engineering Laboratory (HEL) under the direction of John D. Weisz at Aberdeen Proving Ground, Maryland, in 1951. (HEL, renamed the Human Research and Engineering Directorate [HRED], is now a part of the Army Research laboratory, and employs about 200 scientists and human-factors practitioners).

The military services provided contract support for engineering psychology research at several universities, including Harvard and Johns Hopkins universities, the University of Maryland, and the University of California at Berkeley, among others (Alluisi, 1994). At Johns Hopkins, Professor Alphonse

Chapanis, an Army Air Corps officer who conducted significant engineering psychology research during WW II, then directed a prolific engineering psychology program for almost 40 years, much of it supported by grants from the Office of Naval Research. Chapanis, who is rightly acclaimed as one of the founding fathers of human factors study, produced the discipline's first textbook: *Applied Experimental Psychology: Human Factors in Engineering Design* (Chapanis, Garner, & Morgan, 1949). For more details on the post-World War II years of engineering psychology productivity, see Chapanis's *Chronicles: 50 years of human factors research, education, and design* (1999) and David Meister's *History of Human Factors and Ergonomics* (1999).

Steady Growth in the 1950s and 1960s: Man-Machine System Experiments

Jumping ahead a bit, in 1957, the Soviet Union launched the first Sputnik satellite. As Earl Alluisi pointed out, that event so surprised and shocked the American public that it fostered a spectacular growth in federal support for science and technology, especially in aerospace arenas, including the segments of engineering psychology research and development and human-factors engineering that were perceived to have relevant contributions to make. Sputnik added stimulus for creation of the National Aeronautical and Space Administration (NASA) and the Advanced Research Projects Agency (ARPA), and promoted substantial increases in funding for the in-house Armed Service laboratories, as well as for the aerospace industries employing engineering psychologists (Alluisi, 1994).

From about 1950 to 1970, a substantial amount of research that can be identified as military engineering psychology work was conducted at numerous government in-house and other federally funded research facilities around the country. Henry McIlvaine ("Mac") Parsons provided a comprehensive description of dozens of those research efforts, which he dubbed "Man-Machine System Experiments" (Parsons, 1972). Parsons described these as laboratory-based studies of multi-person situations, but also man-machine interactions, consisting of tasks in operational system settings responding to complex environmental stimuli, and for which the methods included manipulation, replication, control of variables, collection of objective performance data, and quantification of results. Man-machine system experiments relied extensively on simulation, and because they involved human operators as

subjects, they are distinct from simulations performed entirely on computers.

To note just one example among the many Parsons described, Psychological Research Associates at the University of Michigan's Willow Run Laboratories (along with numerous collaborators) ran a series of operations studies for the Army to address issues concerning infantry rifle squads, battlefield surveillance, photo-interpretation, combat tactics of various types of military units, and tank operations. Some of the research was done within four walls, but frequently the laboratory was actual terrain designated and instrumented for experimental purposes. The studies of rifle squads involved determining squad effectiveness measures and tests, development and evaluation of various training methods, experimental determination of the best size and composition of an infantry rifle squad, and investigations of infantry small-arms fire, including its "psychological effectiveness" and communications.

The scientific community at large mostly has been uninformed about these man-machine system experiment programs because much of the work was originally classified for security reasons, and because few reports of this important research reached open literature journals or books. The sponsors of these research programs were the Army, Navy, and Air Force, the Office of the Director of Defense Research and Engineering, the Federal Aviation Administration (FAA), and NASA. Among the thirty or more major programs described by Parsons (1972) appear such organizational names as: System Development Corporation, Combat Development Experimentation Center, Systems Research Laboratory, Rand Corporation, Lincoln Laboratory, Operational Applications Laboratory at Shaw Air Force Base, Naval Research Laboratory at Chesapeake Bay Annex, Navy Electronics Laboratory, Psychological Research Associates, New York University, University of Michigan Willow Run Research Center, Ohio State University Aviation Psychology Lab, Johns Hopkins Applied Physics Lab, Human Resources Research Office, Mitre Corporation, and many others.

Parsons indicated some of the man-machine experiments sought knowledge about a particular system, a piece of equipment, a training technique, procedures, or certain conditions affecting performance. Other experiments tried to acquire generalizable knowledge about the way humans perform in system settings. How do operators and managers make decisions? How do they develop their procedures? How do they communicate with each other?

(For details and for pointers on how to design complex man-machine system experiments, consult Parsons, 1972.)

The Profession Comes of Age

During the 1950s, rapid growth of the new discipline in the United States was apparent in two ways. First, numerous military engineering psychology studies were published in the open literature, as these were coming out of both military research labs and university research programs sponsored with military research funding from organizations such as the Office of Naval Research (ONR). Second was the formation of two professional societies to represent the science of human factors engineering.

On the East Coast, engineering psychologists working at military and university research labs sought a common affiliation to promote identification of their profession. In 1956, Franklin V. Taylor at the Naval Research Laboratory, Karl Kryter of the Human Factors Research Laboratory at Bolling Air Force Base, and Harry Older, president of the Institute of Human Relations, an engineering psychology contract organization, succeeded in forming a new division of the American Psychological Association: Division 21, the Society of Engineering Psychologists. Over the decades since, numerous APA Div. 21 members, active-duty military officers, defense civil servants, and defense contractors accomplished significant amounts of military engineering psychology research. Some of the more productive and prominent among them are written about in the treatise “Who Made Contributions to Engineering Psychology” (Taylor, 1994; see also www.apa21.org).³

In Southern California, seat of the aircraft and aerospace industries, persons interested in the new emphasis on human factors formed the Human Factors Society in 1957; and with it introduced the journal *Human Factors*. The Human Factors Society accepted as members anyone who worked in any of the multiple areas of human factors—areas dealing with considerations of human factors as they influence the design and operation of systems, including human–machine interfaces, product and workspace designs, and safety. At the beginning, between a third and a half of its members were psychologists, but the Human Factors Society (renamed the Human Factors and Ergonomics Society [HFES] in 1992) has never been viewed as a “psychological society” (Alluisi, 1994). The HFES now has over 4,500 members; perhaps fewer than one-third of them identify themselves as psychologists. The research and practitioner backgrounds for the HFES membership are

quite varied; the professional society is very much an interdisciplinary one (see www.hfes.org).

Major human factors programs were introduced in each branch of the U.S. military services and the Department of Defense itself. Some elements of those programs have dissipated due to budget cuts, downsizing, and mergers over the past twenty years. But during the ensuing five decades, significant amounts of defense sponsored human systems research was conducted, and is still being done today at in-house government laboratories. Most such work now is carried out in military materiel development facilities, such as the Army Research Laboratory’s HRED, the Air Force’s Human Effectiveness Laboratory, and at the Navy’s Office of Naval Research–sponsored programs, some in-house at Navy labs, and some through contract programs at universities and research foundations.

A more modest amount of research that can be identified as engineering psychology has been carried out in military medical research laboratories such as the Army’s Aeromedical Research Lab at Fort Rucker, Alabama; at the Navy’s Aerospace Medical Research Lab at Pensacola, Florida; at the Naval Health Research Center at San Diego, California; and at the Air Force’s School of Aerospace Medicine and the Armstrong Research Lab in San Antonio, Texas, as well as at a few other select locations. As an example pertinent to the aeromedical research programs, for years after helicopters proved their worth in the conflict fought in Vietnam (circa. 1966–1972), all three service aeromedical labs engaged heavily in human factors research and experimentation, studying helicopter crew performance related to new and advanced helicopter systems under development.

Engineering Psychology in Materiel System Acquisition

Human Factors in Military Materiel Acquisition

As should be apparent from what has been written above, military engineering psychologists mostly work as members of interdisciplinary teams. Often, the results of experiments and field studies conducted with soldiers, sailors, airmen, and marines are directed into Department of Defense decision-making forums where the major question is whether to pursue further development or advance to the production procurement step for new weapons and other materiel systems. In those acquisition arenas, the distinction of “professional researcher” labels is often lost, and anyone who serves as the advocate

for soldier performance, and represents soldier user concerns, is normally identified as the “human factors representative.”

Each of the four U.S. military services has its own system for incorporating human performance data, and other human factors findings, to assure procurement of the best human systems design possible. This means all human factors shortcomings identified during operational testing are resolved by redesigning or retrofitting, or are resolved in some other way or by mitigating their risks before procurement decisions are finalized. In assessing the successes, or lack thereof, of a dozen or more major weapons-system development programs, Booher (2003) concluded that there is little question of the value of human factors engineering in producing safe and effective products and systems.

In the 1960s, as a part of its efforts to adopt and adapt a systems engineering approach to materiel acquisition, the USAF materiel acquisition community implemented a personnel-subsystem concept that required materiel developers (i.e., aerospace firms with airframe manufacturing contracts) to assure the System Program Manager that early attention was paid to the manpower, personnel, training, and human factors domains. Air Force contracts contained formal requirements for reports on qualitative and quantitative personnel requirements information (QQPRI), mainly to identify the types of training and simulators or training equipment that would be needed. Prime contractors were required to prepare data and analyses based on systems concepts and designs to increase efficiency and effectiveness of the personnel subsystem, including manning, and training of the personnel who would operate and maintain new aircraft systems.⁴

Army MANPRINT Sets the Stage for Human Systems Integration

In the 1980s, due to significant human factors shortcomings, several recently developed U.S. Army major equipment systems had significant operator performance problems. This was after years of research and development and operational testing had been done. To determine “what went wrong,” the Army conducted reverse systems-engineering analyses to establish lessons learned in hopes of improving things for subsequent equipment development programs. This effort was spearheaded by General Maxwell Thurman, who at the time was the Army’s Deputy Chief of Staff for Personnel (now called the G-1). In 1986, General Thurman, then Deputy Chief of Staff of the Army, formalized

the Army’s Manpower Personnel Integration (MANPRINT) program—a management and technical program designed to improve weapon systems and military unit performance.

In initiating MANPRINT, the U.S. Army was the first organization to fully implement and demonstrate the benefits of a comprehensive human systems integration (HSI) approach, by focusing on the human element. General Thurman, the fiercest proponent and supporter of MANPRINT, coaxed Army leadership into changing the focus of equipment developers away from “equipment-only” and toward a “total system” view—one that focuses directly on the human element, both as a critical component of the system and as the primary reason for designing, developing, and deploying the system. Henceforth, Acquisition was to consider soldier performance and equipment reliability together as a system. The program was very broad, including all army management, technical processes, products, and related information covering the six domains of Manpower (identify the number of people needed to operate and maintain new systems), Personnel Capability (identify skill sets needed), Training (both new equipment and sustainment training), Human Factors Engineering, System Safety, and Health Hazards; after the Persian Gulf War of 1991, a seventh domain of Soldier Survivability was added. The unique aspect of the program was its effective integration of human factors into the mainstream of system definition, statement of requirements, development, and deployment (Booher, 2003). The policy that provided formal definition and spelled out various Army organizational roles and responsibilities was presented in Army Regulation 602–2, Manpower and Personnel Integration (MANPRINT) in the Material Acquisition Process (U.S. Army, 1990).

For a time, the U.S. Navy began its own imitation of MANPRINT, calling their system: SEAPRINT for Systems Engineering Acquisition and Personnel Integration. SEAPRINT contained the same domain elements that MANPRINT did, but instead of Survivability, identified a Habitability domain combining some elements of HFE, safety and health hazards for onboard-ship considerations. The U.S. Air Force flirted briefly with its own proposed AIRPRINT version with slightly different domain names, but it was cut somewhat short before it started. For in 2001, the Department of Defense issued mandatory procedures for major defense acquisition programs, which were to adhere to the newly labeled Human Systems Integration concept, which identifies most of the domains

of MANPRINT; but some of them, such as System Safety, including occupational health, and Health Hazards Assessment, are a bit less clearly delineated because their descriptions are embedded in other portions of the very voluminous acquisition documents (DoD 5000.2R, June 2001; DoDI 5000.02, December 2008).

The original MANPRINT concept is still followed by the Army, which has an executive management MANPRINT position attached to the Office of the Deputy Chief of Staff for Personnel (G-1) in the Pentagon. The Army MANPRINT is the only program formally assigned to represent the soldier-user at senior level Acquisition Councils which enact decisions to advance major weapon system development toward procurement. MANPRINT in various forms has gradually been incorporated into other government system acquisition organizations, both military and commercial, and it appears either under the name Human Systems Integration or Human Factors Integration.

Forecast: Count Your Successes; More Struggles Ahead

Engineering psychologists know how to do good research. The engineering psychology profession has many role-model success stories to point to, illustrating that we know how to do excellent human-systems research. Younger entrants into the profession would do well to read a few of our older books on lessons learned. One such text is that of Stanley N. Roscoe (1980), who documented over thirty years of the highly productive aviation psychology research program directed by Alexander C. Williams, Jr., at the University of Illinois. As was mentioned earlier, much can be learned from reviewing the man-machine system experiments described by Parsons (1972).

It would be frivolous here to suggest better ways to do good human factors research—we know how to do research. In the short run, one can envision many challenging topics on which military engineering psychologist researchers can exercise their talents for identifying and resolving human factors system-user issues (i.e. whether people are better at, or machines might be better at performing tasks, e.g. determining appropriate amounts of automation related to: (a) the proliferation of robotics and unmanned ground vehicles and remotely piloted air systems on contemporary battlefields; (b) the potential for employment of body-mounted biological and psychological sensors, which may permit selective employment of augmented cognition systems;

(c) communications, command and control on distributed battlefields; (d) social-cultural communication among coalition forces who must adjust to both the psychological variables related to their allies as well as those of indigent peoples in nation-building, peacekeeping missions, and counterinsurgency operations; (e) mastering the correct mix of manpower staffing and personnel skills required for development of the new generation of naval vessels that envision operating with significantly reduced manning rosters; (f) designing systems and procedures to account for the diversity of future troop populations (e.g., language and culture differences brought about by adding more to the force, encouraging immigrant enlistment for some aspiring to U.S. citizenship, and increased numbers of smaller-statured women). There are of course many other hot research topics on the horizon as military forces restructure their strategies, their missions, and their technologies. The overriding aim of the engineering psychologist should be more than just assisting the system designer to “meet threshold requirement design criteria,” (e.g. usually minimum performance expectations) but rather should include goals of performing research that will “enhance” soldier performance when operating those systems—striving for excellence in research and for excellence in soldier performance.

Cultural change is needed in HSI and systems engineering. In critiquing the state of affairs regarding human systems integration, we would do well to recall Harold Booher’s cautions about the effectiveness of our human factors work in the systems-engineering arena. Booher (2003) wrote that HSI is very attractive as a new integrating discipline that can help move business and engineering cultures toward a people–technology orientation. Human factors and ergonomics are necessary fields for successful implementation of HSI, but they are not sufficient, because they do not fully cover the important human domains that need representation and because of their inability generally to significantly influence organizational decision-makers. Booher contended that to be effective, the needed cultural change must start with organizational leadership. At the heart of the need for a cultural change in business and engineering is the fact that HFE as a people–technology interface discipline has, by itself, been largely ineffective at changing ingrained attitudes in government and in most industries. If organizations are to change significantly to take advantage of the benefits HSI can offer, top management needs to require that human factors principles

are utilized. Should Booher have added that the “theme” needs to be institutionalized? For he wrote further: even when the benefits of human factors are fully appreciated by top leadership, the influence on systems acquisition tends to erode with changes in leadership (Booher, 2003). Organizational downsizing, significant budget decreases, and changes in the Defense acquisition policy loom as perennial threats.

Some of those same organizational concerns also were highlighted by a U.S. National Research Council (NRC) committee addressing issues facing the HSI community within systems engineering (Pew and Mavor, 2007). The committee offered suggestions on how to succeed in the current evolving systems-engineering environment—an environment that prizes risk-identification and management, and incremental and spiral development; one that employs iterative designs, implements revolutionary software design tools and methodologies, and fully engages in an incremental commitment model of development. The NRC committee fosters creating more synergy between HSI research and practice to make practitioners more aware of relevant research and to better inform researchers about the insights and the body of knowledge gained from practice (Pew & Mavor, 2007).

The NRC committee’s numerous conclusions and recommendations should prompt discussion among HSI proponents and should spur human factors and ergonomics practitioners into action. If we are not already engaged in the material acquisition transformation process, soon we will be left with our own esoteric approach to system design, which will have passed us by a decade ago (Krueger, 2007).

Notes

1 In 2009, the Ergonomics Society changed its name to: Institute of Ergonomics and Human Factors (IEHF). See www.ergonomics.org.uk for more information.

2 For a summary of events crucial to involvement of psychologists in the war effort, see Uhlaner, 1968. For specific topics examined by National Research Council’s 13 World War I psychology committees, see Yerkes, 1919.

3 Division 19: Military Psychology was one of the original 19 APA divisions formed in 1946; many experimental psychologist members of Division 19 also became members of the fledgling new Division 21.

4 For more on the involvement of engineering psychologists in the systems engineering process for materiel system acquisition, consult Meister (1971 and 1976) and Chapanis (1996).

References

Alluisi, E. A. (1994). APA Division 21: Roots and rooters. In: H. L. Taylor (Ed.), *Who made distinguished contributions to*

- engineering psychology* (pp. 4–22). Washington, D.C.: The American Psychological Association Division 21: Applied Experimental and Engineering Psychologists.
- Booher, H. R. (Ed.) (2003). *Handbook of human systems integration*. Hoboken, NJ: Wiley Interscience, John Wiley & Sons.
- Chapanis, A. (1996). *Human factors in systems engineering*. New York: Wiley Interscience, John Wiley & Sons.
- Chapanis, A. (1999). *The Chapanis chronicles: 50 years of human factors research, education, and design*. Santa Barbara, CA: Aegean Publishing Co.
- Chapanis, A., Garner, W. R., & Morgan, C. T. (1949). *Applied experimental psychology: Human factors in engineering design*. New York: Wiley.
- Durso, F. T., DeLucia, P. R., & Jones, K. S. (2010). Engineering psychology. In I. B. Weiner & W. E. Craighead (Eds.), *Corsini encyclopedia of psychology*, (4th ed.) (pp. 573–576). Hoboken, NJ: John Wiley & Sons.
- Fitts, P. M. (1951). Engineering psychology and equipment design. In S. S. Stevens (Ed.), *Handbook of experimental psychology* (pp. 1287–1340). New York: Wiley.
- Krueger, G. P. (2007). Book review: *Human-system integration in the system development process: A new look*, book edited by R. W. Pew & A. S. Mavor (2007). *Ergonomics in Design*, 15, 4, 28.
- Krueger, G. P. (2010). U.S. Army uniformed research psychologists: Making a difference yesterday, today and tomorrow. In: P. T. Bartone, R. H. Pastel, & Vaitkus, M. A. (Eds.), *The 71F advantage: Applying Army research psychology for health and performance gains* (pp. 1–44). Washington, D.C.: National Defense University, Center for Technology and National Security Policy.
- Meister, D. (1971). *Human factors: Theory and practice*. New York: Wiley Interscience, John Wiley & Sons.
- Meister, D. (1976). *Behavioral foundations of system development*. New York: Wiley Interscience, John Wiley & Sons.
- Meister, D. (1999). *The history of human factors and ergonomics*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Meister, D. and O’Brien, T. G. (1996). The history of human factors testing and evaluation. Chapter 1. In: T. G. O’Brien & S. G. Charlton (Eds.), *Handbook of human factors testing and evaluation* (pp. 3–11). Mahwah, NJ: Lawrence Erlbaum Associates.
- Murrell, K. F. H. (1965). *Ergonomics*. London, UK: Chapman and Hall.
- Parsons, H. M. (1972). *Man machine system experiments*. Baltimore, MD: The Johns Hopkins Press.
- Pew, R. W., & Mavor, A. S. (2007). *Human-systems integration in the system development process: A new look*. Washington, D.C.: National Research Council, National Academies Press.
- Roscoe, S. N. (Ed.). (1980). *Aviation psychology*. Ames, IA: Iowa State University Press.
- Taylor, H. L. (Ed.), (1994). *Who made distinguished contributions to engineering psychology*. Washington, D.C.: The American Psychological Association Division 21: Applied Experimental and Engineering Psychologists.
- Thorndike, E. I. (1919). Scientific personnel work in the Army. *Science*, 49, 53–61.
- Uhlaner, J. E. (1968). The research psychologist in the Army—1919–1967. BSRL Technical Report No. 1155. Arlington, VA: U.S. Army Behavioral Science Research Laboratory.
- U.S. Army (1990 & June 2001). Army Regulation 602–2, Manpower and Personnel Integration (MANPRINT) in the Material Acquisition Process. Washington, D.C.: United States Army.

- U.S. Department of Defense. (2001, June 16). Mandatory procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS) acquisition programs. DOD 5000.2R. Washington, DC: U.S. Department of Defense.
- U.S. Department of Defense (December 2008). Department of Defense Instruction No. 5000.02: Operation of the Defense Acquisition System. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics.
- Welford, A. T. (1976). Ergonomics: Where have we been and where are we going? *Ergonomics*, *19*(3), 275–286.
- Yerkes, R. M. (1919). Report of the psychology committee of the National Research Council. *Psychological Review*, *26*, 83–149.
- Zinchenko, V., & Munipov, V. (1979). *Fundamentals of ergonomics*. (English translation in 1989). Union of Soviet Socialist Republics: Progress Publishers.

Psychology's Contribution to Military Training

Stephen L. Goldberg

Abstract

Military psychologists have made significant contributions to training methods and media design. The introduction of a systems approach to training has brought order to the system. Development of individual training methods for both the schoolhouse and distance education and training have allowed for continuing skill development over the course of a career. Engagement simulation technology and the After Action Review (AAR) process brought realism and an effective way to discuss lessons learned. Simulator systems such as Simulator Network (SIMNET), Close Combat Tactical Trainer (CCTT), and Distributed Mission Operations (DMO) have lowered the cost of training, while still exposing trainees to the full complexities of combat without the associated danger. Today's emphasis on cognitive tasks and decision making takes training to the next level from knowing "how to" to knowing "when and where to." Future work for military psychologists will include automating training processes and developing training methods to support the teaching of cultural adaptation.

Keywords: Military training, systems approach, simulation, collective training, intelligent tutor, after-action review

Over the last hundred years, psychologists have conducted research to address the unique challenges presented by military training. These challenges include: the wide range of occupations that need to be trained; the lack of equivalent civilian positions for many military jobs (i.e., infantrymen or armor crewman); very limited opportunities for lateral entry above the lowest level for either enlisted or officers (everyone starts from the bottom and is promoted from there); time spent in the military is a short three or four years for most service members, creating a continual requirement to train a steady stream of new recruits; unlike in civilian jobs military members can go for long periods without performing many of the key tasks in their occupation, resulting in forgetting and a need for retraining to maintain needed levels of proficiency; and individuals must be trained to perform their roles as members of a hierarchy of units or collectives. These challenges and the large numbers that must

be trained necessitate the use of training methods that are not only effective but efficient. As noted by Crawford (1969), the primary objective of training research is to increase the proficiency of the graduates of training programs. Two other objectives are reductions in both training time and cost. Military psychologists, working in either government laboratories or for contractor organizations, have had a primary role in improving military training for soldiers, sailors, airmen, and Marines.

The outcome of the training process is trained and ready units that are capable of achieving their assigned missions. Training generally progresses from learning of individual skills to collective skills. Servicemen and women, regardless of military service or officer/enlisted status, follow a similar course of training. They first go to a service school to learn the basics of their occupational specialty. They then join a unit where they learn to perform as part of a collective such as a squad, platoon, section, or

squadron. Service members learn how to perform tasks in individual schoolhouse training, and they learn when to perform them to support the unit's mission accomplishment in units. The focus of military training research has followed the same progression, from an initial emphasis on improving individual training to a later emphasis on collective training.

Historical Perspective

At the beginning of World War I, psychologists volunteered their services to the war effort. Much of their work involved developing and implementing mass administered tests for the selection and classification of servicemen (Uhlener, 1977). Relative to personnel testing, little effort went into changing the training methods of the day, which primarily used an apprentice approach. However, some psychologists interested in learning and retention did advise officers on training methods (Diskell & Olmstead, 1989).

Yerkes (1941) noted that the impact of the effort during World War I was lost in the interim between the world wars. The importance of psychology to military training, however, was recognized in an interesting "how to" book written by Lt. Colonel L. C. Andrews in 1920. The book, titled *Military Manpower: Psychology Applied to the Training of Men and the Increase in Their Effectiveness*, stated that "the objective of all military training is to fit officers and men to play their individual parts as leaders and members of their respective teams; and so to be able to deliver their maximum manpower at the time and place of battle." Andrew's book extols the virtues of coaching methods, suggesting that instructors should make corrections and suggestions, encouraging their men and keeping them alert and cheerful. He warns, for example, against what must have been the prevalent training method at the time, yelling. Although much of the book is devoted to training soldiers to "drill," many of the methods Andrews put forth were ahead of their time.

The Second World War brought a resurgence of interest in military psychology. The war brought psychologists out of academia to face real-world problems (Kantowitz, Roediger, & Elmes (2009). While most of the work during World War I centered on selection and classification testing, during World War II the large numbers that needed training and the increased complexity of military systems brought attention to the need for training methods that could both train the numbers needed and do it effectively. Some of the most noted psychologists in

the country joined the military or worked in military labs. During the height of World War II, one out of every four psychologists in the United States was involved in military psychology (Driskell & Olmstead, 1989). Military psychologists developed systematic training and training effectiveness evaluation methods (Craighead & Neroff, 2002). They examined the training of gun crews, Navy engine room personnel, and radio operators. They also developed synthetic trainers, overhead projectors, and sound slide programs (Driskell & Olmstead, 1989). The Aviation Psychology Program (APP) was begun under the direction of John C. Flanagan and had noted learning theorist Neal Miller on its staff (Savickas & Baker, 2005). Psychological research on operational training was performed with fighter pilots, navigators, bombardiers, flight engineers, radar observers, and flexible gunners. The acquisition and retention of aircrew skill was also studied (Crawford et al., 1947). A group of 30 university based psychologists helped the Army Air Force in pilot training. They worked for the National Research Council's Committee on Aviation Psychology and used academic facilities to study military problems (Savickas & Baker, 2005).

Unlike after World War I, work in military psychology continued after World War II. In the late 1940s and early 1950s, organizations emerged in the military services to continue to perform the types of military psychology research begun during the war. In 1949 the Human Resources Research Center (HRRC) was established in the Air Training Command (Brokaw & Perrigo, 1981). In 1950 the Army established a Federal Contract Resource Center at George Washington University to conduct training research. The Human Resources Research Organization's (HumRRO) training research mission was eventually assumed by the U.S. Army Research Institute for the Behavioral and Social Sciences, with HumRRO continuing to the present as a not-for-profit contract research organization (Crawford, 1969). The Office of Naval Research (ONR), organized in 1946, has funded a great deal of the fundamental educational research in the United States (Chipman, 2004). The Naval Personnel Research and Development Center and the Naval Training Device Center (later Naval Air Warfare Center, Training Systems Division) have conducted Navy and Marine Corps training research. These laboratories and centers have conducted and supported research on training issues relevant to their service. Up through the 1980s, much of the work focused on training of individual job skills.

Individual Skills Training ***Systems Approach to Training***

McFann (1974) in his presidential address to the American Psychological Association's Division of Military Psychology discussed what military psychology could offer to civilian education. The first contribution he discussed was development of a systems approach to training that relied on task analysis as its foundation. McFann noted that Gagne, in his 1961 presidential address, looked toward task analysis as the way to improve military training over help that could be provided by well-known learning principles. Gagne believed that the design of instruction should be based on an analysis of the subject matter (Spector, 2000). Gagne's approach to military training encompassed nine steps that are at the heart of the systems approach to training. According to Gagne, instruction in the context of military training should (1) gain attention, (2) inform the learner of the objectives of the instruction, (3) stimulate recall of prior learning, (4) present the stimulus material, (5) provide learning guidance, (6) elicit performance, (7) provide feedback, (8) assess performance, and (9) enhance retention and transfer (Gagne, 1962). In 1966, a military-wide regulation was published that prescribed a systems approach to training. This was followed in the mid-1970s by publication of the Interservice Instructional Systems Design (ISD) (Branson, 1975) model for training analysis, design, development, implementation, and assessment. The ISD model described in detail the steps that needed to be followed to produce effective military instruction. The ISD model had a strong influence on military training processes. The U.S. Army Training and Doctrine Command went as far as to redesign the structure of their schools to be consistent with it.

The ISD model was the foundation for the widespread use of performance-based approaches to training. In performance-based training, learning and relevance are not to be secondary to scheduling (Scales, 1994). The U.S. Army produced soldier's manuals for each military occupational specialty (MOS) that described the tasks, conditions, and standards for each job at each of four skill levels. At Skill Level One, training was focused on learning procedures for the job tasks soldiers were most likely to have to perform during their first tour of duty. At higher skill levels, soldiers would receive more information on theory, concepts, and decision making. The early emphasis on procedural knowledge produced trainees who showed up at their first unit capable of performing a limited number

of tasks. It was up to the unit to train the tasks not taught in institutional training and to teach employment of tasks and decision making.

Rifle Marksmanship Training

Rifle marksmanship is taught to everyone entering the military, and it has been the focus of considerable attention by military psychologists. Researchers at HumRRO conducted four rounds of rifle marksmanship studies from 1955 to 1971 (Dees, Magner, & McClusky, 1971; McFann, Hammes, & Taylor, 1955; Olmstead & Jacobs, 1969; and Staff, HumRRO, 1959), resulting in improvements to the marksmanship program of instruction. This work was followed by an extensive program of research conducted by the Army Research Institute Field Unit at Fort Benning, Georgia, and its contractor, Litton-Mellonics. The goal of the Army Research Institute research was to train infantrymen and other soldiers to meet the rifle-defeatable threat from 300 meters away and closer (Smith et al., 1980). Smith and his colleagues (1980) found deficiencies in the way the marksmanship training was conducted and the way that feedback that was provided after firing. Instruction was hurried, and much of the information that had been traditionally taught earlier had been lost or reduced to the "eight steady hold factors," a list of behaviors that had been determined to contribute to good marksmanship. Nothing was taught about the effects of wind or gravity on the flight of the bullet. The instructors seemed to have a general lack of knowledge or skill in marksmanship training. Also, because of a shortage of instructors, there was virtually no opportunity for individual instruction. By contrast, Smith and his colleagues found that Marine rifle marksmanship training utilized highly trained instructors who would provide a considerable amount of individualized instruction. A comparison of Marine and Soldier performance found that the quality of instruction and/or number of instructors and the quality of knowledge of results did have an impact on performance.

Smith and his colleagues (1980) summarized a series of experiments conducted at Fort Benning to overcome the marksmanship training problems they had identified. In a different study, Evans, Thompson, and Smith (1980) compared three groups of shooters. One group went through a day of standard re-qualification with little instruction or feedback, and a second group took part in a two-day program with Army Marksmanship Unit instructors. A third group received training

equivalent to Marine marksmanship training: they spent three days in a program that included the Army Marksmanship Unit instruction and a day on a known-distance range. Results on a record fire range showed a 44 % improvement for the third group relative to the group that took the normal re-qualification training. Other research addressed the rifle-zeroing process, feedback issues, and the accuracy of the rifles themselves. This research resulted in a redesigned basic marksmanship program that featured a revised zeroing target, scaled silhouette-target transitional exercises, downrange feedback, and to the extent possible, extra instructors. An experiment testing the new approach demonstrated a 29% improvement in hits over the control group.

The success of these changes influenced the U.S. Army Infantry School to base a new program of instruction on them (USAIS, M16A1 Rifle Marksmanship Training, 1980). Further research on rifle marksmanship addressed advanced marksmanship training for infantrymen and unit-based marksmanship training (Evans & Osborne, 1988). After an extensive review of Army Infantry missions quick fire (a method used to deliver fast, effective fire on surprise personnel targets at close ranges [FM3–22.9]), suppressive firing (rifle fire precisely aimed at a definite point or area to control the enemy by killing them, preventing them from observing the battlefield or effectively using their weapons [FM 3–22.9]) and firing at moving personnel targets were topics added to advanced marksmanship training for infantry Soldiers. In Army units, marksmanship training must consider both individual and unit-collective firing proficiency (Osborne et al., 1985). With the exception of quick fire, the individual portion of the unit marksmanship program mirrors those in basic marksmanship. The collective training portion is less standardized, varying by unit mission requirements. In developing and refining training for basic, advanced, and unit marksmanship, over 18,000 Soldiers were tested. In more recent years, rifle marksmanship training research has focused on the use of simulators and training devices to provide more practice opportunities and contain costs and firing using night-vision devices (Evans, Dyer, & Hagman, 2000).

Skill Retention

Recruits entering the military go through a period of training immediately upon enlisting. The training provides them with basic military skills such as drill and ceremonies, first aid, use of a gas mask, and

care and use of weapons. After basic training or boot camp, they will go on to training in the specific job skills of their occupational specialty. Mechanics learn the basics of parts replacement; armor crewmen learn to drive, load, and fire tanks, etc. A major concern has been that by the time a Soldier, sailor, airman, or Marine gets to his first assignment, he may have forgotten how to perform many of the tasks he had learned earlier. Considerable research has been performed by military psychologists over the last 35 years to determine how quickly various tasks and skills are forgotten and how frequently they have to be retrained or practiced to maintain their currency (Schendel, Shields, & Katz, 1978). A number of variables have been identified that are relevant to skill retention. These included the nature of the task, individual differences, training frequency, and level of performance mastery or skill acquisition (Shields, Goldberg, & Dressel, 1979, Goldberg, Drillings, & Dressel, 1981, Hagman & Rose, 1983).

Rose and his colleagues (1985) developed a model based on an extensive data set that predicted skill retention for a range of military tasks. The model, which was called the User's Decision Aid (UDA), required answers to a series of questions. Questions addressed the use of job aids in task performance; the number of steps in procedural tasks; the need to perform the steps in a specified sequence; judging whether or not the tasks had a built-in logic that allowed one to judge if it was being done correctly (e.g., putting a rifle back together: if the parts aren't fitting together you know you aren't doing it right); if the task has a time limit; if there are mental or thinking requirements in the task; the number of facts, terms, names, rules, or ideas that must be memorized in order to perform the task; how hard are these to remember (simple to complex); and what were the motor-skill requirements of the task. The output of the UDA is a single score that predicts the decline in performance among Soldiers who were proficient at the conclusion of training. The UDA identifies a curve that gives the percentage of those trained who will be able to perform the task correctly after a given interval of no practice (Rose et al., 1985). By applying the UDA, training managers would have the information they would need to schedule training at intervals that would maintain an adequate level of proficiency without having to train all tasks at the same rate. Factors such as the criticality of the task to the mission could also be taken into account.

In the late 1980s and early 1990s, the use of the Individual Ready Reserve (IRR) to augment active-duty Soldiers in Bosnia and Desert Storm provided an opportunity to evaluate the skill retention of Soldiers who had been away from the military for long periods of time. Results of this research are summarized in Wisner, Sabol, and Ellis (1999). Based on the testing of IRR members soon after they reported for duty, Army (Wisner et al., 1991) and Air Force (Davis, 1991) research found that, for procedural or knowledge-based tasks, there was a typically large fall-off in performance after 18 to 24 months, with considerable variability across task type. For mobilized IRR Soldiers, performance ranged from a 73% pass rate for “evaluate casualty” to 17% for “decontaminate skin and equipment.” Other common soldiering tasks fell in between these extremes, but most had “go” rates below 40% (Wisner et al., 1996).

Researchers found that reacquisition of task performance proficiency occurred relatively quickly compared to original training time. In data summed across three different studies, Sabol (1998) found that approximately 90% of Soldiers could receive a “go” after training lasting less than 40% of the original training time.

Skill acquisition research has also investigated strategies for prolonging retention. Suggested approaches to prolonging retention include: using the UDA to develop an optimal training schedule to keep as large a number of Soldiers current as possible (Wisner et al., 1996); maximizing the original learning (Goldberg et al., 1981; repeating testing during training (Hagman, 1981); spacing practice compared to massed practice (Hagman, 1980); teaching facts within the context of task performance; using a task-oriented versus topic-oriented method (Sturges, Ellis, & Wulfeck, 1981)); and encouraging peer tutoring, where Navy researchers found that the tutors remembered significantly more than those they tutored (Semb, Ellis, & Araujo, 1993).

The vast majority of the studies and data on skill retention has involved skills and tasks performed by service members in their first enlistment. Little is known about retention of skills or growth in proficiency that occurs over a career in the military. A recent Air Force-sponsored conference brought together military psychologists to discuss this issue and the related question of how the military develops experts (O’Neil, 2009). Concern about skill retention has recently reemerged due to the nature of the counterinsurgency missions the United States

and its allies are involved in. These missions, for the most part, do not involve performance of many tasks and skills needed to fight a mid-intensity conflict between large nation states. The operations in Iraq and Afghanistan are very different from the type of war the Army prepared for during the Cold War and fought in the Gulf in 1991 and 2003. There is a concern about the retention of these skills and how often they must be trained to keep the military ready for the full range of potential conflicts.

Training Technologies for Individual Training

Platform instruction has been the single most prevalent individual training method used by the services over the last 60 years (Driskoll & Olmstead, 1989). This form of institutional training requires skilled and knowledgeable instructors in large numbers. Demands to decrease the cost of training has motivated a search for new ways to train service members that reduce both the number of instructors and the amount of time for institutional training. Military psychologists have played an important role in developing and validating a number of technology-based alternatives to platform instruction.

Correspondence courses (Rocklyn, 1982), audio and visual tapes (Knerr, Downey, & Kessler, 1975), computer-based training (Yasutake, 1986; Graham, 1987), video-disk based courseware (Schroeder et al., 1986), synchronous and asynchronous online courses (Phelps, Ashworth, & Hahn, 1991), and intelligent computer-based training or tutoring (Chipman, 2004) are the major training technologies that have been used in individual training. These technologies vary in media, automation, and intelligence. Correspondence courses and audio/visual tapes present the least technologically sophisticated approaches. In both cases, instruction is rote, with no opportunity for individualization. Computer-based training and video-disk-based training allow for branching, depending on student progress. Online courses, when presented synchronously or asynchronously, attempt to bring many of the features of classroom instruction to a distributed training audience. These courses have instructors who assign work and are available to answer questions.

Intelligent computer-based training or “intelligent tutoring” is the most sophisticated approach. Intelligent tutors attempt to individualize instruction to foster faster learning and better performance. An optimal intelligent tutor seeks to teach in much

the same way as a human tutor. It presents material based on the student's prior learning using a pedagogical strategy to work its way through the corpus of information to be taught (Corbett, Koedinger, & Anderson, 1997). The tutor could also take into account the student's current emotional state, preferred learning style, and other factors (Ong & Ramachandran, 2005).

Of the presentation technologies discussed above, primary attention by research psychologists has been focused on computer-based training and intelligent tutor design, development, and effectiveness. Computer-based training research originally focused on systems that had a central computer that provided instruction to nodes at various distant sites. Programmed Logic for Automated Teaching Operations (PLATO) and Time-Shared Interactive Computer Controlled Information Television (TICCIT) were two of the early computer-based training systems. TICCIT in the early 1980s developed a personal computer-based form that was more flexible than the central processor version. An early test of "micro-TICCIT" by the Army Research Institute demonstrated that computer-based training could effectively train complex maintenance skills using simulations and carefully constructed feedback (Graham, 1987). A goal of computer-based training was to present material in an engaging way and not just be a page-turning device. Computer-based training has become a central technology in the military's distributed learning programs.

The U.S. Army, Air Force, and Navy have each funded research programs in intelligent computer-based training (ICT) technology. Chipman (2004) reviewed ONR's program in this area. ONR began funding work in artificially intelligent tutoring in 1969 and has funded the research of a number of prominent university-based researchers. The tutors have predominantly taught academic subjects such as algebra and physics. Chipman points to two relatively early projects that demonstrated that ICT technology could apply to practical military training problems. The two projects, the Navy's Intelligent Maintenance Training System (Towne & Munroe, 1987) and the Air Force's SHERLOCK projects (Gott, Kane, & Lesgold, 1995), both involved maintenance training. While effective tutors could be built, they were being built by researchers and not training developers. As a result, development costs were high, limiting more widespread adoption of the technology (Towne & Munro, 1991). Air Force investment in authoring systems during the

1990s was a focal point of their extensive research program in tutor technology. Unfortunately, the inability of tutors to meet their promise and the closing of the Air Force Research Lab's office at Brooks Air Force Base reduced the investment in the area, and ICTs have still not reached a point where they are commonly found in military training.

Most successful intelligent tutors have taught subjects (math, physics, troubleshooting) that had well-understood, structured knowledge domains. Recent tutor research is beginning to move outside those areas to address less-structured areas such as decision making, where the "correct" action may be ambiguous (Durlach, 2009). Tutor technology has the potential to partly make up for the decrease in the number of instructors in military schools (Dempsey, 2010).

Researchers are attempting to address difficult intelligent tutor issues that include computer-based natural language understanding (Ryder et al., 2002); development of tutors for training ill-defined domains such as command and control and the training of team, crew, or unit performance; a student model that includes a wider range of variables that impact learning (Hernandez, Sucar, & Conati, 2008); and alternative instructional strategies. The lack of effective authoring systems remains a problem, and most tutors are still being handcrafted by their developers.

Today's military must be skilled in areas beyond military strategy and tactics. Both officers and enlisted are being asked to negotiate with members of other cultures, run towns and cities, and rebuild destroyed infrastructure. Tutor technology has the promise of potentially capturing this knowledge and customizing training to a broad range of trainees.

Simulation for Individual Training

Military psychologists have had prominent roles in the design, training strategy development, and evaluation of simulators. Simulators have been built in increasing numbers because they save wear and tear, are less expensive to operate, and are safer than training on actual equipment. Simulators were originally designed to assist in the training of pilots. Their use has spread, and there are now simulators to train warfighters to drive, pilot, shoot, or control a wide range of equipment in each of the military services.

The first modern simulator, known as the "Blue Canoe," was designed by Edwin A. Link to train

World War II pilots to fly by instruments. The Link trainer employed vacuum technology similar to that used in organs in the 1920s (DeAngelo, 2000). Simulators have progressed significantly since those early days. The level of visual realism that can be attained at a low cost with today's computer-generated graphics is remarkable compared to even a few short years ago. Yet many of the questions asked then are still relevant to the design of simulators today. "How much fidelity is enough?" "What tasks can this simulator train?" and "Does performance in the simulator transfer to the actual equipment?"

The question of how much fidelity to the real world is needed for effective training is perhaps the most persistent of these questions. If you ask those in uniform what they want in a simulator, they will tell you they want it to replicate the real world in every detail (Stewart, Johnson, & Howse, 2008). In other words, the simulator must stimulate visual, auditory, tactile, and olfactory senses in ways that mirror the sensory inputs of the real-world environment. Military psychologists have long argued against the universal need for this degree of realism or fidelity (Singer, 1993; Stewart, 1993; Stewart, Johnson, & Howse, 2008). Boldovici (1992) and others have argued for attention to be focused on the tasks to be trained, presenting the necessary stimuli to initiate the desired performance in the trainee. Many of the issues involved with fidelity and realism have been erased by the progress made by the simulator industry. Realism that would have been very costly or unattainable in the 1980s and 1990s is now the industry standard. Some fidelity questions have been addressed repeatedly with no satisfactory conclusion. An example of this is the question of whether or not there is a need for motion platforms in flight and driver trainers (Fedderson, 1962; Boldovici, 1992; Bowen, Oakley, & Barnett, 2006; McCauley, 2006). No satisfactory answer has been reached, because there is limited empirical transfer of training data due to the danger of performing the tasks where motion cues are most important in the actual aircraft or ground vehicle.

Since visual fidelity now approaches photo realism, fidelity questions are being asked about the realism required for senses other than vision. The need for accurate smells is being investigated for medical training (Fowler, 2005), and in the Future Immersive Training Environment (FITE) Joint Capability Technology Demonstration (JCTD) for training infantry for operating in urban areas (Joint Forces Command [JFCOM], 2009). Tactile stimuli in the form of a shock are being investigated as a

means to simulate being shot (FITE, JCTD, 2009), and the Joint Fires and Effects Trainer, which trains forward observers on rules of engagement and call for fire, can reproduce the high temperatures Soldiers might encounter in current operating areas (Institute for Creative Technology Fact Sheet, 2011). The question "What tasks can this simulator train?" is sometimes asked after a simulator has been procured because the simulator was designed and developed without a careful analysis of the tasks it should be designed to train. In order to design simulators to meet training objectives, research psychologists have developed techniques for assisting design engineers to do critical tradeoff analyses based on the tasks to be trained. Analysis and tradeoff procedures were incorporated in the Optimization of Simulation-Based Training Systems (OSBATS) tools. OSBATS was developed to allow those writing simulator design specifications to tradeoff fidelity and cost while maintaining training objectives (Sticha, 1990). A similar set of tools was developed by the Air Force to derive training requirements, select an approach for meeting the objectives identified, and make training equipment and fidelity and instructional-design decisions (Hritz et al., 1980).

Transfer from performance on the simulator to performance on the actual equipment is at the heart of simulator effectiveness. Several techniques have been developed by military psychologists for measuring transfer of training. The simplest of these is the "backward transfer of training" method, in which those who are experienced operators of a system perform tasks they would in the system in a simulator that they are unfamiliar with (Stewart, 1994). If they are able to perform the tasks in the simulator successfully without prior practice, it can be assumed that transfer from simulator to system will also occur. Another technique takes into account the savings in system-training time that training on the simulator provides (Kaempf & Blackwell, 1990). So if training on the simulator reduces the amount of training time on the actual system, then positive transfer has been demonstrated. In a review of aviation-simulator-transfer studies conducted from 1986 to 1997, Carretta and Dunlap (1998) found that the literature demonstrated several problems in conducting transfer studies. Researchers do not typically report sufficient details about their procedures, and few studies include complex pilot skills.

The methods and studies reported above were developed for aviation transfer of training. Research has also been conducted investigating transfer from simulators that train driving (Kaptein, Horst, &

Hoekstra, 1996), tank gunnery (Smith & Hagman, 1993), and maintenance skills (Mirabella, MacPherson, & Patterson, 1989). Too often the acquisition of training systems by the military occurs without adequate analysis of their effectiveness in training skills and having those skills transfer to the actual equipment or warfighting situation (Salas, Milham, & Bowers, 2003). Frequently there is more concern about the possibility of the training system providing negative transfer, or the training of dysfunctional or potentially dangerous behaviors, than about its positive effects. Even so, negative training is also rarely systematically investigated in the course of acquiring a training system (McCauley, 2006).

Collective Training

Up to this point our discussion has focused on the training of individual warfighter tasks and skills. Of course it is rare in the military for individuals to act alone. Soldiers, sailors, airmen, and Marines perform missions as a unit or collective. Collective training is the training that teaches them to function as a unit and perform their individual tasks within the unit context. Until 1980, most training research efforts were directed at individual warrior training issues. Since then the emphasis has switched to collective training. Military psychologists have played an important role in the introduction of new training strategies, methods, and technologies for collective training in each of the services.

Engagement Simulation

Through the end of the Vietnam War, collective military exercises or training events were conducted using referees who subjectively determined casualties. There was a need for objective casualty assessment methods that would be a better measure of collective proficiency and also force exercise participants to practice more realistic tactical behaviors. In this way, how they acted on the battlefield would actually bear upon whether or not they “survived” the training (Root et al., 1979). Squad Combat Operations Exercise (SCOPE) and REALTRAIN, an expansion of SCOPE to tanks and antitank weapons, were early engagement simulation methods in the Army that were developed jointly by the Army Research Institute and the Combat Arms Training Board (CATB) (Gorman, 1992). They involved realistic two-sided tactical training where casualties were assessed by one side reading numbers displayed on either enemy individuals or vehicles (Shriver et al., 1975). SCOPE and REALTRAIN,

while low-cost, still required the intervention of referees.

The introduction of the Multiple Integrated Laser Engagement System (MILES) took engagement simulation to a new level (Sulzen, 1986). MILES placed eye-safe lasers on Soldiers’ individual weapons and weapon systems (i.e., tanks). Soldiers and vehicles were outfitted with laser detectors that would react to near misses and hits. When a Soldier or vehicle was hit, the extent of the damage was assessed. The evaluation of MILES by the Army Research Institute found it effective in training Soldiers to move tactically and behave realistically (Oberts-Gray et al., 1981). MILES provided immediate intrinsic feedback to Soldiers and significantly reduced the need for large numbers of referees on the simulated, live battlefield.

Realistic engagement simulation was a driving force for the services to develop Combat Training Centers (CTC). The National Training Center (NTC) at Fort Irwin, California, the original and largest of the Army’s CTCs, was organized in the early 1980s to provide a place for units to exercise their collective skills against a capable enemy in a large maneuver area. Throughout most of its existence, the NTC has prepared units for large-scale battles that could occur in Cold War scenarios. In recent years, the end of the Cold War and the U.S. Army’s involvement in counterinsurgency wars in Iraq and Afghanistan have dramatically changed the training at the NTC. The NTC now provides mission rehearsal exercises for deploying units. Units are trained to operate in urban environments in close contact with the indigenous population (at the NTC, civilians are played by role players, immigrants from Iraq or Afghanistan). Training in fire and maneuver tactics with tanks and other mechanized forces as had been done in the past occurs infrequently. Engagement simulation is still a key piece in ensuring realistic casualty assessment and combat performance. Red Flag exercises at Nellis Air Force Base in Nevada serve much the same purpose for the Air Force as the NTC does for the Army.

The After-Action Review

A byproduct of new technologies for engagement simulation was a new way of providing feedback to Soldiers. The After-Action Review (AAR) is a technique that was derived from methods that S. L. A. Marshall used during World War II to gain a perspective on what occurred in battle. He conducted group interviews that he called “interviews after

combat” (Everett, 1992). His technique allowed Soldiers to provide their perspective on what happened and why. It became the foundation for the AAR as it was developed by military psychologists and senior Army training analysts (Bosley et al., 1979; Word, 1987).

The AAR replaced the “critique.” Critiques were feedback on unit performance provided by exercise referees. They were based on the observations of the referees and their assessments of what had happened. Since their views of the battlefield were limited and they had determined the outcome, there was a considerable amount of subjectivity in the process. With the introduction of engagement simulation, more objective outcomes were possible and a new way of providing feedback was needed (Morrison & Meliza, 1999). Table 19.1 describes the attributes of each feedback method.

The Army implemented the new approach to AAR in the early 1980s. It was a fairly radical concept, since officers and enlisted men would share their experiences, and mistakes by leaders and led were openly discussed. In the years since its introduction, the AAR has become an accepted practice in the U.S. Army. The CTCs’ reliance on the AAR as their primary feedback method increased the prominence of the AAR as an effective training method (Gubler, 1997; Morrison & Meliza, 1999). CTC observer/controllers (O/C) have generally set the standard for AAR quality. CTC O/Cs receive training in leading AARs, and they lead them frequently. Military psychologists, as noted above, were responsible for refining this process, and they

also developed the initial CTC training for O/Cs on how to lead them (Scott & Fobes, 1982).

In addition to utilizing state-of-the-art engagement simulation technologies, the CTCs are instrumented ranges that track vehicles and record firing events. Capturing and displaying these data provides a picture of “ground truth,” including the sequence of movements. Comparing what actually happened to the perceived truth of the training audience has proven to be a powerful mechanism. It allows those being trained to identify cause-and-effect relationships on the simulated battlefield and to transpose them to possible future scenarios (Knerr & Lampton, 2005). The AAR approach has been applied to live field training, constructive simulation-based training for command groups, and virtual simulator-based training (Morrison & Meliza, 1999).

Virtual-Networked Training Systems

An Air Force research psychologist was the Defense Advanced Research Projects Agency (DARPA) program manager for the Simulation Networking (SIMNET) program. That ground-breaking program, begun in the early 1980s, tied multiple simulators together in a computer network to allow collective training to be conducted (Alluisi, 1991; Cosby, 1995). SIMNET was a research program that showed enough promise that it has been followed by fielded networked simulator-based training systems in the U.S. Army (The Close Combat Tactical Trainer) and Air Force (Distributed Mission Training).

Table 19.1 Contrast of performance critiques and AAR (from Morrison and Meliza, 1999)

Characteristics of Feedback	Performance Feedback Method	
	Traditional Performance	Critique AAR Sessions
Soldier participation	Soldiers are passive members of an audience	Soldiers are active participants in a discussion
Main topic of discussion	Errors committed	Sequence of events
Direction of communications	One-way (from leader to participants)	Two-way
Atmosphere	Defensive	Open to suggestion
Instructional style	Traditional lecture	Guided discovery learning
Source of information: why it happened?	Exercise leader and controllers	Participants, members of the opposing force, and exercise controllers
Source of information: What happened?	Subjective judgment	Objective performance indicators

SIMNET and the distributed interactive simulation systems that came after it all function the same way. They pass data across a network frequently enough so that the simulators on the network can maintain an up-to-date representation of the state of each of the entities represented in the overall simulation (Thorpe et al., 1987). SIMNET was primarily engineering- and computer-science-oriented. SIMNET still presented significant opportunities for behaviorally oriented training researchers. Questions about what tasks the system is capable of training, what training strategies would be most effective, how to efficiently develop scenarios, how to measure system training effectiveness, and what data to capture and how to best display them in AARs had to be answered to train with these systems and demonstrate their effectiveness. However, little of the money invested in development went toward addressing these questions. To its developers, SIMNET was a simulation that left it up to its users how it would be employed. They were sure that it would benefit combat units by allowing them to practice in a combined-arms atmosphere (Thorpe et al., 1987). The behavioral science research community took it upon themselves to address the training issues.

SIMNET was not designed to train a specified set of tasks. Instead, it displayed a virtual environment in which simulated entities (people or things) could operate. The vehicle simulators in SIMNET were designed with fidelity tradeoffs to keep costs low. As a result the simulators are more capable in some areas than others. For example, the gunnery controls in SIMNET tanks do not require the input of the same data that is necessary on the M1 tank. Therefore, one would not want to rely on SIMNET to train for all battle tasks. Also, many of the controls inside a SIMNET M1 tank were non-functioning pictures wallpapered to the inside of the simulator cabinet; therefore, tasks associated with those controls could not be performed. Since SIMNET was a research project, many of the decisions about what tasks could or could not be performed were not well documented. In designing training for SIMNET and later its follow-on the Army's, Close Combat Tactical Trainer (CCTT), it was necessary to analyze the simulation system to determine the degree to which it could represent the performance of various individual and collective military tasks. Burnside (1990) developed a rule-based methodology for making these assessments based on the ratings of subject-matter experts.

The NTC instrumentation system captures movement and engagement data to support AARs and analysis. The AAR data are available only because of the significant investment in buying and maintaining the instrumentation system. SIMNET, on the other hand, produces the same data routinely and shares them across the simulation network. The SIMNET program, however, did not develop a way to capture and display the data for AAR purposes. Seeing this as a missed opportunity, the U.S. Army Research Institute developed the first virtual AAR system for SIMNET, the Unit Performance Assessment System (UPAS) (Meliza, 1992a, 1992b; Meliza et al., 1992). UPAS was a node on the network that recorded the protocol data units that contain the formatted data about vehicle movement and weapons. UPAS was capable of playing back what happened or extracting information that could be presented as AAR aids. AAR aids were summaries of events or data that represented ground truth, and they could serve as the basis for discussion by the AAR leader and the training audience. A significant UPAS contribution was the development of a number of innovative aids for summarizing unit performance. UPAS was the first of several AAR systems developed by or for ARI (Brown et al., 1997; Clark et al., 2004). Many of the AAR system features of the early ARI prototypes have become part of other AAR systems that have been fielded or are being used for research purposes.

Another networked simulator capability that has received considerable research attention is being able to provide training to small infantry units through dismounted combatant simulation. SIMNET and CCTT are both simulations in which the training audience is riding in vehicles. These "vehicles" consist of workstations at which operators sit. An operator's movement is limited by the movement of the vehicle. Their vision is also constrained as it is in an actual vehicle. A tank gunner, for example, sees the world outside his tank through sights and vision blocks. Immersing an individual in a virtual world on foot is much more challenging. Individuals need to interact with their environment and effectively perceive and act on it. As noted by Cohn and colleagues (2003), individuals need the ability to move about the virtual environment, manipulate objects, react appropriately to haptic stimuli, locate virtual sounds, and perform visual tasks (i.e., judge distances, recognize friendlies and enemies, and estimate the size of objects). Military psychologists from the Army and Navy have been tackling the dismounted simulation problem for more than ten

years. Virtual-reality technologies provide the means to perceive and act on the virtual environment. Training and behavioral results of the Army's program in dismounted simulation are reported in Knerr (2007). Knerr concludes that virtual immersive simulations can provide the opportunity for small-unit leaders and unit members to learn and practice the cognitive and decision-making skills that will allow them to respond adaptively to rapidly changing situations. Cognitive and decision-making skills can be trained even if some physical tasks cannot be performed in the simulation.

The Navy and Marine Corps, through the Office of Naval Research, recently concluded a program to develop a dismounted combatant simulation capability. Titled Virtual Technologies and Environments (VIRTE), it focuses on developing new interactive technologies based on understanding human perception and actions in virtual environments (Cohn et al, 2003). VIRTE, in addition to designing and developing systems that enhance performance in virtual worlds, is also focused on performing team task analyses, motion sickness evaluations, usability analysis, and evaluation of team-based performance enhancement (Cohn et al., 2000).

Structured Training

The method of training in networked simulations was not a primary concern of SIMNET developers. Keeping training close to the way it was administered in the field was a goal (Thorpe et al., 1987). SIMNET was distributed to both Active and Reserve Component units. In the Reserve Component, training time was limited and more structure was needed since units would not have the time to plan and develop their own training scenarios. The first structured training packages were developed under the Virtual Training Program (VTP) (Hoffman et al., 1995).

The VTP was designed for reserve units, and the emphasis was entirely on the execution of a mission. Planning and preparation was not emphasized, and necessary plans were incorporated in the training support package (TSP). The TSP contained the scenario, enemy actions, tasks trained by the package, all of the planning information needed, and a guide for the AAR. The TSP dictated all the events, ensuring that the tasks to be trained occurred (Campbell, Quinkert, & Burnside, 2000). VTP TSPs were developed for platoon through battalion training. The VTP scenarios were later adapted for the Close Combat Tactical Trainer and were used to drive the operational test of the training system. Scenarios for higher echelons used Janus a constructive simulation.

The TSP training approach was developed for training staffs as well as combatants. Brigade Staff Exercise and Brigade-Battalion Staff Exercise use constructive simulations to provide input to the staff decision-making process. The staff training TSPs required planning and preparation as part of the exercise (Campbell et al., 2000). TSP-based training at each echelon went through an evaluation phase where the ability of the training to impart the skills necessary to improve performance was measured (Shlecter & Finley, 2000). Across the various structured training programs, results consistently showed that participants saw improvement in their skills.

Distributed Mission Operations

Distributed Mission Operations (DMO) is a concept developed by the U.S. Air Force Research Laboratory to leverage advances in computing and communication technologies to provide a distributed synthetic training environment that utilizes advanced image generation technologies, high resolution displays, and secure distributed networks (Bell, 1999). DMO research has been conducted at the Air Force Research Laboratory's Warfighter Training Division in Mesa, Arizona. The focal point of the training research program is a network of four F-16 simulators that can be flown as a four-ship team. These simulators can be connected in real-time to simulators at other locations in the United States and around the world (Shvaneveldt et al., 2002). The other locations can provide players in other roles, such as Airborne Warning and Control System (AWACS) operators. The objective of DMO is to concurrently train air crews in tasks requiring coordination, communication, and decision-making (Ramesh & Andrews, 1999). It provides an environment in which collective training can take place that is not constrained by security, cost, and safety restrictions (Crane, 1999). After early success, the U.S. Air Force leadership determined the concept could improve actual operations in addition to training. The expanded DMO concept went beyond research to include capabilities to connect live, virtual, and constructive environments to form a synthetic battlespace for training and for operations (Andrews & Bell, 2009).

Considerable attention has been paid to making DMO a high-fidelity training environment. DMO engineering requirements and challenges have included a need for high-resolution visual systems, multilevel security, development and maintenance of necessary databases, realistic representation of

threats, and interconnection technologies (Straw, 2002). Video and telephonic devices, electronic whiteboards that allow transmission of photos, PowerPoint slides and maps were technologies adapted to provide participants with briefings and debriefings (Andrews & Bell, 2009). Rapid, effective communications between a training audience that had not worked together before fostered development of shared mental models that would contribute to building the trust needed for effective performance (Crane, 1999, as described in Andrews & Bell, 2009). DMO has also improved capabilities to measure training performance through embedded measurement technologies in DMO computers and providing observers with the means to record their subjective observations.

DMO research has addressed the acquisition and growth of complex skills based on field training, rather than institutional training experiences. Better understanding of the individual and team-training process began with development of a job-analysis approach to determine the mission-essential competencies (MEC) that fighter pilots must possess in order to perform successfully (Alliger et al., 2007). MECs are defined as the higher order individual, team, and inter-team competencies that a fully prepared pilot, crew, or flight requires for successful mission completion under adverse conditions (Symons et al., 2006). MECs enable the determination of training requirements and the appropriate mix of live operation and virtual training media, and directly enable the construction of air combat simulation scenarios for which validated measures of performance can be developed.

Evaluating the effectiveness of DMO has rested on metrics derived from MECs; process and product measures, such as number and types of communications between teammates; degree of coordination; accuracy of situational assessments; correctness of command-and-control decisions; and impact of the mission effects on the simulated battlefield (Schvaneveldt et al., 2002). DMO effectiveness has been evaluated in a number of contexts. The typical research exercise has consisted of four pilots coming to Mesa for a weeklong training exercise during which they fly together on several missions designed to provide a range of situations. International exercises have also taken place. The coalition training research has developed training and assessment methodologies for use in mission training via distributed simulation. These efforts used competency-based training and rehearsal scenarios and data-collection instrumentation for

delivering and assessing distributed training events (Smith et al., 2007). The coalition exercises networked pilots flying simulators in Mesa, Arizona; and sites at Bedford, United Kingdom; and Toronto, Canada. As a result of the research, there is a much greater understanding of the cultural, language, and tactical challenges of bringing together multinational teams of pilots to fly missions.

Cognitive Decision-Making

Warfighters down to the squad and fire-team level are being asked to use their best judgement to make decisions that previously would have been made at higher levels. In order to accomplish its mission, an infantry squad on patrol in a small town in Afghanistan must use their understanding of local customs to interact effectively with the populace. They must appropriately gauge their reactions to the situations they encounter. Warfighters need the cognitive skills to decide what to do for a wide range of possible situations. Knowing *when* performance of a task is appropriate is as important to knowing *how* to perform it. Cognitive skills require a different analysis process to define them and different methods to train them than procedural tasks. (Clark & Estes, 1996). Military psychologists have developed a paradigm for training decision-making based on teaching novices how to think about problems the way that experts do and bring their prior experiences to bear in making decisions. The following sections discuss the research topics that have contributed to advances in training for cognitive decision-making.

Cognitive Task Analysis

Task analysis is the foundation of the ISD model, the systems approach to training. It focuses on identifying the sub-tasks and steps or overt behaviors that constitute task performance. Clark and Estes (1996) point to the increasing cognitive complexities of work not captured in the traditional behavioral task analysis. For example, adaptive problem-solving is required in dynamic, unstable task environments, where the performer needs flexible knowledge and skill that are adaptable to new situations (Hall, Gott, & Pokorny, 1995). In a cognitive task analysis (CTA), these cognitive components of the task are of primary importance (Klein & Militello, 2001). A task analysis is an objective process, whereas a CTA often deals with components that lack clear boundaries of measurement. CTAs define the thought processes that users follow to perform tasks at various levels, from novice to

expert (Hanser, 1995). A CTA focuses on the types of knowledge necessary to complete each component of the task (Clark & Estes, 1996). It also includes the knowledge of when and why tasks should be performed (Hall et al., 1995).

Knowledge-elicitation techniques are at the heart of a CTA (Miller, 2001). In-depth interviews with subject matter experts (SMEs) are used to extract information about cognitive events, structures, and models. The interviews are designed to identify the knowledge and skills necessary for task performance in the context of their use (Hall et al., 1995). As noted by Chipman, Schraagen, and Shalin (2000), an expert who is being interviewed needs to have direct conscious access to their relevant knowledge and skill. Research on expertise has shown this is often not the case. CTAs must use a variety of methods to elicit knowledge, including observation of expert performance, observing coaching by experts, and many others. Doing a CTA is a team effort among one or more CTA experts and several subject-matter experts. The CTA is the basis for development of decision-making training.

Naturalistic Decision-Making

The military's traditional decision-making process is an analytical planning procedure. It guides commander, staff, and subordinate headquarters interactions during planning. It is focused on examining the battlefield situation and analyzing alternative courses of action in parallel. The full process is detailed, deliberate, sequential, and time-consuming (U.S. Army Sergeants Major Academy, 2005). The Military Decision Making Process is the formal decision-making process that the military teaches in its schools. Military psychology researchers, however, have found that this process, or even a somewhat less rigorous version of it, is not how decisions are actually made on the fluid, rapidly changing battlefield or in counterinsurgency operations.

Interviews were held with decision-makers faced with quickly assessing a situation and developing a plan. The interviewees included urban fire ground commanders, wildfire incident commanders, and U.S. Army tank platoon leaders. They were asked about the cues, goals, and option-evaluation strategies they used in making decisions (Klein & Calderwood, 1990). These interviews found that experienced decision-makers rely more on situation assessment, while novices rely more on option-evaluation strategies. Experts and novices notice the same cues in a situation; however, novices miss the tactical implications of the cues. Expert decisions tend to be made without

conscious deliberation about the alternatives, and when deliberation does occur, experienced decision-makers are more likely to use serial rather than concurrent evaluation of options. Options are frequently evaluated through use of images or "mental models" that act as simulations. When analogies are used, they are critical to option-selection. Time pressure affects novices more than experts because experts rely on rapid recognition processes. This model for "naturalistic decision making" (Klein, 2008) was called the Recognition-Primed Decision model (Klein, 1987). The quality of decisions made through naturalistic decision making and specifically the recognition-primed decision-making model relies on both the prior experience of the decision maker and the skills they possess to recognize, assess, and relate the current situation to their past experiences and to consider how the current situation relates to strategies and decisions that were effective in analogous situations in the past. The result is decision makers' seeing themselves as generating, monitoring, and modifying plans to meet the needs of situations (Canon-Bowers & Bell, 1997). Canon-Bowers and Bell see training to support naturalistic decision making as a means to accelerate proficiency or the growth of expertise through "managed experience." The process involves training in thinking skills as well as exposure to the kinds of situations that decision makers will be likely to face in the real world.

Training Cognitive Decision-Making Skills

There are training paradigms that have developed recently that provide both the thinking skills as well as the experiential base for real-world decision making. Guided experiential learning (Clark, 2004) and adaptive thinking skills training (Lussier & Shadrick, 2003; Shadrick, Lussier, & Fultz, 2007) are two examples of training methods that are designed to build decision-making expertise. The two methods have similar elements. They build training based on the results of a cognitive task analysis, which determines the characteristics and knowledge that experts in a given domain possess. Expert knowledge, behaviors, and strategies form the basis for building training objectives. Declarative domain knowledge is important, but the critical elements are the automatic behaviors, which rely on development of a level of expertise (Lussier & Shadrick, 2003). Expertise is developed through frequent deliberate practice, with feedback. "Deliberate practice" is a focused and guided process that relies heavily on coaching for scaffolding of task, feedback, and error diagnosis. Through the

repetition built into deliberate practice, learners can build up an experience base that enables them to find the commonalities in the current situation with those they had encountered previously. The actions that worked in the past become the basis for building a response to the current situation (Ross et al., 2004).

Guided experiential learning (GEL) has been used to train individuals, teams, and units. Clark (2004) concluded that the GEL approach is appropriate if the training meets the following objectives:

1. The course objectives require the learning and transfer of :
 - a. Technical skills and/or
 - b. Procedural “how to” knowledge, and/or
 - c. Where problems are linked and cumulative (that is, where solving a more advanced problem requires that simpler, prerequisite problems be mastered), and
 - d. Where experts are more successful at solving problems and achieving goals than novices, or
 - e. Where the task involves the solving of well-defined problems of any kind, and,
2. IF the skills of the trainees are classified as novice to intermediate.

The GEL approach to training builds on the research findings of cognitive psychology. It focuses on teaching when decisions need to be made and how to make them. The focus of the decision-making training is on authentic and typical problems the trainee will face after training (Clark, 2005). As with other methods discussed in this section, GEL relies on deliberate practice to support learning and building an effective experience base.

Adaptive thinking is a training method developed to teach tactical decision-making skills. Leaders who are adaptive thinkers are able to respond rapidly and appropriately to rapidly changing situations (Shadrick & Fite, 2009). The product of this approach has been the Think Like a Commander (TLAC) training programs. TLAC was designed to teach young officers the thinking skills necessary to plan and execute tactics under conditions that deviate from what is expected. It maintains that problems should be approached the way that experts think about them (Shadrick & Lussier, 2002). Based on a cognitive task analysis, eight behaviors or themes were identified that represented experts’ thinking processes. The TLAC themes for battlefield thinking are presented in Table 19.2. TLAC training involves

applying the themes to identifying the critical tactical information contained in a series of vignettes. Students are given a specified amount of time to enter the critical tactical information for each vignette. The students’ performance is evaluated against the tactical information identified by expert battlefield commanders. Through group discussion, the students review the problem presented in the vignette, the tactical information identified by experts, and the tactical information identified by the students.

The TLAC process assists students in evaluating their own performance. The further the student goes in the training, the less time they have to consider each scenario (Shadrick & Fite, 2009). There is significant evidence that TLAC improves the ability to identify critical tactical information (Shadrick & Lussier, 2004). Variants of TLAC are being used in Army service schools, and computer and web-based versions have been developed (Shadrick & Fite, 2009). A version of TLAC has also been developed for training National Guard Soldiers to interact with civil authorities in times of crisis (Schaefer, 2008).

Contemporary Training Research Issues ***Cultural Understanding and Adaptability***

Western military forces are now involved in a different type of conflict than the fire and maneuver tactics associated with mid-intensity conflict and the Cold War. Nation-state militaries fighting each other on a defined battlefield have given way to fighting insurgents and non-state militias. As evidenced by events in Iraq and Afghanistan, urban areas are the focus of conflict. To succeed in urban combat, positive engagement with the local populace is critical. A key to working closely with people is understanding and adapting to local culture and language. Also, the rapidly evolving tactics employed by the enemy make it critical for lessons learned to be shared quickly and taught to those in the schoolhouse or on their way to the theater of operations (Riccio et al., 2007).

“Cultural adaptability” refers to the ability to understand one’s own and others’ cognitive biases (Sutton et al., 2006). The ability of military personnel to adapt to other cultures and operate within them goes beyond understanding the behavior of inhabitants of the countries our forces are operating in. It also includes understanding and adapting to cultural differences between military services, other government agencies, non-governmental agencies, and the coalition partners. Research on methods for training Soldiers to effectively operate in a multicultural environment such as that described above is

Table 19.2 TLAC themes of battlefield thinking

Theme	Description
Keep a Focus on the Mission and Higher Intent	Commanders must never lose sight of the purpose and results they are directed to achieve.
Model a Thinking Enemy	Commanders must not forget that adversaries are reasoning human beings intent on defeating them.
Consider Effects of Terrain	Commanders must not lose sight of the operational effects of the terrain on which they must fight.
Use All Assets Available	Commanders must not lose sight of the synergistic effects of having their command fight as a combined arms team.
Consider Timing	Commanders must not lose sight of the time they have available to get things done.
See the Big Picture	Commanders must remain aware of what is happening around them, how it might affect their operations, and how they can affect others' operations.
Visualize the Battlefield	Commanders must be able to visualize a fluid and dynamic battlefield with some accuracy and use the visualization to their advantage.
Consider Contingencies and Remain Flexible	Flexible plans and well-thought-out contingencies result in rapid, effective responses under fire.

Note: Adapted from Shadrick, Lussier, & Fultz (2007).

still in its infancy. Research activity in the area is mounting as interest and funding increase.

Culture and language-training research projects cover a range of applications. Examples include work by O'Connor and colleagues (2009), who investigated the improvements needed in teaching and mentoring skills for Soldiers serving as advisers in a cross-cultural environment; and development and assessment of the BILAT (Bilateral Negotiation) game by the University of Southern California's Institute for Creative Technology working with several Army laboratories (Hill et al., 2006). BILAT trains cultural awareness and negotiation skills. Results of an evaluation of BILAT found that the scores of Soldiers without prior negotiation experience increased significantly on a situational judgement test, while those with prior experience did not increase (Durlach, Wansbury, & Wilkinson, 2008).

A recent workshop was held to discuss what military leaders need to know about culture and identity. The workshop's findings concluded that cross-cultural training should place priority on generalizable concepts about culture so that leaders can learn about and adapt to unfamiliar cultural environments on their own (Abbe, 2008).

Serious Games for Training

"Serious games" are training systems that utilize video game technology for training purposes. Serious games have been developed for training emergency medical procedures and combat casualty care, logistics, convoy operations, small-unit tactics, and many other topics. These games are designed to be engaging, challenging, and motivating to military students (Belanich, Sibley, & Orvis, 2004). Researchers have investigated the relationship of a number of trainee characteristics, including game experience, on motivation. Findings indicated that video-game experience positively predicted motivation only when the trainee's experience was with a game possessing similar characteristics to the current game's (Orvis, Horn, & Belanich, 2006).

Improved game technology has dramatically lowered the cost of simulation. The ability of game-based simulations to be played over the Internet opens the possibility of training with units that are already in a conflict area, a so-called right-seat ride, or by units, now separated, that will be deploying together (Singer et al., 2008). Recently, the U.S. Army has conducted game-based exercises with elements of the United Kingdom's Army over the Internet. Training sessions with coalition partners

provide units with an opportunity to learn about differences in terminology and culture ahead of experiencing them in an area of operations. Research psychologists have been collecting data from three such exercises and publication of the results will show that units were able to train effectively by themselves and over the Internet (Singer, personal communication, 2010).

Intelligent Agents in Training

Simulation-based training requires significant numbers of staff to be effective. Role players, exercise controllers, and trainers are needed to provide an opposing force, control the scenario, and develop the After-Action Review. Given cutbacks in personnel at service schools and limited training resources at home station and deployed locations, it will be necessary to find technological and pedagogical methods to reduce the numbers of personnel required to support training. Efforts are underway to further develop the capabilities of artificial intelligence to support training by producing intelligent computer-generated entities that are capable of carrying on simple conversations or expressing emotion (von der Putten et al., 2009), automated data capture, and after-action review systems (Core et al., 2006; Ayers & Caler, 2009), and intelligent tutors that can understand the knowledge and emotions of their students and provide the right individualized instruction to support an optimal learning environment (D'Mello et al., 2005). Each of these research areas would provide automation support to the training process and have the potential to substitute these intelligent agents for trainers and other support staff.

Conclusions

Military psychologists have significantly contributed to the training methods used by each of the military services for both individual and collective training. Since World War I, training has evolved from an apprentice model to one that relies heavily on computer-based instruction and simulation to train large numbers of individuals in different military occupations and to train different types of units to perform a wide range of missions. The use of task analysis and cognitive task analysis to define training objectives has allowed for a systematic approach to developing training. Skill acquisition and retention is well understood for entry-level training but not across a career in the military.

The modern era of training research started after World War II with the establishment of laboratories that have continued to the present. Over time, the

focus of research has periodically shifted as a function of new technologies and the nature of the missions faced by the military. Individual training emphasis gave way to collective training research topics, as methods for effective engagement simulation and simulation networking were introduced.

The Cold War era required training to meet the threat presented by the large armies of the Warsaw Pact. Research on methods to teach fire and maneuver of large formations on defined battlefields has given way to an emphasis on research on how to train for combat in urban environments against an insurgent force that is difficult to differentiate from the civilian population. The rapidly changing situations that urban environments present require warfighters to have skills to adapt to new situations, knowledge of local customs, and the ability to make difficult decisions in an ambiguous environment. Current research is focused on methods to develop the cognitive skills to make effective decisions based on experience gained from training in live training areas, simulation systems, and computer-based games.

Future Directions

Challenges remain for military psychologists conducting research in training. Military training needs to better understand the nature and growth of expertise. Given the demands being placed on enlisted service members and officers, methods are needed for accelerating the learning process to build experience and expertise faster and earlier in their careers. Part of the complexity of the contemporary operating environment is the need to interact with civilian populations. Research on how to best train cultural understanding will be part of an overall objective of training for adaptability and flexibility and the ability to handle unanticipated or rarely encountered situations. Finally, automation of training processes is an important goal to provide effective training at an affordable cost in both people and resources.

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References

- Abbe, A. (2008). *Building cultural capability for full-spectrum operations* (ARI Study Report 2008-04). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Alliger, G. M., Beard, R., Bennett, W., Colegrove, C. M., & Garrity, M. (2007). *Understanding mission-essential competencies as a work analysis method* (Air Force Research

- Laboratory AFRL-HE-AZ-TR-2007-0034). Mesa, AZ: U.S. Air Force Research Laboratory, Human Effectiveness Directorate.
- Alluisi, E. A. (1991). The development of technology for collective training: SIMNET, a case history. *Human Factors*, 33, 343-362
- Andrews, D., & Bell, H. (2009). A virtual environment application: Distributed mission operations. In J. Cohn, D. Nicholson, & D. Schmorrow (Eds.), *The PSI handbook of virtual environments for training and education: Developments for the military and beyond. Vol. 3, Integrated systems, training evaluations, and future directions* (pp. 77-84). Westport, CT: Praeger Security International.
- Andrews, L. C. (1920). *Military manpower: Psychology as applied to the training of men and the increase of their effectiveness*. New York: E. P. Dutton & Co.
- Ayers, J., & Caler, N. (2009). *Automated support for After Action Review (AAR) presentation* (ARI Contractor Report 2009-07). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Bell, H. H. (1999). The effectiveness of distributed mission training. *Communications of the ACM*, 42(9), 73-78.
- Belanich, J., Sibley, D., & Orvis, K. L. (2004). *Instructional characteristics and motivational features of a PC-based game* (ARI Research Report 1822). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Boldovici, J. A. (1992) *Simulator motion* (ARI Technical Report 961). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Bosley, J. J., Onozko, P. W. J., Knerr, C. S., & Sulzen, R. H. (1979). *Tactical engagement simulation training techniques: Two training programs for the conduct of After Action Review* (ARI Research Product 79-2). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences
- Bowen, S. A., Oakley, B. P., and Barnett, J. S. (2006). *Effects of motion on skill acquisition in future simulators* (ARI Study Report 2006-7). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Branson, R. K. (1975) *Interservice procedures for Instructional Systems Development: Executive summary and model*. Tallahassee: Florida State University, Center for Educational Technology, for Naval Education and Training Command, Pensacola, Florida.
- Brokaw, L. D., & Perrigo, N. A. (1981) *Manpower, personnel and training research and development in the United States Air Force, 1946-1979* (AFHRL Technical Paper 81-2). Brooks Air Force Base, Texas: Air Force Human Resources Laboratory.
- Brown, B., Wilkinson, S., Nordyke, J., et al. (1997). *Developing an automated training analysis and feedback system for tank platoons* (ARI Research Report 1708). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences
- Burnside, B. L. (1990). *Assessing the capabilities of training simulations: A method and simulation networking (SIMNET) application* (ARI Research Report 1565). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC ADA226354)
- Campbell, C. H., Quinkert, K. A., & Burnside, B. L. (2000). *Training for performance: The structured training approach* (ARI Special Report 45). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Canon-Bowers, J., & Bell, H. (1997). Training decision makers for complex environments: Implications of the naturalist decision making perspective. In C. E. Zsombok & G. Klein (Eds.), *Naturalist decision making* (pp. 99-110). Mahwah, NJ: Lawrence Erlbaum Associates.
- Carretta, T. R., & Dunlap, R. D. (1998). *Transfer of training effectiveness in flight simulation: 1986-1997* (AFRL-HE-AZ-TR-1998-0078). Mesa, AZ: U.S. Air Force Research Laboratory, Human Effectiveness Directorate, Warfighter Training Research Division.
- Chipman, S. E. (2004). *Overview: The U.S. Office of Naval Research Training Technology R&D* (NATO Research and Technology Organization MP-HFM-101). Paris, France: NATO Research and Technology Organization.
- Chipman, S. E., Schraagen, J. M. C., & Shalin, V. L. (2000). Introduction to cognitive task analysis. In NATO RTO-TR-24, *Cognitive Task Analysis*. Neuilly-sur-Seine, France: NATO Research and Technology Organization.
- Clark, B. R., Lampton, D. R., Martin, G. A., & Bliss, J. P. (2004). *User manual for the Dismounted Infantry Virtual After Action Review System (DIVAARS)* (ARI Research Product 2004-03). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Clark, R. E. (2004). *Design document for a guided experiential learning course* (Final report on contract DAAD 19-99-D-0046-0004 from TRADOC). Los Angeles: Institute for Creative Technology and Rossier School of Education, University of Southern California.
- Clark, R. E. (2005). *Guided experiential learning: Training design and evaluation* (TRADOC Career Program 32). Los Angeles: Institute for Creative Technology.
- Clark, R. E., & Estes, F. (1996). Cognitive task analysis for training. *International Journal of Educational Research*, 25(5), 403-417.
- Cohn, J. V., Helmick, J., Meyers, C., & Burns, J. (2000). Training-transfer guidelines for virtual environments (VE). Presented at 22nd Annual Interservice/Industry Training Simulation and Education Conference, Orlando, FL. Sha
- Cohn, J. V., Schmorrow, D., Lyons, D., Templeman, J., & Muller, P. (2003). Virtual technologies for expeditionary warfare training. Paper presented at NATO Symposium on Advanced Technologies for Military Training, Genoa, Italy, October 13-15, 2003, and published in RTO MP-HFM-101.
- Corbert, A. T., Koedinger, K. R., & Anderson, J. R. (1997). Intelligent tutoring systems. In M. Helander, T. K. Landauer, & P. Prabhu (Eds.), *Handbook of human-computer interaction*, 2nd rev. ed. (pp. 849-874). Amsterdam, The Netherlands: Elsevier Science.
- Core, M., Lane, H., van Lent, M., Gomboc, D., Solomon, S., & Rosenberg, M. (2006). *Building explainable artificial intelligence systems*. Proceedings of the Eighteenth Conference on Innovative Applications of Artificial Intelligence, Boston, MA, July, 2006.
- Cosby, L. N. (1995). *SIMNET: An insider's perspective* (Institute for Defense Analysis Report IDA/HQ95-46334). Alexandria, VA: Institute for Defense Analysis.
- Craighead, W. E., & Neroff, C. B. (Eds.). (2002) *The Corsini encyclopedia of psychology and behavioral science*. Vol. 3, Edition 3, s.v. "Military Psychology," pp. 957-960.
- Crane, P. M. (1999). Designing training scenarios for distributed mission training. Paper presented at the 10th International Symposium on Aviation Psychology, Columbus, OH.
- Crawford, M. P. (1969). *Research in Army training: Present and future* (ADA688255). Alexandria, VA: George Washington University Human Resources Research Office.

- Crawford, M. P., Sollenberger, R. T., Ward, L. B., Brown, C. W., & Ghiselli, E. E. (1947). *Psychological research on operational training in the Continental Air Forces* (AD0651792). Washington, D.C.: Army Air Forces, Aviation Psychology Program.
- DeAngelo, J. (2000). *The Link flight trainer: A historical mechanical engineering landmark*. (Roberson Museum of Science program). New York: AMSE International.
- Davis, M. (1991). *Determination of skill degradation rates and retraining requirements by AFSC: Phase II*. Alexandria, VA: Human Resources Research Organization.
- Dees, J. W., Magner, C. J., & McCluskey, M. R. (1971). *An experimental review of basic combat rifle marksmanship: MARKSMAN, Phase I* (HumRRO Technical Report 71-4). Alexandria, VA: Human Resources Research Organization.
- Dempsey, M. E. (2010). Erosion of TRADOC's core competencies and functions. (Memorandum to the Chief of Staff, U.S. Army). Ft. Monroe: VA: U.S. Army Training and Doctrine Command.
- D'Mello, S. K., Craig, S. D., Gholson, B., Franklin, S., Picard, R., & Graesser, A. C. (2005). Integrating affect sensors in an intelligent tutoring system. In A. Mendez-Vilas, J. A. M. Gonzalez, and J. M. Gonzalez (Eds.), *Advances in technology-based education: Toward a knowledge-based society*, vol. 3, Proceedings of the II International Conference on Multimedia and Information & Communication Technologies in Education (pp. 1933-1937) Badajoz, Spain: Junta de Extremadura.
- Driskell, J. E.; Olmstead, B. (1989). Psychology and the military: Research applications and trends. *American Psychologist*, 44(1), 43-54.
- Durlach, P. J. (2009) *Adaptive training*. Presented at the Adaptive Training Workshop, March 3-5, 2009, Charleston, South Carolina.
- Durlach, P. J., Wansbury, T. G., & Wilkinson, J. G. (2008). *Cultural awareness and negotiation skills training: Evaluation of a prototype semi-immersive system*. Paper presented at the U.S. Army Science Conference, December 1-4, 2008, Orlando, FL.
- Evans, K. L., & Osborne, A. D. (1988). *The development and implementation of basic, advanced and unit M16A1 rifle marksmanship training programs* (ARI Research Report 1491). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Evans, K. L., Dyer, J. L., & Hagman, J. D. (2000). *Shooting straight: 20 years of marksmanship research* (ARI Special Report 44). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Evans, K. L., Thompson, T. J., & Smith, S. (1980). FORSCOM/US Army Marksmanship Unit M16A1 Rifle and .45 Cal pistol marksmanship training evaluation (ARI Research Report 1263). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Everett, S. E. (1992). *Oral history techniques and procedures*. Washington, D.C.: U.S. Army Center for Military History.
- Fedderson, W. E. (1962). *The role of motion information and its contribution to simulation validity*. (Army-Navy Instrumentation Program Report D228-429-001). Ft. Worth, TX: Bell Helicopter Corp.
- Flannigan, J. C. (1947). *The aviation psychology program in the Army Air Forces* (AAF Aviation Psychology Program Research Report, No. 1). Washington, D.C.: US Government Printing Office.
- Fowler, S. (2005). Injury, Treat, Die—Re-Boot, *RDECOM Magazine*. Retrieved March, 2005 from http://www.rdecom.army.mil/rdemagazine/200503/itf_simulator.html, March, 2005.
- Gagne, R. M. (1962). Military training and principles of learning. *American Psychologist*, 17(2), 83-91.
- Goldberg, S., Drillings, M., & Dressel, J. (1981). *Mastery training: Effects on skill retention* (ARI Technical Report 513). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Gorman, P. F. (1992). *The secret of future victories* (IDA Paper P-2653). Arlington, VA: Institute for Defense Analysis.
- Gott, S. P., Kane, R. S., & Lesgold, A. (1995). *Tutoring transfer of technical competence* (Air Force Armstrong Laboratory Technical Report AL/HR-TP-1995-0002). Brooks AFB, TX: U.S. Air Force Armstrong Laboratory.
- Graham, S. (1987). *Field evaluation of a computer-based maintenance training program for reserve component units* (ARI Research Report 1461). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Gubler, J. C. (1997). Unit simulation training system After Action Reviews (AAR): A novel approach to achieve effectiveness. Unpublished master's thesis. Orlando, FL: University of Central Florida College of Engineering.
- Hagman, J. (1980). *Effects of training schedule and equipment variety on retention and transfer of maintenance skill* (ARI Research Report 1309). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Hagman, J. (1981). *Testing during training: Why does it enhance long-term motor task retention?* (ARI Technical Report 535). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Hagman, J. D., & Rose, A. M. (1983). Retention of military tasks: A review. *Human Factors*, 25(2), 199-213.
- Hall, E. P., Gott, S. P., & Pokorny, R. A. (1995). *A procedural guide to cognitive task analysis: The PARI methodology* (Armstrong Laboratory Technical Report AL/HR-TR-1995-0108). Brooks AFB, TX: Human Resources Directorate, Manpower and Personnel Division, Air Force Armstrong Laboratory.
- Hanser, L. M. (1995). *Traditional and cognitive job analyses as tools for understanding the skill gap*. Berkeley: National Center for Research in Vocational Education, University of California.
- Hernandez, Y., Sucar, E., & Conati, C. (2008). An affective behavior model for intelligent tutors in, B. P. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Intelligent tutoring systems: Ninth International Conference, ITS 2008 Montreal Canada, June 23-27, 2008 Proceedings* (pp. 819-821). Heidelberg, Germany: Springer-Verlag Berlin.
- Hill, R. W., Belanich, J., Lane, H. C., et al. (2006). Pedagogically structured game-based training: Development of the ELECT BILAT simulation. Proceedings of the 25th Army Science Conference, December, 11-14, 2006, Orlando, FL.
- Himwhich, H. A. (1977). *A comparison of the TICCAT and PLATO systems in military settings* (SI-ER-915-1). Urbana-Champaign, IL: University of Illinois.
- Hoffman, R. G., Graves, C. R., Koger, M. E., Flynn, M. R., & Sever, R. S. (1995). *Developing the Reserve Component virtual training program: History and lessons learned* (ARI Research Report 1675). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Hritz, R. J., Harris, H. J., Smith, J. A., and Purifoy, G. R. (1980). *Maintenance training simulator design and acquisition: Handbook of ISD procedures for design and documentation* (Air Force Human Research Lab Technical Paper 8151). San Antonio, TX: U.S. Air Force Human Research Laboratory.
- Hurlock, R. E., & Slough, D. A. (1976). *Experimental evaluation of PLATO IV Technology: Final Report* (NPRDC Technical

- Report 76-TQ-44). San Diego, CA: Naval Personnel Research and Development Center.
- Institute for Creative Technology. (2011) Immersive & cognitive training aids (ICT Fact Sheet). Los Angeles, CA: Author.
- Joint Forces Command (2009). *Future Immersive Training Environment (FITE) Joint Capability and Technology Demonstration (JCTD) management and transition plan*. U.S. Joint Forces Command, VA: Suffolk.
- Kaempf, G. L., & Blackwell, N. J. (1990). *Transfer-of-training study of emergency touchdown maneuvers in the AH-1 flight and weapons simulator* (ARI Research Report 1561). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Kantowitz, B. H., Roediger, H. L., & Elmes, D. G. (2009). *Experimental psychology*, 9th ed. Belmont, CA: Wadsworth.
- Kaptein, N. A., van der Horst, A. R., and Hoekstra, W. (1996). *The effect of field of view and scene content on the validity of a driving simulator for behavioral research* (TNO Report TM 96-A022). Soesterberg, The Netherlands: TNO Human Factors Research Institute.
- Klein, G. (1989). Recognition-primed decisions. In W. Rouse (Ed.), *Advances in machine systems research*, 5, pp. 47–152. Greenwich, CT: JAI Press.
- Klein, G. (2008). Naturalist decision making. *Human Factors*, 50(3), pp. 456–460.
- Klein, G., & Calderwood, R. (1990). *Investigations of naturalist decision making and the recognition-primed decision model* (ARI Research Note 90–59). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Klein, G., & Militello, L. (2001). Some guidelines for conducting a cognitive task analysis. In *Advances in human performance and cognitive engineering research*, 1, pp. 163–199. Bingley, UK: Emerald Group Publishing Limited.
- Knerr, B. W. (2007). *Immersive simulation training for the dismounted soldier* (ARI Study Report 2007–01). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knerr, B. W., and Lampton, D. R. (2005). *An assessment of the Virtual-Integrated MOUT Training System (V-IMTS)* (ARI Technical Report 1163). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knerr, C. S., Downey, R. G., and Kessler, J. J. (1975). *Training individuals in Army units: Comparative effectiveness of selected TEC lessons and conventional methods* (ARI Research Report 1188). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Lussier, J. W., & Shadrick, S. B. (2003). Adaptive thinking training for tactical leaders. Presented at the NATO RTO Human Factors and Medicine Symposium on Advanced Technologies for Military Training, October 13–15, Genoa, Italy.
- McCaughey, M. E. (2006). *Do Army helicopter simulators need motion bases?* (ARI Technical Report 1176). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- McFann, H. H. (1974). *What does military psychology have to offer civilian education?* Presidential address to Division 19 of the American Psychological Association, August, 1974, New Orleans, LA.
- McFann, H. H., Hammes, J. A., & Taylor, J. E. (1955). *TRAINFIRE I: A new course in basic rifle marksmanship* (Technical Report). Alexandria, VA: Human Resources Research Organization.
- Meliza, L. L. (1992a). *Platoon-level After Action Review aids in the SIMNET Unit Performance Assessment System* (ARI Technical Report 956). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Meliza, L. L. (1992b). *Unit performance assessment system development* (ARI Technical Report 1008). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Meliza, L. L., Tan, S. C., White, S., Gross, W., & McMeel, K. (1992). *SIMNET Unit Performance Assessment System (UPAS) User's Guide* (ARI Research Product 92–02). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Menaker, E., Coleman, S., Collins, J., & Murawski, M. (2006). *Harnessing experiential learning theory to achieve warfighting excellence*. Paper presented at Interservice Industry Training Simulation and Education Conference, November 28–30, 2006, Orlando, FL.
- Miller, T. E. (2001). A cognitive approach to tools to support planning. In E. Salas & G. Klein (Eds.), *Linking expertise to naturalistic decision making* (pp. 95–111). Mahwah, NJ: Lawrence Erlbaum Associates.
- Mirabella, A., MacPherson, D. H., & Patterson, C. A. (1989). *Application of training research literature to maintenance performance training* (ARI Research Report 1527). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Morrison, J. E., & Meliza, L. L. (1999). *Foundations of the After Action Review process* (ARI Special Report 42). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- O'Connor, A., Roan, L., Cushner, K., & Metcalf, K. A. (2009). *Cross-cultural strategies for improving the teaching, training, and mentoring skills for Military Transition Team Advisors* (ARI Technical Report 1255). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Olmstead, I. A., & Jacobs, T. O. (1969). *The effects of changes in transition firing upon "quick kill" proficiency* (Technical Report 69–14). Alexandria, VA: Human Resources Research Office.
- O'Neil, H. (2009). *Bullet list: Accelerated learning*. Position paper presented to the Meeting on Accelerated Learning, October 9–10, 2009, Mesa, AZ.
- Ong, J., & Ramachandran, S. (2005). *An intelligent tutoring system approach to adaptive instructional systems* (ARI Contractor Report 2005–09). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Orvis, K. A., Horn, D. B., & Belanich, J. (2006). *Videogame-based training success: The impact of trainee characteristics—Year 2* (ARI Technical Report 1188). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Osborne, A. D., Evans, K. L., Lucker, H. A., & Williams, G. P. (1985). *Development of a rifle marksmanship training program for units* (ARI Research Product 85–24). Alexandria VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Phelps, R. H., Ashworth, R. L., & Hahn, H. A. (1991). *Cost and effectiveness of home study: Using asynchronous computer conferencing for Reserve Component training* (ARI Research Report 1602). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Ramesh, R., & Andrews, D. H. (1999). Distributed Mission Training: Teams Virtual Reality, and Real-time Networking. *Communications of the ACM*, 42(9), 65–68.
- Riccio, G. E., Diedrich, F. J., Lerario, M., et al. (2007). *Tools to help prepare soldiers for the contemporary operating*

- environment. Paper presented at Interservice Industry Training Simulation and Education Conference, November 27–29, 2007, Orlando, FL.
- Roberts-Gray, C., Clovis, E. R., Gray, T., Muller, T. H., & Cunningham, R. F. (1981). *Field survey of current practices and problems in Army unit training with implications for fielding and training with the MILES (Multiple Integrated Engagement System)* (ARI Technical Report 524). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Rocklyn, E. H. (1982). *A survey of correspondence course training* (NPRDC-Technical Report-82–27). San Diego, CA: Naval Personnel Research and Development Center.
- Root, R. T., Knerr, C. M., Severino, A., & Word, L. E. (1979). *Tactical engagement simulation training: A method for learning the realities of combat* (ARI TP 370). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Rose, A. M., Czarnolewski, M. Y., Gragg, F. E., Austin, S. H., & Ford, P. (1985). *Acquisition and retention of soldiering skills* (ARI Technical Report 671). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Rose, A. M., Radtke, P. H., Shettle, H. H., & Hagman, J. D. (1985). *User's manual for predicting military task retention* (ARI Research Product 85–26). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Ross, K. G., Klein, G., Thunholm, P., Schmitt, J. F., & Baxter, H. C. (2004). The recognition-primed decision model. *Military Review*, 74(4), 6–10.
- Ryder, J. M., DePaul, J. L., Zachary, W. W., and Iordanov, V. (2002). *Automated Tutoring Environment for Command (ATEC): Using an intelligent tutor to model expert mentor interaction* (ARI Technical Report 1125). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Sabol, M. (June 1998). Accelerating mobilized soldiers' reacquisition of skills. *Proceedings of the 21st Army Science Conference*. Norfolk, VA
- Salas, E., Milham, L. M., and Bowers, C. A. (2003). Training evaluation in the military: misconceptions, opportunities, and challenges. *Military Psychology*, 15(1), 3–16.
- Savickas, M. L., & Baker, D. B. (2005). The history of vocational psychology: Antecedents, origins, and early development. In W. B. Walsh and M. L. Savickas (Eds.), *Handbook of vocational psychology: theory, research and practice*, (3rd ed. pp. 15–50). Mahwah, NJ: Lawrence Erlbaum Associates.
- Scales, R. H. (1994). *Certain victory: The U.S. Army in the Gulf War*. McLean, VA: Brassey's.
- Schaefer, P. S. (2008). *Training effectiveness assessment of Red Cape: Crisis action planning and execution* (ARI Research Report 1885). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Schendel, J. D., Shields, J. L., & Katz, M. S. (1978) *Retention of motor skills: Review* (ARI Technical Report 313). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Schroeder, J. E., Dyer, F. N., Czerny, P., Youngling, E. W., & Gillotti, D. P. (1986). *Videodisc Interpersonal Skills Training and Assessment (VISTA): Overview and findings*, vol. 1 (ARI Technical Report 703). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Scott, T. D., & Fobes, J. L. (1982). *National Training Center After Action Review guidebook* (ARI Research Product 83–11). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Semb, G. Ellis, J., & Araujo, J. (1993). Long term retention of knowledge learned in school. *Journal of Educational Psychology*, 85, 305–316.
- Shadrick, S. B., & Fite, J. E. (2009). *Assessment of the Captains in Command training program for adaptive thinking skills* (ARI Technical Report 1240). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Shadrick, S. B., & Lussier, J. W. (2002). The application of Think Like a Commander in the Armor Captains Career Course. Presented at the *Interservice/Industry Simulation, & Education Conference, Orlando, FL*
- Shadrick, S. B., & Lussier, J. W. (2004). *Assessment of the Think Like a Commander training program* (ARI Research Report 1824). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Shadrick, S. B., Lussier, J. W., & Fultz, C. (2007). *Accelerating the development of adaptive performance: Validating Think Like a Commander* (ARI Research Report 1868). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences
- Shields, J., Goldberg, S., & Dressel, J. (1979). *Retention of basic soldiering skills* (ARI Research Report 1225). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Shlechter, T. M., & Finley, D. L. (2000). *Structured simulation-based training programs: History and lessons learned* (ARI Research Report 1675). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Shvaneveldt, R., Tucker, R., Castillo, A. R., Bennett, W. (2002). *Knowledge acquisition in distributed mission training* (Air Force Research Laboratory-HE-AZ-TP-2002–0002). Mesa, AZ: Air Force Research Laboratory, Warfighter Training Research Division.
- Shriver, E. L. L., Mathers, B. L., Griffin, G. R., et al. (1975). *REALTRAIN: A new method for tactical training of small units* (ARI Technical Report S-4). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Singer, M. J. (1993). *The optimization of simulation-based training systems: A review of evaluations and validation of rule bases* (ARI Research Report 1653). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Singer, M. J. (2010). Personal communication regarding training in distributed game-based environments.
- Singer, M. J., Long, R., Stahl, J., & Kusumoto, L. (2008). *Formative evaluation of a massively multi-player persistent (MMP) environment for asymmetric warfare exercises* (ARI Technical Report 1227). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Smith, M. D., & Hagman, J. D. (1993). *Interdevice transfer of training between the Guard Unit Armory Device, Full Crew Interactive Simulation Trainer, Armor and the mobile Conduct of Fire Trainer* (ARI Research Report 1635). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Smith, E., McIntyre, H., Gehr, S. E., et al. (2007). *Evaluating the impacts of mission training via distributed simulation on live exercise performance: Results from the US/UK "Red Skies" study* (AFRL-HE-AZ-TR-2006–0004). Mesa, AZ: U.S. Air Force Research Laboratory, Warfighter Readiness Research Division.
- Smith, S., Osborne, A. D., Thompson, T. J., & Morey, J. C. (1980). *Summary of the ARI-Benning research program on M16A1 rifle marksmanship* (ARI Research Report 1292).

- Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Spector, J. M. (2000). Gagne's influence on military training research and development. In R. Richey (Ed.), *The legacy of Robert M. Gagne* (pp. 211–227). New York: ERIC-IT Clearing House.
- Staff, HumRRO (1959). Trainfire V: Extension of research on Trainfire I rifle marksmanship course. Research memorandum. Alexandria, VA: Human Resources Research Office.
- Stewart, J. E. (1993). *Research prospectus for the Simulator Training Research Advanced Testbed for Aviation* (ARI Technical Report 980). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Stewart, J. E. (1994). *Using the backward transfer paradigm to validate the AH-64 Simulator Training Research Advanced Testbed for Aviation* (ARI Research Report 1666). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Stewart, J. E., Johnson, D. M., & Howse, W. R. (2008). *Fidelity requirements for Army aviation training devices: Issues and answers* (ARI Research Report 1887). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Sticha, P. (1990). *Research and development on the characterization of simulation-based training systems: Project executive summary* (ARI Technical Report 904). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Straw, J. L. (2002). *Distributed mission training. Briefing*. Mesa, AZ: Air Force Research Laboratory, Warfighter Training Research Division.
- Sturges, P., Ellis, J., & Wulfeck, W. (1981). *Effects of performance-oriented text upon long-term retention of factual material* (NPRDC Technical Report 8122). San Diego, CA: Naval Personnel Research and Development Center.
- Sulzen, R. H. (1986). *Annotated bibliography of tactical engagement simulation 1966–1984* (ARI Technical Report 725). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Sutton, J. L., Pierce, L. G., Burke, C. S., & Salas, E. (2006). Cultural adaptability. In C. S. Burke, L. G. Pierce, & Eduardo Salas (Eds.), *Understanding adaptability: A prerequisite for effective performance within complex environments* (pp. 143–173). Amsterdam, Netherlands: Elsevier.
- Symons, S., France, M., Bell, J., & Bennett, W. (2006). *Linking knowledge and skills to mission essential competency-based syllabus development for Distributed Mission Operations* (AFRL-HE-AZ-TR-2006–0041). Mesa, AZ: U.S. Air Force Research Laboratory, Warfighter Readiness Research Division.
- Thorpe, J. A., Bloedorn, G. W., Taylor, R., Miller, D.C., & Cyrus, M. (1987). *The SIMNET network and protocol*. Cambridge, MA: BBN Labs.
- Towne, D. M., & Munroe, A. (1987). The intelligent maintenance training system, pp. 277–284. Presentation at the SCS Simulators Conference, April 6–9, 1987, Orlando, FL.
- Towne, D. M., & Munroe, A. (1991). Simulation-based instruction of technical skills. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 33(3), 325–341.
- Uhlener, J. E. (1977). *The research psychologist in the Army, 1917–1977* (ARI Research Report 1155). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- U.S. Army (2003). *Rifle marksmanship M16A1, M16A2/3, M16A4, and M4 carbine* (FM 3–22.9). Washington, D.C.: Headquarters, Department of the Army.
- U.S. Army Infantry School (1980). *M16A1 rifle marksmanship training draft program of instruction*. (Prepared originally by Litton-Mellonics/Army Research Institute.) Ft. Benning, GA: U.S. Army Infantry School.
- U.S. Army Sergeants Major Academy (2005). *Military decision making process* (Training Support Package W112). Ft. Bliss, TX: U.S. Army Sergeants Major Academy.
- Van den Bosch, K., & de Beer, M. M. (2007) Playing a winning game: An implementation of critical thinking training. In R. R. Hoffman (Ed.), *Proceedings of the Sixth International Conference on Naturalist Decision Making* (pp. 177–198). Mahwah, NJ: Lawrence Erlbaum Associates.
- Von der Putten, A., Gratch, J., Kang, S. H., & Kramer, N. (2009). *It doesn't matter what you are! Comparing interacting with an autonomous virtual person with interacting with a virtually represented human*. Proceedings of the Sixth Conference of the Media Psychology Division of the German Psychological Society, September 9–11, 2009, University of Duisburg-Essen, Germany.
- Wisher, R., Sabol, M., & Ellis, J. (1999). *Staying sharp: Retention of military knowledge and skills* (ARI Special Report 39). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Wisher, R., Sabol, M., Sukenik, H., & Kern, R. (1991). *Individual Ready Reserve (IRR) call-up: Skill decay* (ARI Research Report 1595). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Wisher, R., Sabol, M., Maisano, R., Knott, B., Curnow, C., & Ellis, J. (1996). *Retraining medics for mobilization*. Paper presented to the American Educational Research Association, April 8–12, 1996, New York, NY.
- Word, L. E. (1987). *Observations from three years at the National Training Center* (ARI Research Product 87–02). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Yasutake, J. Y. (1986). *Computer-based training implementation and system evaluation* (AFHRL-TP-85–40). Brooks Air Force Base, Texas: Air Force Human Resources Lab.
- Yerkes, R. M. (1941). *Proceedings of the American Philosophical Society*, 84, 527–542.

The Role of Sleep in the Military

Implications for Training and Operational Effectiveness

Nita Lewis Miller, Panagiotis Matsangas, and Aileen Kenney

Abstract

This chapter addresses the role of sleep in a variety of military settings, ranging from military education and training regimes and extending to military missions and combat operations. It begins with a broad overview of the scientific literature related to sleep and performance. It then describes a ten-year series of studies conducted at the Naval Postgraduate School that addresses fatigue and sleep restriction in military settings. These studies include a series of efforts examining sleep patterns of sailors aboard U.S. Navy warships and submarines; studies that focus on shifting the timing of sleep during training and educational programs for Navy recruits at Great Lakes, Illinois and Army basic combat trainees at Fort Leonard Wood, Missouri; a four-year longitudinal study describing the sleep in cadets at the United States Military Academy in West Point, New York; and studies of sleep in operational environments, including surveys of warfighters while deployed and recently returned from combat in Southwest Asia. Many of these studies are reviewed in the chapter, which concludes with recommendations advocating the inclusion of sleep as a factor when calculating military effectiveness.

Keywords: Sleep restriction, sleep deprivation, human performance, fatigue, military operations, military training, military education

Military operations span a wide spectrum ranging from basic military training and education, through military operations other than war (MOOTW), to war itself. By their very nature, military operations are conducted under tremendously stressful conditions. Individuals in military settings are under pressure to continue to conduct operations when quality sleep may be a rare commodity—and sometimes, they are asked to perform without any sleep at all. Their duties expose them to life-and-death situations in environmentally hostile conditions that may even include facing enemy combatants. While the impact of fatigue is not restricted to the military, the combined effects of a multitude of acute and chronic stressors—including severe sleep restriction—make the military population both unique and relevant to study when exploring the range and limits of human performance.

An Overview of Sleep

This first section of the chapter provides the rationale and scientific justification for the entirety of the program of research that follows. It begins with a discussion of circadian rhythms and the requirement for sleep in humans. It then provides a short tutorial on sleep architecture that describes the function and purpose of various stages of sleep. This introductory sleep overview concludes with a summary of the effects of restricted sleep on various kinds of human performance.

Circadian Rhythms and Requirements for Sleep in Humans

Human alertness waxes and wanes in a highly predictable manner over the course of a 24-hour day. Known as the circadian cycle (*circa* = about, *dies* = day), this pattern occurs naturally and is

represented in a diurnal pattern of sleep and wakefulness. Many other physiological parameters are aligned with this same circadian rhythm. For example, core body temperature and hormones such as melatonin, cortisol, human growth hormone (HGH), and the more recently discovered hormones leptin and ghrelin, are known to have circadian patterns of release and action. Together, these hormones have a huge impact on human performance, mediating sleep and wakefulness as well as growth and cellular repair, hunger, and satiation. Although science discovers more every day about the contributions of these hormones, it is evident from our current knowledge that they are vital to our physical and mental health and well-being.

In his autobiographical account of the first nonstop, trans-Atlantic flight, Charles Lindbergh (1953) wrote:

My mind clicks on and off. . . . I try letting one eyelid close at a time while I prop the other open with my will, but the effort is too much. Sleep is winning. My whole body argues dully that nothing—nothing that life can attain, is quite so desirable as sleep. My mind is losing resolution and control.

Despite efforts to refrain from sleeping, our bodies require it just as we require food and water. As humans, approximately a third of our life is spent asleep. For the most part, humans have adapted to the standard 24-hour day, although research conducted in temporal isolation facilities shows that

without light or other cues such as exposure to light, mealtimes, and daytime sounds, many humans have an innate 24.5 to 25.0 hours clock (Horne, 1988). Horne (1988) defines sleep as “the rest and recovery from the wear and tear of wakefulness.” Sleep and sleep deprivation have been studied for decades—yet sleep remains a mysterious, but vital, requirement for life to be sustained. If deprived of sleep for longer than 14 days, humans will die (Coren, 1997).

There is almost universal acknowledgement that healthy adult humans require approximately eight hours of sleep each night for full cognitive functioning (Anch et al., 1988). However, it is also recognized that there is considerable variability among individuals, with some requiring more and some less than eight hours of sleep per night (Van Dongen & Dinges, 2000). Not only are there differences between individuals in sleep requirements, but there are also fairly predictable changes in sleep patterns that occur within an individual over the course of a lifetime. Figure 20.1 illustrates the changes in sleep patterns that are seen over a typical lifespan.

As can be seen, newborn infants have highly disrupted sleep patterns and generally get little contiguous sleep. To the great relief of their parents, most infants are sleeping through the night by the time they reach one year of age. Napping, a practice common in babies and young children, tends to disappear as children reach elementary school age. In adolescents and young adults through the

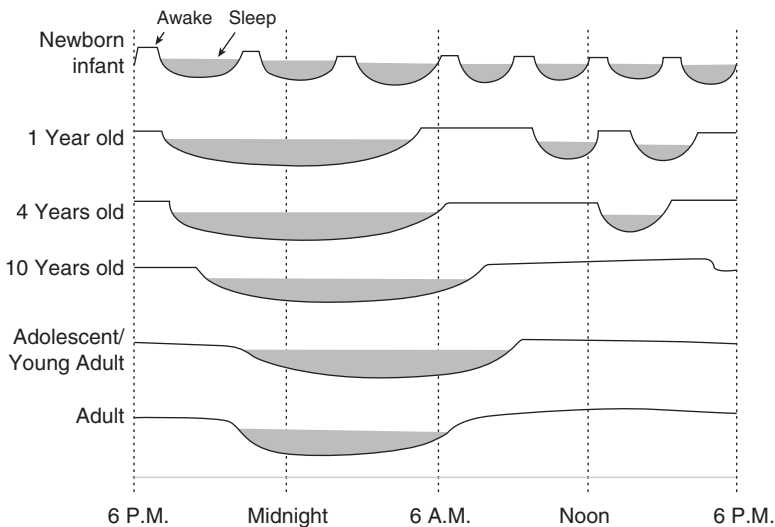


Fig. 20.1. Sleep patterns over a typical lifespan (Miller, Matsangas, & Shattuck, 2008).

mid-20s, there is another interesting shift in sleep patterns. This age group actually requires approximately 0.50 to 1.25 hours more sleep per night than do their adult counterparts. Coinciding with the pattern of melatonin release in this age group, bedtime is delayed, with even later awakenings (Carskadon, 2002; Carskadon et al., 1995; Wolfson & Carskadon, 1998, 2003). This change is important for the discussion of sleep in the military since many military service members, especially junior enlisted and junior officer personnel, are still in this adolescent and young adult sleep category and consequently require from 8.50 to 9.25 hours of sleep per night (Miller & Shattuck, 2005). By the time individuals reach their mid-20s—and continuing through their middle-age years—sleep requirements are fairly stable, at around eight hours per night.

Sleep Architecture in Humans

At one time, it was thought that nothing happened in the brain during sleep. However, it is now known that there are times in which the sleeping brain is more active than during its waking state. While asleep, it is impossible to monitor our own behavior. Consequently, over the years, scientists have developed various techniques (e.g., polysomnography, or PSG) to gain insight into the activities of the sleeping brain. This technique includes measuring the electrical activity at the surface of the brain using electroencephalographic (EEG) electrodes placed on the scalp (Kryger, Roth, & Dement, 2000). During PSG procedures, electrodes also capture the respiratory patterns and muscle activity that occur during sleep.

Recordings show that over the course of a typical eight-hour sleep period, the human brain experiences two broad categories of sleep: non-rapid eye movement (NREM) and rapid eye movement (REM). These two sleep categories have different functions and are characterized by distinctive behaviors. NREM sleep can be further divided into five sleep stages: Stage 0 (the awake state) and four progressively deeper sleep stages (Stage 1 through Stage 4). Typical sleep stages over the course of a night's sleep are illustrated in Figure 20.2.

As shown in Figure 20.2, all of these sleep stages are generally experienced over a single sleep cycle that lasts approximately 90 minutes. Research has demonstrated that much of the first half of an eight-hour, contiguous night of sleep is spent in deeper sleep (Stages 3 and 4), while Stages 1 and 2 and REM sleep are more prevalent in the latter half of an eight-hour sleep period.

Both REM and NREM sleep are necessary for normal functioning in humans. In a sleep laboratory, humans can be deprived of a single stage of sleep, known as partial sleep deprivation or PSD. When the sleep-deprived individual is allowed to sleep following PSD, the body tends to rebound into the sleep stage from which it was deprived, in an attempt to make up for the lost sleep. Total sleep deprivation, or TSD, is when the research participant is not allowed to sleep at all. When allowed to sleep after experiencing TSD, the body rebounds by rapidly entering deep stages of sleep that render the brain almost unconscious, reminiscent of brain activity under anesthesia. When sleepers are awakened from deep sleep stages, they frequently

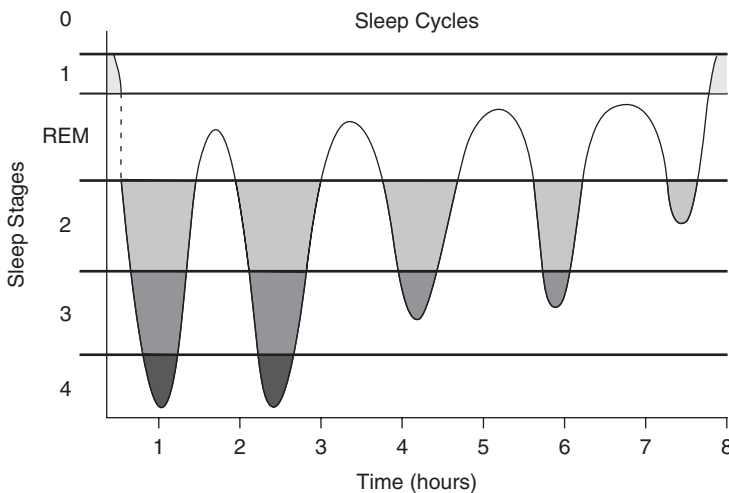


Fig. 20.2 Sleep stages over a typical eight-hour sleep period (Miller et al., 2008).

experience sleep inertia, characterized by reduced alertness and cognitive functioning. While sleep inertia is a normal occurrence upon awakening from a normal night's sleep, it may last much longer when a sleeper is awakened from deep stages of sleep. In operational environments where humans are deprived of adequate amounts of deep sleep, both conditions—the rebound into deeper sleep stages and the resultant sleep inertia when awakened from deep sleep—pose significant risks to the military members and those who rely on them to make good decisions and perform effectively under time pressure.

The Effects of Sleep Deprivation on Human Performance

The scientific literature clearly shows that sleep has a dramatic effect on human performance in laboratory settings. Countless studies have identified the deleterious effect of sleep deprivation on a wide range of human cognitive functions such as attention, memory, mood, and decision making (Broughton & Ogilvie, 1992; Dinges & Kribbs, 1991; Dinges et al., 1997). These studies are well-controlled trials that provide convincing results of changes that occur with sleep restriction—in the laboratory. However, in the military and other related professions, there is often a reluctance to accept such laboratory findings, coupled with the assertion that motivation and determination will allow individuals to perform in real-world environments despite fatigue and lack of sleep (Shay, 1998). Sleep debt seems ubiquitous in the military, despite policies that emphasize the importance of sleep and fatigue-management for the operational readiness of units deployed to combat environments (Department of the Army, 2009; Department of the Navy, 2007). As history has taught us, lapses in attention and poor decisions made by members of our armed forces can have serious and far-reaching consequences. It is for these reasons that research must extend into naturalistic environments to observe the consequences of chronic and acute sleep deprivation during actual operations and to challenge the notion that these individuals are immune from performance decrements due to sleep loss.

Sleep Studies in Operational Environments at the Naval Postgraduate School

The United States military has long been interested in human performance in operational environments. It is not surprising that many studies conducted in the Operations Research Department at the Naval Postgraduate School (NPS) focus on such

issues. Over the past decade beginning in 2002, a group of NPS faculty and graduate students has been actively studying human performance as it relates to sleep in operational settings. Tables 20.1 through 20.3 list many of these operational studies and thesis efforts, the name of the primary investigator (often an NPS graduate student), the date the thesis or report was published, the focus of the investigation, and a summary of its findings with respect to sleep. The remainder of this chapter is divided into three sections according to these tables: “Sleep in Naval Operations,” “Sleep in Training and Educational Environments,” and “Sleep in Combat and Operational Environments.” Many of the findings from these studies are reviewed in the three sections that follow. The chapter then concludes with a discussion of the overall findings from these studies of sleep in military settings.

Studies on U.S. Navy Submarines

This program of operational research began with two studies that examined self-reported sleep patterns of U.S. Navy submariners by Blassingame and Gamboa. In her thesis, Blassingame (2001) evaluated whether differences existed in the self-reported sleep of U.S. Navy submariners in four different operational environments: (1) at sea, (2) in port, (3) on shore duty, and (4) on leave. The analysis was based on survey data of U.S. Navy enlisted submariners ($n = 143$) with at least one year of experience on Fleet Ballistic Missile Submarine (SSBN) or on Fast Attack Submarine (SSN) platforms. Surveys were administered either to sailors assigned to the USS *Providence* ($n = 93$) or a convenience sample of submariners receiving care at the Naval Ambulatory Care Center (NACC) in Groton, Connecticut ($n = 74$) who had served aboard SSBN or SSN platforms. Survey respondents were asked to indicate the number of hours they slept and the longest uninterrupted sleep they received in a typical 24-hour period for each of the four operational conditions. The results of the study (see Figure 20.3) showed that there are significant differences in the reported quality and quantity of sleep between the four operational conditions. Submariners reported getting less sleep (about six hours per night) while “at sea” than in any of the other three conditions.

In another survey of U.S. Navy submariners, Gamboa (2002) focused on environmental constraints and time in service as factors related to sleep and fatigue. His analysis was based on survey responses from 258 submariners, which combined the 143 respondents from Blassingame's thesis with

Table 20.1 NPS Sleep studies in naval operation

Naval Vessel	Mission (Length of Study)	Participants	Method of Collecting Sleep Data	Gender	Average Daily Sleep in Hours (+stdev)
USS PROVIDENCE and other SSN or SSBN: Blassingame (2001)	NA	167 submariners	Survey	NA	Self-report ~6 (while at sea) (NA)
USS PROVIDENCE, USS CONNECTICUT, and other SSN or SSBN: Gamboa (2002)	NA	258 submariners	NA	NA	NA
USS STENNIS (CVN): Nguyen (2002)	Operation Enduring Freedom NAO (3 days)	33 enlisted sailors	Actigraphy and sleep logs (<i>n</i> = 28)	22 males 6 females 5 NA	6.28 (NA)
USS STENNIS (CVN): Sawyer (2004)	Operation Enduring Freedom (7 days)	24 crewmembers	Profile of Mood States (POMS) administration	19 males 5 females	NA
USS HENRY M. JACKSON: Osborn (2004)	At sea trials (32 days)	41 submariners	Actigraphy and sleep logs (<i>n</i> = 29)	Males	6.67 (+2.56)
HSV-2 SWIFT: McCauley, Marsangas, and Miller (2004)	Transiting and conducting sea-keeping trials (13 days)	19 total; 1 officer 16 enlisted 2 civilians	Sleep logs (mainly) and actigraphy	18 males 1 female	7.5 (+2.13)
HSV-2 SWIFT: Archibald (2005)	GOMEX 05–1 MIW (8 days)	21 total; 3 officers 18 enlisted	Actigraphy and sleep logs (<i>n</i> = 21)	19 males 2 females	6.78 (+1.5)
USS CHUNG HOON (DDG): Haynes (2007)	Predeployment training (14 days)	25 total; 2 officers 23 enlisted	Actigraphy (<i>n</i> = 22) and sleep logs (<i>n</i> = 25)	NA	7.27 (+1.03)
USS LAKE ERIE and USS PORT ROYAL (CG): Mason (2008), and unpublished data	RIMPAC Exercise 2008 (24 days)	70	Actigraphy and sleep logs (<i>n</i> = 70)	NA	5.58 (+1.92)
USS RENTZ: Green (2009)	Predeployment workups (24 days)	24 total, 3 officers 21 enlisted	Actigraphy and sleep logs (<i>n</i> = 24)	males	6.71 (NA)
Sleep on Motion-Based Platform: Grow & Sullivan, (2009)	Laboratory experiment (2 nights of sleep)	12 NPS graduate students	Actigraphy and sleep logs (<i>n</i> = 12)	11 males 1 female	NA

additional survey data obtained onboard the USS *Connecticut* (SSN 22), a Seawolf-class attack submarine. The purpose of this research was twofold: (1) to determine whether the shift in working environment from shore duty to sea duty had an effect on enlisted submariner sleep patterns; and (2) to assess

whether length of time in service was related to self-reported optimal sleep duration. As with Blassingame’s study, Gamboa verified that submariners reported shorter and more disrupted sleep patterns while underway. Rank, time in service, sea time, and self-reported optimal sleep duration

Table 20.2 NPS Sleep studies in training and educational environments

Unit or Program	Mission (Length of Study)	Participants	Method of Collecting Sleep Data	Gender	Average Daily Sleep in Hours (\pm stdev)
USN Enlisted training at RTC, Great Lakes: Baldus (2002)	Enlisted training (~63 days)	31 USN recruits	Actigraphy and sleep logs ($n = 31$)	20 males 11 females	6.1(\pm 1.2)
USN Enlisted training at RTC, Great Lakes: Andrews (2004)	Academic performance (3 years of test scores)	2,597 USN recruits	Test scores retrospective analysis; no sleep data	NA	NA
United States Military Academy, West Point, 4-Year Longitudinal Study of Sleep in Cadets: Kenney and Neverosky, 2003; Miller, 2005; Godfrey, 2006; DeVany, 2008; Miller and Shattuck (2005); Miller et al. (2010)	Military undergraduate university (4 years of data, 2 months per year)	~1,400 (80 cadets selected for actigraphic recording)	Actigraphy and sleep logs ($n = 80$) Surveys ($n = \sim$ 1,400)	56 males 24 females	5.60 (+1.49)
USN Officer Candidate School, Newport, RI: O'Connor and Patillo (2003)	Officer training and indoctrination (6 days)	20 faculty and students	Actigraphy and sleep logs ($n = 20$)	NA	NA
MAWTS-1: Maynard (2008)	Flight training WTI 2-05 (43 days)	13 total, students ($n = 6$) instructors ($n = 7$)	Actigraphy and sleep logs ($n = 13$)	NA	Students: 5.62 Instructors: 6.10
	Flight training school WTI 1-06 (44 days)	20 students	Actigraphy and sleep logs ($n = 20$)	males	7.05 (\pm 0.74)
Fort Leonard Wood: Miller et al. (2010)	Basic combat training (63 days per unit)	394 recruits and cadre	Actigraphy and sleep logs ($n = 94$ recruits)	59 males 35 females	Intervention: 5.89 (\pm 1.21) Control: 5.33 (\pm 1.18)

were also associated with the respondents' sleep patterns.

One of the more interesting findings of the Gamboa thesis was that more experienced submariners reported needing *fewer* hours of sleep at sea, compared to the amount they needed while on shore duty. It was as if the more experienced submariners knew that they were not going to be able to get adequate sleep while at sea, so they reported needing less sleep in this condition. One explanation for this finding could be that submariners who are more susceptible to sleep deprivation are more likely to drop out of the service or find other branches of military service more to their liking,

and the remaining service members were a self-selected group who required less overall sleep to function. Another possible explanation offered was cognitive-dissonance-reduction theory, which holds that an individual will attempt to remedy a perceived dissonance or disconnection between two or more conflicting beliefs. According to Gamboa, these sleep-deprived submariners reported needing less sleep while at sea to reduce the perceived dissonance between the environment (that of continual sleep deprivation) and the knowledge that they need a certain amount of sleep to function optimally. While the individual's actual sleep requirement did not change between at-sea and in-port conditions,

Table 20.3 NPS Sleep studies in combat and operational operations

Unit or Context	Mission (Length of Study)	Participants	Method of Collecting Sleep Data	Gender	Average Daily Sleep in Hours (+stdev)
Warfighters in Iraq and Kuwait: Doheny (2004)	Operation Iraqi Freedom (OIF) Phase IV (NA)	273 total: 244 enlisted 22 officers	surveys	237 males 24 females 12 NA	Self-report 6.67 (NA)
USMC Rotary Wing Aviation Battalion in Iraq: (unpublished data, 2006)	Rotary wing flight operations in Iraq (10 days)	20 pilots	actigraphy and sleep logs (<i>n</i> = 20)	NA	6.5 (±1.66)
Naval Aviation MH-53 (Rotary Wing) squadron: Solberg (2006)	Mine hunting operations (14 days)	25 aircrew	actigraphy and sleep logs (<i>n</i> = 25)	20 males 2 females 3 NA	7.47 (±1.65)
Fort Benning Survey: Miller et al. (2010)	Infantry officers returning from Iraq/ Afghanistan (NA)	46 infantry officers	surveys	Males	Self report by OPTEMPO: Low: 7.8 (NA) Moderate: 6.0 (NA) High: 3.9 (NA)

NPS Studies in Fatigue in Naval Operations (from Table 20.1)

experienced submariners reported needing less sleep while at sea because they have learned that it will be impossible to get adequate sleep while at sea.

A third NPS study on U.S. Navy submariners was conducted by Osborn (2004) as part of a project

sponsored by the Naval Submarine Medical Research Laboratory (NSMRL) in Groton, Connecticut. The purpose of the study was to evaluate the feasibility of a new watchstanding schedule that would be more in line with naturally occurring circadian

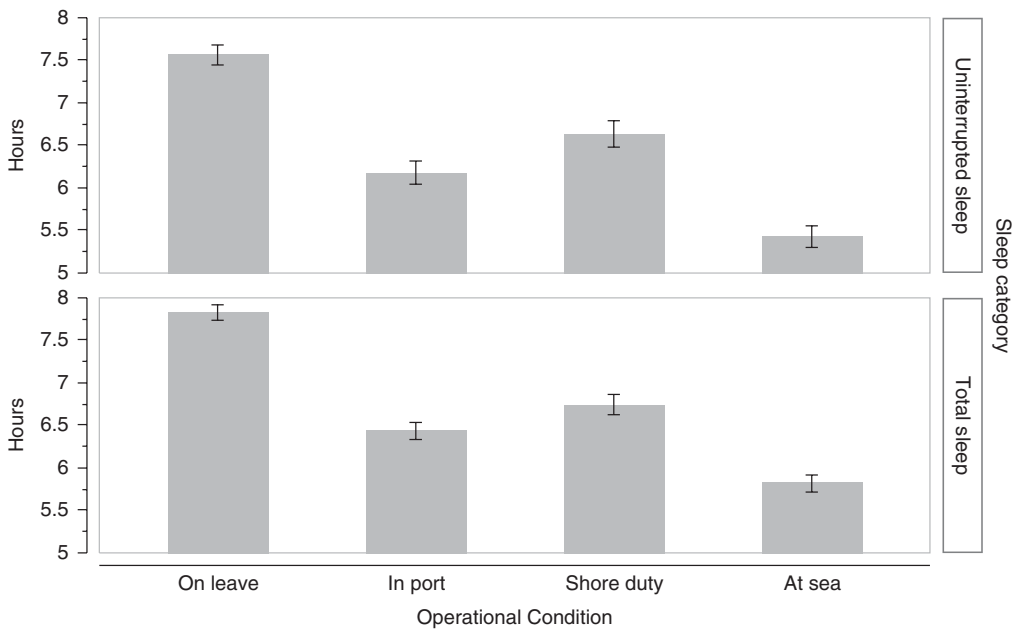


Fig. 20.3 Daily sleep (“Total sleep”) and longest uninterrupted sleep episode per 24 hours (“Uninterrupted sleep”) (Blasingame, 2001).

rhythms. The study was conducted between October 29 and December 2, 2003, onboard the USS *Henry M. Jackson* (SSBN 730 GOLD), a nuclear-powered, ballistic missile submarine. Data on 41 male volunteers (average age 25.6 years) were collected for 32 days and included exit surveys to elicit feedback from the crew and objective measures of sleep using wrist-worn activity monitors. Crewmembers were divided into three groups, each one following a different watchstanding schedule (two experimental groups, Schedules 1 and 2, and one control group, Schedule 3). The control group worked the 18-hour, three-section watch schedule currently in use in the U.S. submarine fleet (Stolgitis, 1969). The two experimental (alternative) schedules attempted to more closely simulate a 24-hour cycle (Miller et al., 2003). Results showed that the participants received, on average, 6.67 hours of daily sleep while underway. Analysis showed that Schedule 1 participants received the least amount of sleep. The participants on Schedule 2 received slightly more sleep, while Schedule 3 provided the most sleep in this study. The conclusion: the new schedules failed to provide a significant improvement in daily sleep.

The new schedule attempted to compress watch periods more closely together to extend the opportunity for contiguous sleep. However, since little additional work was completed during the compressed watch periods, unfinished work was carried over into the period set aside for sleep, defeating the intention of the 24-hour schedule. Although laboratory studies had indicated otherwise, when tested in an operational environment, the new schedule was not better than the old 18-hour schedule due to the operational requirements on a submarine. The study did highlight the need for a watchstanding schedule that allows for better sleep hygiene, along with more time to complete required work.

Studies on Surface Ships

Ongoing efforts in support of Operation Enduring Freedom (OEF) gave NPS researchers the opportunity to conduct a study on the effects of shift-work and high operational tempo onboard the aircraft carrier USS *John C. Stennis* (CVN-74) (Miller & Nguyen, 2003; Nguyen, 2002). Before the data collection period, the aircraft carrier had shifted from day to night operations, with the entire crew working the night shift to support nighttime flight operations. Participants in the study were 28 enlisted crew members (22 males and 6 females). Sleep data were collected using wrist-worn activity monitors

and sleep logs for 72 hours, while the carrier conducted routine combat operations. The study concluded that significant differences in the quality and quantity of sleep were determined by where the sailors worked. A pattern of sleep deprivation was particularly evident in the individuals who were working topside and were exposed to bright morning sun immediately prior to bedtime. The results, displayed in Figure 20.4, show that individuals who worked belowdecks (and never saw daylight) received 7.35 hours of sleep, while the sailors who worked topside averaged only 4.72 hours of sleep per day ($t = 6.19, p < 0.001$).

A follow-on study by Sawyer (2004), also conducted aboard the USS *Stennis*, examined the same participants in the Nguyen (2002) study. This study was a self-reported assessment of the mood state of sailors who were required to abruptly change their work and rest habits. Mood states were assessed using the Profile of Mood States (POMS), a standardized, 65 question five-point adjective rating scale that measures six affective states: Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment (McNair, Lorr, & Droppleman, 1992).

Mood states were monitored at three time points: when sailors had been working the night shift for over 90 days, then 24 hours after shifting from working nights to working the day shift, and again one week following the shift to working during daylight hours. The results showed that younger participants were angrier than older participants while on nightshift work (Figure 20.5). This finding

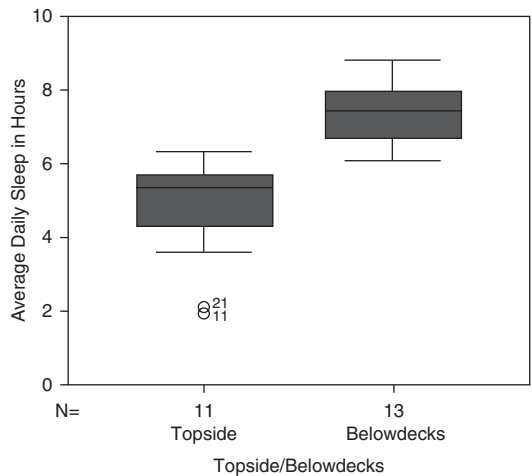


Fig. 20.4 Average daily sleep in hours by working environment on the USS *Stennis*.

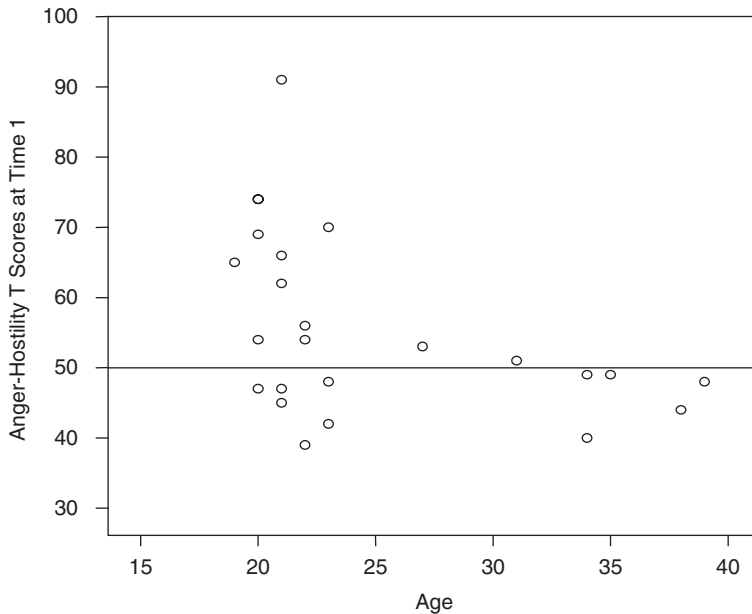


Fig. 20.5 Anger-Hostility T scores versus age while working night shift (Time 1). T scores above 50 indicate greater than normal anger-hostility.

is particularly interesting considering the additional sleep required for adolescent and young adult populations and serves as a possible explanation for the differences observed.

There was also a significant interaction between mood state and sex, with female participants reporting significantly higher scores on total mood disturbance (TMD) than the male participants. The scores for TMD of males dropped one week after shifting to daytime work, indicating an improvement in overall mood; this pattern was reversed in females. This finding was statistically significant, although the sample size of the females was small ($n = 6$). These findings are seen in Figure 20.6, which follows.

In addition, participants working topside received significantly less sleep than those working belowdecks, and their POMS scores reflected their fatigued state (Figure 20.7). The study provided vital information to the U.S. Navy’s surface warfare community concerning the operational impact of mood states and performance caused by extended working hours, disruptive sleep, and reversal of sleep and work cycles.

Studies on the High-Speed Vessel HSV-2 Swift

The next pair of NPS operational sleep projects was conducted on the high-speed vessel HSV-2 *Swift*, a 98-meter, wave-piercing catamaran. The main thrust of this research was to address the possible effects on

personnel performance when sailors operate aboard high-speed vessels with unconventional hull designs. The first study evaluated the effect of ship motion on sleep amount and quality, sleepiness, and predicted effectiveness (Matsangas & Miller, 2006; McCauley, Matsangas, & Miller, 2005). Data were collected during a 14-day transit while the ship traveled from Norway to Norfolk (May 10–May 23, 2004) and executed sea-keeping trials (May 11–May 17, 2004). Nineteen crewmembers participated in the study, during which sleep was assessed through actigraphy and activity logs. During the data collection period, the ship encountered sea states between 4 and 5.

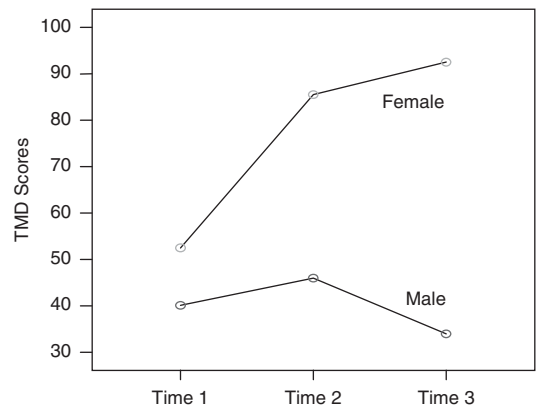


Fig. 20.6 Total Mood Disturbance (TMD) scores of participants working belowdecks, over time, by gender.

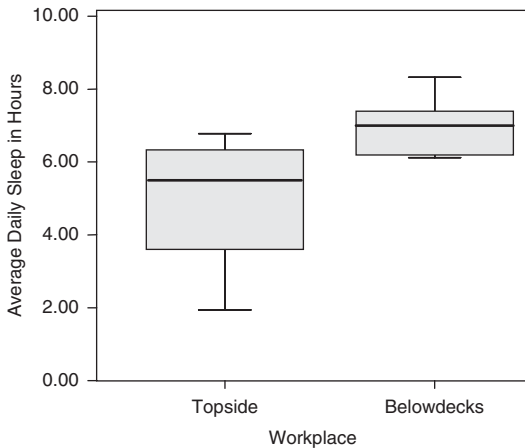


Fig. 20.7 Average daily sleep by work environment (sailors working topside versus those working belowdecks).

Wave heights were significant, generally in the eight- to ten-foot range; average wave period was in the eight- to 12-second range, and the ship's speed varied from 10 to 36 knots, resulting in considerable motion for the sailors onboard. The motion states were quite severe at times, interfering with the wrist-worn activity monitors and resulting in an underestimation of the sleep received by the crew. Because of this complication, sleep amount and quality were determined from activity logs combined with bedtime start and stop times from the actigraphic recordings. This method of calculating sleep gave an overestimation of sleep, but given the severity of the ship's motion, it was the only solution deemed reasonable.

Whether assessed by self-report or by wrist activity monitors (WAMs), it was evident that the crewmembers' sleep was interrupted by ship motion. This finding was echoed in the comments in the underway sleep logs, which indicated increased sleep fragmentation during the rough sea trials period (May 11–17). Thirty percent of the crew noted that sleep disruptions due to ship motion were common on the HSV-2 and identified ship motion as a significant cause of nighttime awakenings.

Building on the previous study on the HSV-2, Archibald (2005) examined the effects of noise, temperature, humidity, motion, and light on the sleep patterns of the crew of HSV-2 *Swift* during Mine Interdiction Warfare (MIW) Gulf of Mexico Exercise (GOMEX) 05–1. The weather during GOMEX 05–1 was mild, and the HSV-2 *Swift* was used as the command flagship, coordinating the movements of the other ships in the exercise. Consequently, the HSV-2 *Swift* was not required to operate at high speeds or maneuver quickly.

The study had 21 participants whose sleep patterns were collected using wrist-worn actigraphy and sleep logs. Results showed that the average daily sleep amount was 6.78 hours, with the average sleep episode length being 5.40 hours. Time spent at sea, which is related to rank, was negatively correlated with sleep while underway ($r = -0.778$, $p = 0.001$). This finding was consistent with that of Belenky (1997), who found that sleep amount is inversely proportional to rank, with higher-ranking soldiers receiving significantly less sleep than those junior to them.

Studies on the Navy Standard Work Week (NSWW)

The most recent U.S. Navy operational studies were conducted on four surface combatants: the USS *Chung Hoon* (Haynes, 2007), the USS *Lake Erie* and USS *Port Royal* (Mason, 2009), and the USS *Rentz* (Green, 2009). In an attempt to accurately calculate the number of sailors required to man each class of ship, the United States Navy has developed a model called the Navy Standard Work Week. The NSWW represents a standardized version of one week of work performed by a single enlisted sailor while at sea (Department of the Navy, 2007). After first determining the amount of work to be performed to operate each class of ship, the NSWW is then used to calculate manning levels, which are a theoretical reflection of the minimum manpower resources necessary to accomplish the ship's mission. The work weeks for sea duty are based on operational requirements under projected wartime conditions with units in Condition III steaming, as described in OPNAV Instruction 1000.16K, page C-1 (Department of the Navy, 2007):

The Navy's standard workweeks . . . are guidelines for sustained personnel utilization under projected wartime or peacetime conditions. . . . Daily workload intensity is a function of operational requirements; as such, the actual day-to-day management of personnel is the responsibility of the commanding officer.

Under certain circumstances it may become necessary to exceed the standard workweek; however, extending working hours on a routine basis could adversely affect such matters as moral, retention, safety, etc., and as policy, such extensions should be avoided.

Using this NSWW model, the 168 hours in one week for any given sailor are divided into two categories: "Available Time" for duty (81 hours) and "Non-Available Time" (87 hours). Available Time is occupied by all required tasks that are performed by

crewmembers; these include work or maintenance, watchstanding, training, and attending meetings. Non-Available Time comprises all personal time that is allotted to the crew, and includes messing (dining), sleeping (56 hours on a weekly basis; on average, eight hours of sleep per day), and free time.

Three studies have addressed how well the NSWW reflects the daily schedule of sailors: Haynes (2007), Mason (2009), and Green (2009). In his study to assess NSWW issues, Haynes (2007) evaluated sleep patterns onboard the USS *Chung Hoon* (DDG-93), an Arleigh Burke-class Aegis destroyer. Data were collected on 25 crewmembers during a 14-day period in February 2007. Data collected included actigraphy recordings ($n = 22$), and daily sleep and activity logs ($n = 25$). During the study period, the ship was conducting predeployment training while in Condition III. (Note: A ship's deployment phase is preceded by a predeployment training cycle. During this phase, the crew conducts exercises involving warfare training and damage control at sea to simulate the operational tempo and conditions that might be experienced during battle.)

The results of this study were based on the information included in the sleep and activity logs. Analysis showed that participants reported 7.27 hours of daily sleep (standard deviation [stdev] = 1.03 hours, median = 7.08 hours). Departmental analysis shows that participants in the Combat Systems Department reported 7.72 hours of daily sleep, whereas the Engineering Department reported 7.24 hours, and the least sleep was found among the operations personnel (6.15 hours of daily sleep). Crewmembers participating in the study worked longer hours than they were allocated in the NSWW

model. Figure 20.8 shows the NSWW and the average time each week sailors spent working during the USS *Chung Hoon* study. In fact, 85% of the sailors in the study exceeded the 81 hours of Available Time allotted by the NSWW; over 50% of the participants reported working more than 95 hours per week (~13.60 hours per day).

On average, the sailors worked 16.95 hours per week more than they were allotted in the NSWW, which equaled 2.40 hours more per day in Available Time. The findings of this study led to a recommendation that revisions of the NSWW be developed for enlisted sailors based on departmental assignment, with a separate version of the NSWW developed for officers. If implemented, this change would more accurately reflect the demands placed on sailors in the Navy and allow for calculation of more realistic manning of U.S. Navy vessels.

Another shipboard study of the NSWW was conducted on the USS *Lake Erie* (CG-70) and the USS *Port Royal* (CG-73), two Ticonderoga-class guided-missile cruisers (Mason, 2009). Like the study on the USS *Chung Hoon*, the purpose of this research was twofold: (1) to determine the amount of work and rest provided to sailors during a typical training exercise, and (2) to determine if the NSWW accurately reflects the actual activities of sailors onboard U.S. Navy cruisers.

Data were collected over an entire 24-day underway period (between July 7 and July 30, 2008) during the Rim of the Pacific (RIMPAC) Exercise 2008 (ship in readiness Condition III). Initially, the study included participants who wore wrist activity monitors and completed daily activity logs. The thesis reported on a total of 39 participants

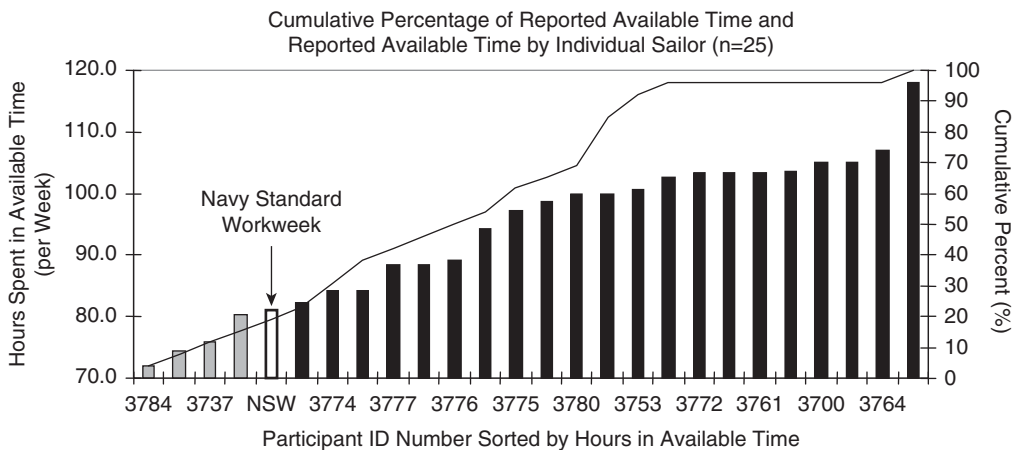


Fig. 20.8 Hours spent working per week on the USS *Chung Hoon* (Haynes, 2007).

(six officers and 33 enlisted personnel). The jobs performed by participants varied according to their rating, rank, and Navy Enlisted Classification (NEC) specialty. Pay grades varied from E-1 through O-5. Additionally, the watch-stations manned by the sailors included the engineering, combat systems, operations, supply, and administration departments.

Results show that, on average, senior personnel, both officer and enlisted, slept approximately two hours less than allotted by the NSWW. Senior Chief Petty Officers and Chief Petty Officers (both enlisted-grade E-8/E-7 participants) averaged 6.26 hours of sleep, while senior officers (Lieutenant Commanders [O-4] and above), averaged 6.38 hours of sleep per day. In contrast, junior personnel (enlisted grades E-1 through E-3 and officer grades W-2 through O-3) averaged 7.83 and 7.06 hours of sleep, respectively. Analysis indicated that 85% of the participants had more time on duty (“Available Time”) than allocated by the NSWW model throughout the entire underway period. In fact, only five participants worked less than the allotted 81 hours (and these individuals were not actively engaged in the RIMPAC exercise). The following figure (20.9) depicts these findings.

Departmental analysis showed that sailors in the Combat Systems Department worked the most hours: 15 hours more per week than the “Available” 81 hours of NSWW. Figure 20.10 shows the NSWW and the departmental breakdown time sailors spent sleeping in this study. The Operations Department logged, on average, five hours more

sleep than allowed in the NSWW. Final analysis of the data log sheets and Actiwatch indicate that 84% of the participants (excluding officers) were categorized as falling below the NSWW sleep allotment, averaging just over 47 hours versus 56 hours of sleep per week. Finally, as noted by Mason (2009), both ships had similar findings in all categories of the NSWW model.

The sleep data from sailors on these two ships were analyzed again to determine if the patterns of sleep were different between the two ships. This analysis focused on the sleep data of 70 participants—42 from the USS *Lake Erie* and 28 from the USS *Port Royal*. Results showed that the average daily sleep obtained during the three-week underway period was 5.58 hours (stdev = 1.92 hours, median = 5.51), with no significant differences between the two ships. For all sailors on both ships combined, the length of the average sleep episode was 4.11 hours (stdev = 2.12 hours, median = 4.05). However, the length of the average sleep episode differed between the two ships, with sleep episodes being shorter on the USS *Port Royal* (USS *Lake Erie*: mean = 4.34, stdev = 2.11, median = 4.32; USS *Port Royal*: mean = 3.85, stdev = 2.01, median = 3.72; $F[1,1822] = 26.6, p < 0.001, \text{Cohen's } d = 0.239$). Sleep fragmentation was especially evident for sailors on the USS *Port Royal*, who averaged 1.36 sleep episodes per day, which was 11.6% more than seen in sailors on the USS *Lake Erie*. This finding illustrates that napping was a strategy used by many crewmembers to alleviate their sleep debt.

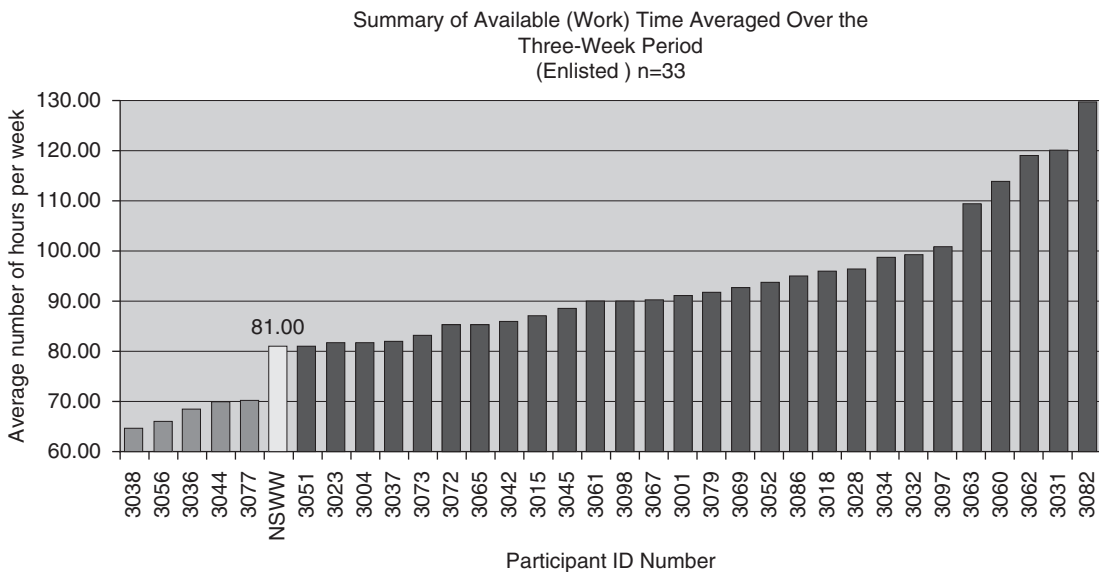


Fig. 20.9 Weekly average available time (time spent working) for the three-week underway period (Mason, 2009).

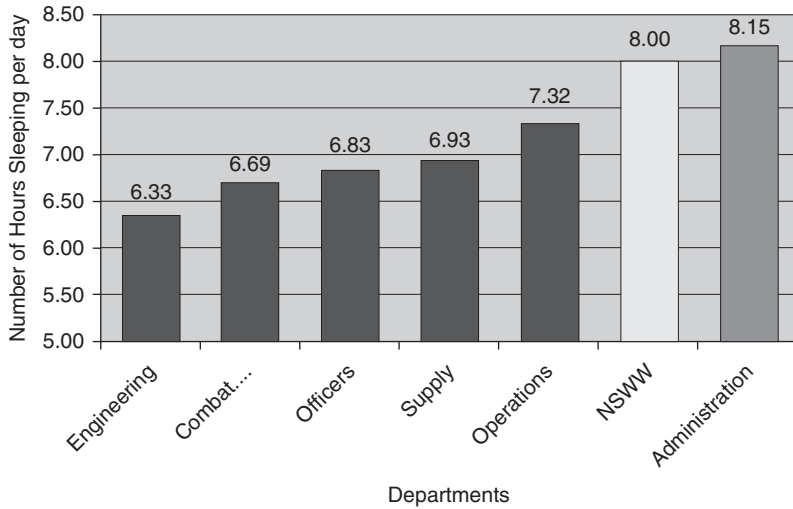


Fig. 20.10 Average hours of sleep per night by ship's department (Mason, 2009).

Since sailors on the USS *Port Royal* had less contiguous sleep, the sleep they did receive was of less benefit than that received by their shipmates on the USS *Lake Erie*. Both crews suffered from significant sleep deprivation, as seen in Figure 20.11.

The most recent NPS study on the NSWW examined work and rest patterns of sailors on the USS *Rentz* (FFG-46), an Oliver Hazard Perry-class guided missile frigate (Green, 2009). In her thesis research, Green examined the sleep of 24 sailors during predeployment underway training periods. Her analysis yielded no surprises; just as in the previous two studies, sailors worked more hours than allocated in the NSWW, and the participants were chronically sleep-deprived.

Studies of Fatigue on the Effectiveness of Training and Education (from Table 20.2)
Studies of Fatigue and Training Effectiveness in U.S. Navy Enlisted Recruits

United States Navy recruits are trained at the Recruit Training Command (RTC) in Great Lakes, Illinois. Basic training, or boot camp, lasts approximately 63 days, during which the recruits are taught basic military knowledge and practice skills that prepare them to serve in the United States Navy. Recruits are under a closely controlled daily schedule, and prior to December 2001, received only six hours of sleep per night. In December 2001, a decision was made to change the amount of sleep allowed by Navy recruits from six to seven hours of sleep per

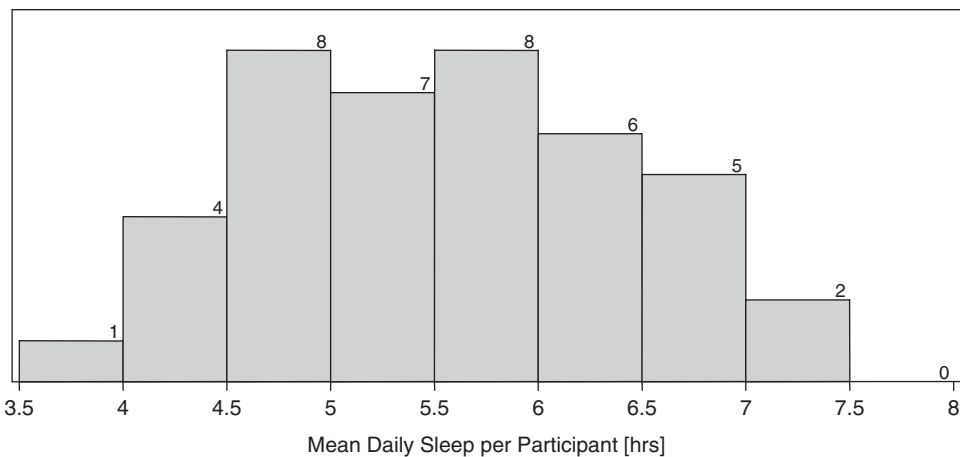


Fig. 20.11 Average daily sleep per sailor on the USS *Lake Erie* and the USS *Port Royal* over the entire three-week data collection period (the number of participants is shown at the top of each bar).

night (i.e., mandatory bedtime was from 2100 to 0400 hours). In early 2002, the sleep regimen was changed once more to give recruits eight hours of sleep per night, sleeping from 2100 to 0500 hours. In May 2002, the Navy recruit sleep regimen was finalized at eight hours per night, with bedtime at 2200 and wakeup at 0600 hours. This last modification was selected to coincide with the recognized sleep requirements and naturally occurring circadian rhythms of adolescents and young adults.

Two studies of Navy recruits at RTC were conducted by NPS to assess the impact of these decisions. The first study (Baldus, 2002) assessed the quantity and quality of sleep received by a sample of recruits in two eight-hour sleep conditions: 2100 to 0500 and 2200 to 0600. The data represent a cohort of boot camp recruits whose bedtimes shifted from 2100 to 2200. Sleep data and activity were evaluated using WAMs (see Figure 20.12) and paper-and-pencil activity logs. Data were collected from April to June 2002 and comprised one complete cycle of recruit training. Participants included 31 recruits (20 males and 11 females) from five different recruit divisions.

Based on the recruits' sleep patterns, sleep was defined as *non-disrupted* (an eight-hour contiguous nighttime interval) or *disrupted* (any night having at least a 30-minute period of wakefulness after sleep onset or more than 45 minutes of wakefulness from bedtime until sleep onset). Standing watch, personal activities such as bathroom visits, or some other activity typically caused these disruptions in nighttime sleep.

Results from this study showed that although recruits were allotted eight hours of sleep per night, the overall average sleep for all recruits in this study was 6.10 hours (stdev = 1.20 hours) per night (Baldus, 2002). Recruits tended to receive more



Fig. 20.12 Wrist-worn activity monitors on U.S. Navy recruits (Baldus, 2002).

sleep when following the 2200 to 0600 sleep regimen than when following the 2100 to 0500 sleep regimen. On average, the 2200 bedtime resulted in 22 more minutes of sleep per night per recruit—a finding that mirrored the shift in adolescent and young adult circadian rhythms that favors later bedtimes.

Finally, the study addressed the gender effect in sleep patterns. Although not statistically significant ($p = 0.20$), the results suggest a difference in sleep patterns between males and females. Over the course of the study, female recruits received an average of ten more minutes of sleep per night than did their male counterparts (6.24 hours versus 6.08 hours, respectively; see Figure 20.13). This difference was consistent whether looking at sleep amount in disrupted nights (females = 5.52 hours, males = 5.22 hours) or non-disrupted nights (females = 7.24 hours, males = 7.07 hours). Based on the findings of the study, it was concluded that the change in bedtime from 2100 to 2200 was beneficial and should remain in place.

After this first descriptive study of sleep patterns of recruits, another study was conducted specifically to examine the academic performance associated with the two sleep regimens; that is, six versus eight hours of nightly sleep (Andrews, 2004). One year of data with the eight-hour sleep regimen (calendar year 2003) was compared to two separate years when only six hours of sleep per night were allowed (calendar years 2000 and 2001). Average test scores by division and month were compared across the three years under investigation and included test

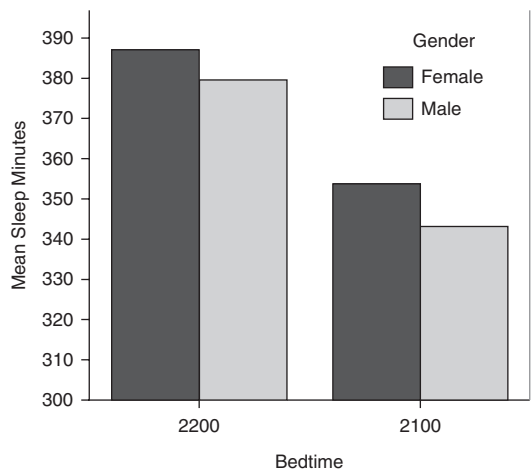


Fig. 20.13 Minutes of sleep received by males and females at two different bedtimes (2100 and 2200). All recruits were allowed eight hours of sleep (Baldus, 2003).

scores of 2,597 recruits. Standardized test scores for each recruit and the year they were trained were entered into a regression model, adjusting for their Armed Services Vocational Aptitude Battery (ASVAB) score and month of administration. The month of test administration and ASVAB scores were included in the regression equation in an attempt to adjust for seasonal variations and differences in individual recruit aptitude following the two different sleep policies. Results displayed in Figure 20.14 show that recruits who had six hours of sleep per night scored significantly lower than the recruits who had eight hours of sleep per night ($F[2, 33] = 29.97, p < 0.0001$).

In short, recruits who received eight hours of sleep per night scored, on average, 11% higher (mean = 4.38, stdev = 0.25, median = 4.38) than their counterparts who received only six hours of sleep (mean = 3.91, stdev = 0.11, median = 3.9), supporting the hypothesis that more sleep was associated with significantly better academic performance. The findings were statistically significant and support the changes made by the Recruit Training Command. It should be noted that other administrative and procedural changes that occurred during this same period (e.g., waterless hand-washing before meals and sleeping in new barracks) may have contributed to the improvements in test scores in 2003.

A Study of Fatigue and Training Effectiveness in U.S. Army Enlisted Recruits

Another study of training effectiveness in military recruits was conducted in late summer and fall of 2009 at Fort Leonard Wood, Missouri, in U.S.

Army Basic Combat Training (BCT). This study is described in detail in Chapter VI of an NPS dissertation by Tvaryanas (2010), but is briefly summarized here. The study set out to compare the training effectiveness of Army basic combat trainees in two training regimens. One company of trainees ($n = 185$) used a conventional training regimen, which allowed eight hours of sleep each night from 2030 to 0430, while another company of trainees ($n = 209$) used an experimental training regimen that allowed eight hours of sleep each night from 2300 to 0700. The primary question was whether sleep and recruit performance, including marksmanship, would be improved by adjusting the timing of the primary sleep period to be more in alignment with the naturally occurring patterns of sleep in adolescents and young adults.

Demographic and psycho-physiological measures were collected at the start of the study using standard survey instruments and methods. A random sample of 95 recruits wore WAMs to record sleep quantity and quality throughout the study period. Weekly assessments of subjective fatigue and mood were collected using the POMS. Results of the actigraphic analysis showed that a 2.5-hour, phase-delayed sleep schedule improved sleep relative to the conventional BCT schedule, resulting in, on average, more than 30 minutes of extra sleep per night. Besides schedule, personal factors such as age and gender also influenced recruits' average total daily sleep: female recruits and recruits who were younger tended to sleep more. The schedule modification was shown to be effective in improving sleep over the entire course of BCT. However, increased nightly sleep during the week in which marksmanship skills were taught (i.e., one week prior to the actual marksmanship tests) resulted in greater improvements in marksmanship.

This finding is in line with other studies that show greater skill-acquisition following adequate amounts of sleep. The study demonstrated that schedule modifications that improve sleep can be expected to result in improved marksmanship performance during BCT. Perhaps most importantly, such benefits may be obtained at no additional cost, since the content and length of training remains the same and there are no requirements for additional investments in new technologies or facilities.

A Study of Sleep in Undergraduate Military Education

In yet another study of sleep in military members, conducted at the United States Military Academy

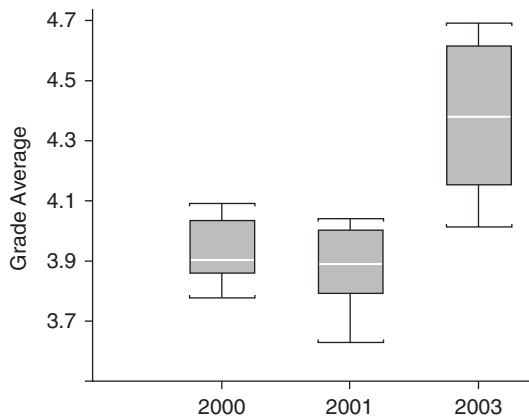


Fig. 20.14 Standardized U.S. Navy grades for recruits receiving six hours of sleep per night (years 2000 and 2001) versus recruits receiving eight hours of sleep per night (Andrews, 2004). The blank line in the shaded box represents the median.

(USMA) in West Point, New York, the sleep patterns of nearly 1,400 military cadets (the USMA Class of 2007) were followed for four years during their undergraduate education. The results of this study have been described in detail in two publications but are summarized here. Academic performance, class ranking, attrition, race, gender, and “morningness-eveningness” preferences were recorded for the entire class. A sample of the class ($n = 80$) wore WAMs and completed activity logs for one month in the fall and spring academic semesters for the four-year period.

As seen in Figure 20.15, on average, over the four-year period, cadets slept less than 5.5 hours on school nights. Cadets napped extensively, perhaps in an attempt to compensate for their chronic sleep debt. They slept more during fall than spring semesters. Male and female cadet sleep patterns varied dramatically, with males consistently getting, on average, more than 20 minutes less sleep than females.

The study demonstrated that cadet sleep at USMA is related to academic year, semester, season, gender, day category (school day or weekend), and day of the week. For example, Figure 20.16 shows the pattern of sleep by academic year. Nightly sleep (sleep only in the major nighttime period) is shown by the dotted line. Daily sleep (i.e., total sleep in a 24-hour period, including naps) is indicated by the solid black line. With an increase in naps during the final year at USMA, daily sleep reached a peak in the final year of the study, continuing to rise over the four-year period.

The study showed that military cadets at USMA experience a severe and chronic sleep debt that may have long-term consequences. In addition to developing poor sleep hygiene habits, cadets may have difficulty in taking full advantage of the world-class education and training afforded them at West Point.

Studies of Fatigue in Combat and Operational Environments (from Table 20.3)

Studies of Sleep and Compliance with Sleep Plans in Combat in Southwest Asia

This study assessed the impact of sleep logistics during Phase IV operations of Operation Iraqi Freedom (Doheny, 2004). Survey data were collected from warfighters operating in Iraq and Kuwait from August 25 to October 15, 2003, using a convenience sample of respondents. The study focused on answers to a 96-question survey designed to

capture sleep patterns and determine adherence to sleep/rest plans. The survey asked questions relating to unit-level sleep/rest planning, sleep/wake patterns, warfighter fatigue and sleep latency, symptoms of sleep deprivation, and confounding lifestyle factors that impede sleep and rest. The respondent population included 273 participants (237 males and 24 females; average age = 29.80 years, stdev = 8.96 years, median = 27; average time deployed = 178 days, stdev = 68.3 days, median = 174.5 days).

Survey results showed that sleep deprivation was a significant problem for forces deployed to the Southwest Asia region, especially those operating in Iraq ($p = 0.0151$). Between 73% and 83% of the respondents showed moderate symptoms of sleep deprivation, whereas between 14% and 23% showed significant symptoms of sleep deprivation. These findings may be linked with the finding that only 38% of the sample reported that they were briefed on a sleep plan. Considering that the majority of the respondents included warfighters with ranks that have the responsibility to supervise the implementation of a sleep/rest plan, this suggested that units may not have considered the importance of implementing sleep and rest. Respondents reported getting 6.67 hours of sleep per day, most of which was on a cot, and napping occurred approximately every other day for around 45 minutes. Finally, 34% reported falling asleep at least once when they were supposed to be awake.

Another conclusion was that the units with effective sleep/rest plans had a higher probability of maintaining satisfactory performance effectiveness levels than those with no or ineffective sleep/rest plans ($p = 0.004$). Furthermore, units located in Kuwait had a higher probability of maintaining satisfactory performance effectiveness levels than units in Iraq, which supported the decision to rotate units out of Iraq and into Kuwait for rest and recovery ($p = 0.0029$). The data did not suggest, however, that there were differences in the probabilities associated with maintaining satisfactory performance effectiveness levels when other factors were considered (gender, Military Occupational Specialty (MOS) categories, or rank).

The data suggest that the respondents' sleep patterns did not support effective mission accomplishment. Based on the finding that only between 45% and 57% of the sample's sleep/wake patterns satisfactorily supported mission accomplishment, the author concluded that typical standards of operational readiness, requiring 75% of the population to be mission-capable, were not met.

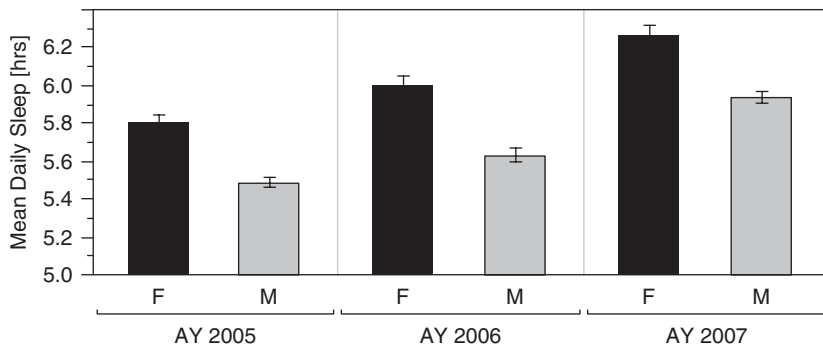


Fig. 20.15 Average daily sleep in hours for females and males for academic years (AY) 2005, 2006, and 2007.

Studies of Sleep in Helicopter Pilots in Iraq (2006)

This study, conducted in Iraq from May 21 to June 1, 2006, assessed sleep quantity and shifting sleep schedules during actual combat flight operations. Participants included 20 active duty pilots from a Marine Corps operational aviation battalion conducting flight operations in Iraq. Ten days of sleep data were collected through actigraphy and sleep logs. The study data included 210 sleep episodes, with durations ranging from 0.62 to 13.65 actual hours of sleep. Depending on sleep duration and the number of major sleep episodes in the course of each day, sleep incidents were categorized as either “sleep” or “nap.” In total, 16 naps were reported by eight participants over the ten-day period. All naps occurred during days where the major sleep episodes took place at night. The average sleep duration per “sleep” episode was 6.37 hours ($n = 192$, stdev = 1.65 hours), while the average “nap” length was 1.55 hours ($n = 16$, stdev = 1.07 hours). On average, participants in the study got approximately 6.5 hours (stdev = 1.66 hours) of total daily (per 24 hours) sleep. Participant sleep amount varied greatly within the unit, with the average daily (24 hours)

sleep ranging from 5.0 to 7.9 hours (median 6.7 hours), with only 25% of the pilots receiving between 7 and 8 hours of daily sleep.

In order to assess the effect of sleep schedules on the amount of sleep obtained, participants were grouped according to their sleep schedule. Half of the participants ($n = 10$) had a fixed sleep schedule, sleeping either during the daytime or at night. The other half of the participants’ sleep shifted at some time in the data collection period. The participants with fixed schedules who slept only during daytime got their sleep between 08:00 a.m. and 04:00 p.m. A second group, night sleepers with fixed schedules, slept between 11:00 p.m. and 07:00 a.m. Results showed that shift schedules were important predictors of the amount of sleep obtained. Participants with fixed sleep schedules slept more than participants whose sleep schedules changed ($F[1,189] = 3.91$, $p = 0.049$). In addition, the quality of sleep at night was better than that of sleeping during the daytime. The following table (20.4) shows these findings.

The study results showed that 75% of the participants received a daily sleep amount significantly less than is physiologically acceptable (Horne, 1985,

Table 20.4 Daily sleep vs. sleep schedule

Sleep Schedule	Number of Participants	Daily Sleep Mean (hrs)	Daily Sleep Standard Deviation (hrs)
Shifting from morning to night sleep	4	6.16	2.01
Shifting from night to morning sleep	6	6.43	1.76
Fixed schedule with daytime sleep only	4	6.53	0.59
Fixed schedule with night sleep only	6	6.79	1.78

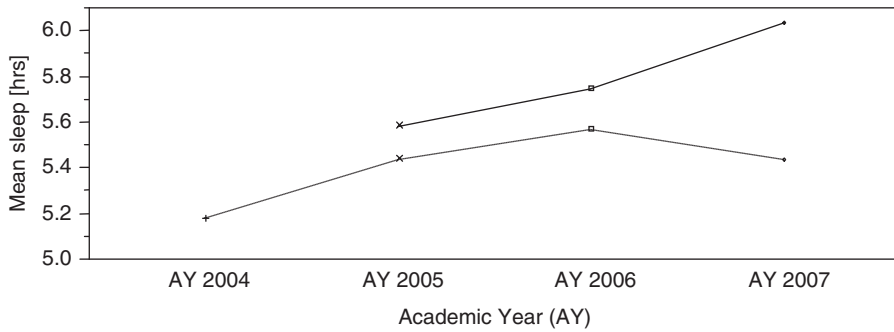


Fig. 20.16 Average daily (solid black line) and night sleep (dotted line) achieved over each of four academic years at USMA.

1988; Van Dongen, Rogers, & Dinges, 2003). Furthermore, a continuously accumulating sleep debt was evident in a large proportion of the participants. Sleep deprivation in this population was exacerbated by the fact that during the data collection period, there were no days that could be considered “weekends” or days off in which catch-up sleep could occur. Therefore, unlike civilians, these combatants did not have the opportunity to ameliorate their sleep deprivation during days off (Akerstedt & Torsvall, 1978; Dahlgren, 1981).

Studies of Reported Sleep Patterns in Army Commanders at Fort Benning, Georgia

This study addressed sleep deprivation issues during military operations from the viewpoint of Army officers newly returned from combat (Miller, Shattuck, & Matsangas, 2010). Forty-nine U.S. Army Officers with recent combat experience were surveyed to assess their units’ sleep patterns and to determine the tactics, techniques, and procedures used to counter the effects of sleep deprivation in their units. Results showed that despite Army policy, which requires units to develop and implement sleep management plans (Department of the Army, 2009), nearly 80% of the participants reported they had not been briefed on a sleep management plan during their most recent deployment. Over half of the respondents reported that fatigue was a problem in their units. During high operational tempo (OPTEMPO), which occupied nearly half of their time in combat, participants report receiving only four hours of sleep daily. Finally, the vast majority of respondents (82.6%) reported feeling sleep-deprived at least occasionally while at high OPTEMPO.

Conclusions and Future Directions

This chapter summarizes ten years of sleep research conducted by the Naval Postgraduate School in

military settings. A common thread runs through all of these studies: American soldiers, sailors, and Marines worldwide are accumulating a staggering sleep debt. Despite the U.S. Navy’s efforts to implement a Navy Standard Work Week, it is clear that its sailors continue to be sleep-deprived—perhaps at an ever-increasing rate. Efforts to promote sleep hygiene in the U.S. military’s ground forces have not been successful, as documented by a widespread failure to comply with mandatory sleep management plans. Continuing pressure to “downsize” the military forces has left the same amount of work to be done by an ever-shrinking work force.

Given that U.S. warfighters suffer from chronic sleep deprivation, they will almost certainly experience deleterious effects on their performance. The most egregious example of the consequences of chronic and acute sleep debt is when combat troops fall asleep when they need to be vigilant. While less obvious, other effects of chronic and acute sleep debt such as microsleeps; lapses in attention, memory, and judgment; alterations in mood; and degraded decision-making also have far-reaching consequences for combat effectiveness. Military leaders would never send troops into harm’s way without the safety afforded them by armor and other personal protective equipment; yet sending troops on missions when they are sleep deprived is equally dangerous to them and to others in their organization. That said, more research is needed to determine how sleep can be optimized on land, at sea, or in the air. Accommodation of adolescent sleep needs has proven successful in various military training environments (e.g., U.S. Navy’s Recruit Training Command at Great Lakes, US Army Basic Combat Training at Fort Leonard Wood and the United States Military Academy at West Point). Other military environments need to be examined to determine if the mitigating strategies used in

training environments will be effective in operational environments.

Another prevalent and troublesome finding in this ten-year research effort is that senior military personnel report that they do not need more sleep. The inference is that the military has “weeded out” individuals with normal sleep requirements by selecting and promoting the individuals who are less susceptible to sleep deprivation. Is attrition higher for individuals who require more sleep than those who either need less sleep or are less susceptible to sleep deprivation or shift work? Does an individual’s sleep propensity constitute such an important characteristic for the U.S. military that this issue should be considered in the military selection process? More importantly, what does this selection process mean for those who do elect to continue in service, and what are the long-term sequelae of chronic sleep deprivation?

In conclusion, ten years of Naval Postgraduate School investigation of sleep in military settings has revealed that when military leaders are bold enough to employ innovative methods to enhance the quality and quantity of sleep, the result is improved effectiveness in training and performance. We conclude this chapter with the sober words of Jonathan Shay (1998):

Pretending to be superhuman is very dangerous. In a well-led military, the self-maintenance of the commander, the interests of his or her country, and the good of the troops are incommensurable only when the enemy succeeds in making them so. It is time to critically reexamine our love affair with stoic self-denial. . . . If an adversary can turn our commanders into sleepwalking zombies, from a moral point of view the adversary has done nothing fundamentally different than destroying supplies of food, water, or ammunition. Such could be the outcome, despite our best efforts to counter it. But we must stop doing it to ourselves and handing the enemy a dangerous and unearned advantage.

References

- Akerstedt, T., & Torsvall, T. (1978). Experimental changes in shift schedules—their effects on well being. *Ergonomics*, 21, 849–856.
- Anch, A. M., Browman, C. P., Mitler, M., & Walsh, J. K. (1988). *Sleep: A scientific perspective*. Englewood Cliffs, NJ: Prentice-Hall.
- Andrews, C. H. (2004). *The relationship between sleep regimen and performance in United States Navy recruits*. Monterey, CA: Naval Postgraduate School.
- Archibald, K. (2005). *Effects of noise, temperature, humidity, motion and light on the sleep patterns of the crew of the HSV-2 Swift*. Monterey, CA: Naval Postgraduate School.
- Baldus, B. R. (2002). *Sleep patterns in U.S. Navy recruits: An assessment of the impact of changing sleep regimens*. Monterey, CA: Naval Postgraduate School.
- Belenky, G. L. (1997). Sleep, sleep deprivation, and human performance in continuous operations. Retrieved November 2, 2006, from <http://www.usafa.af.mil/jscope/JSCOPE97/Belenky97/Belenky97.htm>.
- Blassingame, S. R. (2001). *Analysis of self-reported sleep patterns in a sample of U.S. Navy submariners using non-parametric statistics*. Monterey, CA: Naval Postgraduate School.
- Broughton, R. J., & Ogilvie, R. D. (1992). *Sleep, arousal, and performance*. Boston: Birkhauser.
- Carskadon, M. A. (2002). Factors influencing sleep patterns in adolescents. In M. A. Carskadon (Ed.), *Adolescent sleep patterns: Biological, social, and psychological influences* (pp. 4–26). Cambridge, UK: Cambridge University Press.
- Carskadon, M. A., Wolfson, A. R., Tzischinsky, O., & Acebo, C. (1995). Early school schedules modify adolescent sleepiness. *Sleep Research*, 24, 92.
- Coren, S. (1997). *Sleep thieves: An eye-opening exploration into the science and mysteries of sleep* (1st ed.). New York: Simon & Schuster.
- Dahlgren, K. (1981). Adjustment of circadian rhythms and EEG sleep functions to day and night sleep among permanent night workers and rotating shift workers. *Psychophysiology*, 18, 381–391.
- Department of the Army. (2009). *Combat and operational stress control: Manual for leaders and soldiers* (Field Manual No. 6–22.5). Washington, D.C.
- Department of the Navy. (2007). *Navy total force manpower policies procedures* (OPNAVIST No. 1000.16K). Washington, D.C.
- Dinges, D. F., & Kribbs, N. B. (1991). Performing while sleepy: Effects of experimentally-induced sleepiness. In T. H. Monk (Ed.), *Sleep, sleepiness and performance* (pp.97–128). Chichester, NY: Wiley.
- Dinges, D. F., Pack, F., Williams, K., et al. (1997). Cumulative sleepiness, mood disturbance, and psychomotor vigilance performance decrements during a week of sleep restricted to 4–5 hours per night. *Sleep*, 20(4), 267–277.
- Doheny, S. W. (2004). *Sleep logistics as a force multiplier: An analysis of reported fatigue factors from Southwest Asia warfighters*. Monterey, CA: Naval Postgraduate School.
- Gamboa, D. S. (2002). *An analysis of the effects of environment and career longevity on the sleep patterns of enlisted U.S. Navy submariners*. Monterey, CA: Naval Postgraduate School.
- Green, K. Y. (2009). *A comparative analysis between the Navy standard workweek and the actual work/rest patterns of sailors aboard U.S. Navy frigates*. Monterey, CA: Naval Postgraduate School.
- Haynes, L. E. (2007). *A comparison between the Navy standard workweek and the actual work and rest patterns of U.S. Navy sailors*. Monterey, CA: Naval Postgraduate School.
- Horne, J. A. (1985). Sleep function, with particular reference to sleep deprivation. *Annals of Clinical Research*, 17, 199–208.
- Horne, J. A. (1988). *Why we sleep*. Oxford, UK: Oxford University Press.
- Kryger, M. H., Roth, T., & Dement, W. C. (Eds.). (2000). *Principles and practices of sleep medicine* (3rd ed.). Philadelphia: W.B. Saunders Company.
- Lindbergh, C. A. (1953). *Spirit of St. Louis*. New York: Scribner’s.
- Mason, D. R. (2009). *A comparative analysis between the Navy standard workweek and the work/rest patterns of sailors aboard*

- U.S. Navy cruisers*. Monterey, CA: Naval Postgraduate School.
- Matsangas, P., & Miller, N. L. (2006). The effects of ship motion on the sleeping patterns of crewmembers aboard a high speed Naval vessel. [Meeting Anstract]. *Sleep*, 29(Suppl. S), A126–A126.
- McCauley, M. E., Matsangas, P., & Miller, N. L. (2005). *Motion and fatigue study in high speed vessel operations: Phase 1 report*. Monterey, CA: Naval Postgraduate School.
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). *Profile of mood states manual*. San Diego, CA: EdITS/Educational and Industrial Testing Service.
- Miller, J. C., Dyche, J., Cardenas, R., & Carr, W. (2003). *Effects of three watchstanding schedules on submariner physiology, performance, and mood* (Technical Report No. 1226). Groton, CT: Naval Submarine Medical Research Laboratory.
- Miller, N. L., Matsangas, P., & Shattuck, L. G. (2008). Fatigue and its effect on performance in military environments. In P. A. Hancock & J. L. Szalma (Eds.), *Performance under stress* (1st ed., pp. 231–250). Burlington, VT: Ashgate Publishing.
- Miller, N. L., & Nguyen, J. L. (2003). *Working the nightshift on the USS John C. Stennis: Implications for enhancing warfighter effectiveness*. Paper presented at the Human Systems Integration Symposium (HSIS) 2003: Enhancing Human Performance in Naval & Joint Environments, 23-25 June, Vienna, VA.
- Miller, N. L., & Shattuck, L. G. (2005). Sleep patterns of young men and women enrolled at the United States Military Academy: Results from Year One of a four-year longitudinal study. *Sleep*, 28(7), 837–841.
- Miller, N. L., Shattuck, L. G., & Matsangas, P. (2010). Sleep and fatigue issues in continuous operations: A survey of U.S. Army Officers. *Behavioral Sleep Medicine*.
- Nguyen, J. L. (2002). *The effects of reversing sleep-wake cycles on sleep and fatigue on the crew of USS John C. Stennis*. Monterey, CA: Naval Postgraduate School.
- Osborn, C. M. (2004). *An analysis of the effectiveness of a new watchstanding schedule for U.S. Submariners*. Monterey, CA: Naval Postgraduate School.
- Sawyer, T. L. (2004). *The effects of reversing sleep-wake cycles on mood states, sleep, and fatigue on the crew of the USS John C. Stennis*. Monterey, CA: Naval Postgraduate School.
- Shay, J. (1998). Ethical standing for commander self-care: The need for sleep. *Parameters*, 28(2), 93–105.
- Stolgitis, W. C. (1969). *The effects of sleep loss and demanding work/rest cycles: an analysis of the traditional Navy watch system and a proposed alternative*. Monterey, CA: Naval Postgraduate School.
- Tvryanans, A. P. (2010). *A discourse on human systems integration*. Monterey, CA: Naval Postgraduate School.
- Van Dongen, H. P. A., & Dinges, D. F. (2000). Circadian rhythms and fatigue alertness and performance. In M. H. Kryger, W. Dement, & T. Roth (Eds.), *Principles and practice of sleep medicine* (4th ed.) (pp. 136–153). Toronto: W.B. Saunders.
- Van Dongen, H. P. A., Rogers, N. L., & Dinges, D. F. (2003). Sleep debt: Theoretical and empirical issues. *Sleep and Biological Rhythms*, 1, 5–13.
- Wolfson, A. R., & Carskadon, M. A. (1998). Sleep schedules and daytime functioning in adolescents. *Child Development*, 69(4), 875–887.
- Wolfson, A. R., & Carskadon, M. A. (2003). Understanding adolescents' sleep patterns and school performance: A critical appraisal. *Sleep Medicine Reviews*, 7(6), 491–506.

Teams in the Military

A Review and Emerging Challenges

Marissa L. Shuffler, Davin Pavlas, and Eduardo Salas

Abstract

Teams have long been considered critical to the organizational structure of the military. The complex nature of military missions requires knowledge, skills, and abilities beyond those of a single individual, thus requiring the use of teams. Furthermore, the study of teams in the military environment is constantly evolving as the needs of the military and its missions change and adapt to new global circumstances. Psychology as a discipline has been particularly influential in addressing these needs, developing what is known regarding teams, their processes, training, and success in the military. Therefore, the purpose of this chapter is to review the science of teams and their effectiveness, extrapolate critical lessons learned, and highlight several future challenges critical for military psychology to address in order to prepare future military teams for success.

Keywords: teams, team training, team effectiveness, team leadership

Teams have long been considered critical to the organizational structure of the military (Salas, Bowers, & Cannon-Bowers, 1995). The complex nature of military missions requires knowledge, skills, and abilities beyond that of a single individual, thus requiring the use of collective action to achieve goals (Goodwin & Halpin, 2006). The growing use of teams in the military is in part due to the idea that teams provide specific advantages over individuals working alone. For example, the Army is increasingly relying on small units to accomplish missions, as such units provide flexibility as well as the combined skills and expertise required to operate in complex environments (Bois & Howell, 2009).

Because of their importance, the study of teams in military environments is constantly evolving to suit ever-changing demands. Just as teams provide capabilities beyond those of individuals, they also are an order of magnitude more complex. Thus, extensive research has been conducted over the past several decades to understand how teams function and how to maximize teams to achieve the performance

advantages they offer. Psychology as a discipline has been particularly influential in addressing these needs, by developing the knowledge base of team processes, training, and successes in the military (Salas, Goodwin, & Burke, 2009). Because of the exponential growth of team science, it can be difficult to track the advances that have occurred.

To provide a broader view of the state of team science for the military, the purpose of this chapter is to review the science of teams and team effectiveness, extrapolate critical lessons learned, and highlight challenges critical to future military team success that must be researched. We first begin by defining what a team is and how team effectiveness is conceptualized, followed by a review of some of the key factors that influence team effectiveness. We then turn to the development of effective teams, outlining the critical components to successful team training and highlighting current research in team training. Next, we review team performance measurement, a critical component to gauging military team performance success as well as developmental

needs. Finally, we conclude with a set of future challenges and research directions necessary for advancing the science of military teams.

Defining Military Team Effectiveness

Team and group research has provided a strong foundation for understanding this phenomenon in the military context (Prince & Salas, 1999), yet much has changed in team performance research in the past few decades (Guzzo & Dickson, 1996). These advances in teamwork, team process, and team competencies have enabled a richer understanding of their significance in military team performance. In the following section, we will outline constructs from team research relevant to military team performance and highlight some of the most significant advancements in understanding team processes.

Teams

To understand military team performance, it is important to first define what is meant by *team*. A team is defined as “a set of two or more individuals that adaptively and dynamically interact through specified roles as they work toward shared and valued goals” (Salas et al., 2009, p. 40). Teams are not successful simply by virtue of their existence. Indeed, research points to process losses in teams, such as the reduction of creativity due to decreased psychological safety (Edmondson & Roloff, 2009), the introduction of “groupthink” (Janis, 1982), and development of conflict among team members when attempting to achieve their goals (Jehn, 1995; Jehn, Northcraft, & Neale, 1999). However, teams do have advantages compared to a set of individuals working on the same task simultaneously. Teams are more innovative because of the combined efforts of their diverse members, are better at storing and retrieving knowledge through the use of shared mental models and transactive memory systems, and are better able to quickly respond to changing tasks and market requirements (van Dick et al., 2009; Salas & Cannon-Bowers, 2001). Thus, teams have become a particularly critical part of the military, as achieving goals in complex operating environments increasingly requires the combined efforts of a collective.

Teamwork

For teams to be effective, they must successfully perform both *teamwork* and *taskwork* (Salas, Kosarzycki, Tannenbaum, & Carnegie, 2004). Teamwork is defined as a set of behaviors, cognitions, and

attitudes that are enacted to achieve mutual goals and meet the demands of the outside environment (Salas et al., 2007). Taskwork involves the skills necessary for team members to perform tasks, whereas teamwork skills focus primarily on the behaviors and attitudes necessary for teams to function and accomplish these tasks (Salas et al., 2007). Both of these skill sets are viewed as equally important, although many recognize that taskwork skills should be trained before teamwork to ensure team members first have an understanding of the skills necessary to perform their individual tasks (Salas & Cannon-Bowers, 2001). Additionally, several researchers argue that the relationship between taskwork and team effectiveness is mediated by teamwork skills (Hackman & Morris, 1975; Bass, 1996; Burke, Wilson, & Salas, 2003).

Taskwork and teamwork can further be broken down into generic and specific skills. Cannon-Bowers, Tannenbaum, Salas, and Volpe (1995) delineated a 2 x 2 framework (see Figure 21.1) that could be used to organize these team and taskwork skills. This framework depicts that these skills can vary along two axes with respect to the degree to which they are *team-generic* or *team-specific* (first axis) and *task-specific* or *task-generic* (second axis). By combining these axes, four categories of competencies are produced (i.e., context-driven, team-contingent, task-contingent, and transportable).

From a training perspective, the situational and environmental context drives the determination of which skills will be the most appropriate to train. For example, context-driven skills are those driven by the particular task and team involved. Conversely, team-contingent competencies are those that are team-specific, but are applicable across a wide variety of tasks. The third box in the matrix, task-contingent competencies, are those that are task-specific,

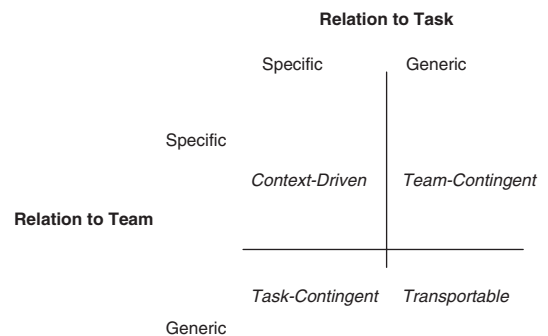


Fig. 21.1 Types of team competencies (Cannon-Bowers et al., 1995).

but transportable across teams (i.e., not dependent on the particular makeup of the team). Finally, transportable competencies are those that are team- and task-generic (i.e., they apply across a wide range of teams and collective tasks). The skills and competencies that fall within this category are those that tend to be trained within highly dynamic environments where task and team member requirements change frequently.

In the military, teams are expected to perform both teamwork and taskwork simultaneously. While being able to efficiently and effectively perform the task at hand is critical to all types of military teams, teamwork skills are also crucial for effective coordination and communication among the members. Merket and colleagues (1999) found that breakdowns in team performance skills were found to play a significant role in making errors. Specifically, they found that deficiencies in aircrew coordination skills (e.g., situational awareness, decision making, leadership, adaptability) contributed to 68% of the mishaps examined in the study. Certainly, understanding the role of teamwork skills beyond just taskwork is important to team effectiveness and accident prevention.

Team Competencies

As the understanding of teamwork has grown, so has the knowledge of the specific skills and competencies necessary to successfully perform teamwork. Over the past few decades, researchers have worked to identify the core competencies that are necessary for teamwork to occur, including knowledge, skills, and attitudes (Cannon-Bowers et al., 1995). After collecting and synthesizing prior teamwork research, Cannon-Bowers and colleagues (1995) identified a set of eight major teamwork skills, including: (1) adaptability, (2) communication, (3) coordination, (4) decision making, (5) interpersonal relations, (6) leadership/team management, (7) performance monitoring/feedback, and (8) shared situational awareness. Drawing upon theoretical and empirical advances in team research, this list of competencies has been further refined by Salas and colleagues (2007), who grouped them into three larger categories of attitudes, behaviors, and cognitions, while also expanding the number of teamwork skills included within each of these groups. Table 21.1 presents a summary of these expanded competencies.

Although identifying these competencies has led to great advances in understanding what impacts teamwork, most recently the work of Marks et al.

(2001) and Salas et al. (2007) have further contributed to our understanding of the dynamic interdependencies among the components of teamwork. Focusing on the temporal nature of teams, Marks and colleagues identified a framework of team processes in addition to interpersonal processes. Salas and colleagues built upon this framework to advance a “big five” of teamwork, highlighting five core components of teamwork: (1) team leadership, (2) mutual performance monitoring, (3) backup behavior, (4) adaptability, and (5) team orientation. Furthermore, they examined how these core competencies require the support of several coordinating mechanisms, including shared mental models, closed-loop communication, and mutual trust; as well as how these competencies may vary in importance over the lifespan of the team. These competencies certainly have implications for the military community, as all are critical in the demanding and complex situations occurring for military teams at any given moment.

Understanding Team Effectiveness through I-P-O and IMOJ Frameworks

There are many frameworks and models of team effectiveness that have emerged from the literature. Traditionally, teamwork and team effectiveness have been studied using an input-process-output (I-P-O) framework (see Figure 21.2), as originally advanced by McGrath (1984). From this perspective, inputs involve antecedent factors that enable and constrain the interactions of team members (Mathieu et al., 2008). Inputs can involve individual characteristics, team-level factors, and organizational-level factors. These factors combine to drive team processes, or the interactions of members that are directed to accomplishing the team task at hand. Processes are a very important piece to this framework, as they provide the mechanism by which team inputs are transformed into team outcomes. *Outcomes* are described as results and byproducts of these team processes, and can include factors such as team performance as well as affective reactions (Mathieu et al., 2000).

This model of team effectiveness has been well utilized over the years, with adjustments and modifications being made to some degree in order to better understand team issues (Cohen & Bailey, 1997; Mathieu et al., 2008). For example, some researchers have examined the temporal nature of the model (Marks, Mathieu, & Zaccaro, 2001), while others have looked at the inherently multi-level nature of the individual, team, and organizational inputs that affect processes and outcomes

Table 21.1 Teamwork competencies

Proposed Competencies	Description	Sources
<i>Attitudes</i>		
Team/Collective Orientation	“A preference for working with others and the tendency to enhance individual performance through the coordination, evaluation, and utilization of task inputs from other group members while performing group tasks” (Salas, Guthrie, Wilson, Priest, & Burke, 2005, p. 200).	Alavi & McCormick (2004) Driskell & Salas (1992) Eby & Dobbins (1997) Jackson, Colquitt, Wesson, & Zapata-Phelan (2006) Mohammed & Angell (2004) Salas, Sims, & Burke (2005)
Team/collective	“A sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a successful concerted response to goals-specific situational demands” (Zaccaro, Blair, Peterson, & Zazanis, 1995, p. 309).	Bandura (1986) Gibson (2003) Katz-Navon & Erez (2005) Watson, Chemers, & Preiser (2001) Zaccaro, Blair, Peterson, & Zazanis (1995)
Psychological Safety	“A shared belief that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 354).	Edmondson (1999)
Team Learning Orientation	“A shared perception of team goals related to learning and competence development; goals that guide the extent, scope, and magnitude of learning behaviors pursued within a team” (Bunder. & Sutcliffe, 2003, p. 553).	Bunderson & Sutcliffe (2003) Yazici (2005)
Team cohesion	The degree to which team members exhibit interpersonal attraction, group pride, and commitment to the task.	Beal, Cohen, Burke, & McLendon (2003) Carless & De Paola (2000) Zaccaro, Gualtieri, & Minionis (1995)
Mutual Trust	“The shared belief that team members will perform their rules and protect the interests of their teammates” (Salas, Sims, & Burke, 2005, p. 561).	Aubert & Kelsey (2003) Bandow (2001) Webber (2002) Salas, Sims, & Burke (2005)
Team empowerment	“Team members’ collective belief that they have the authority to control their proximal work environment and are responsible for their team’s functioning” (Mathieu, Gilson, & Ruddy, 2006, p. 98).	Mathieu, Gilson, & Ruddy (2006) Kirkman, Rosen, Tesluk, & Gibson (2004)
Team reward attitude	“An individual’s general evaluation of receiving rewards based on the performance of the team” (Shaw, Duffy, & Stark, 2001, p. 904).	Haines & Taggar (2006) Shaw, Duffy, & Stark (2001)
Team goal commitment/ team conscientiousness	The degree to which team members feel an attachment to the team level goal and the degree to which they are determined to reach this goal.	Aub6 & Rousseau (2005) English, Griffith, & Steelman (2004) Weldon & Weingart F; (1993)
<i>Behaviors</i>		
Mutual performance monitoring	The ability of team members to “keep track of fellow team members’ work while carrying out their own . . . to ensure that everything is running as expected” (McIntyre & Salas, 1995, p. 23).	Dickinson & McIntyre (1997) Marks & Panzer (2004) McIntyre & Salas (1995) Salas, Sims, & Burke (2005)

(Continued)

Table 21.1 Teamwork competencies (Cont'd)

Proposed Competencies	Description	Sources
Adaptability	“Ability to adjust strategies based on information gathered from the environment through the use of backup behavior and reallocation of intrateam resources. Altering a course of action or team repertoire in response to changing conditions (internal or external)” (Salas, Sims, & Burke, 2005, p. 560).	Burke, Stagl, Salas, Pierce, & Kendall(2006) Entin & Serfaty (1999) Kozlowski, Gully, Nason, & Smith (1999) LePine (2003,2005) Salas, Sims, & Burke (2005)
Backup/supportive behavior	“Ability to anticipate other team member’s needs through accurate knowledge about their responsibilities. This includes the ability to shift workload among members to achieve balance during high periods of workload or pressure” (Salas, Sims, & Burke, 2005, p. 560).	Marks, Mathieu, & Zaccaro (2000) McIntyre & Salas (1995) Porter et al. (2003) SaIas, Sims, & Burke (2005)
Implicit coordination strategies	“Synchronization of member actions based on unspoken assumptions about what others in the group are likely to do” (Wittenbaum & Strasser, 1996, p. 23).	Adelman, Miller, Henderson, & Schoelles (2003) Entin & Serfaty (1999) Espinosa, Lerch, & Kraut (2004) MacMillan, Entin, & Serfaty (2004) Rico, Sanchez-Manzanares, Gill & Gibson (2008)
Shared distributed leadership	“The transference of the leadership function among team members in order to take advantage of member strengths (e.g., knowledge, skills, attitudes, perspectives, contacts, and time available) as dictated by either environmental demands or the development stage of the team” (Burke, Fiore, & Salas, 2004, p. 105).	Pearce & Sims (2002) Hiller, Day, & Vance (20%) Day, Gronn, & Salas (2006)
Mission analysis	“The interpretation and evaluation of the team’s mission, including identification of its main task. As well as the operative environmental conditions and team resources available for mission execution” (Marks, Mathieu, & Zaccaro, 2001, p. 365).	Marks, Mathieu, & Zaccaro (2001) Mathieu & Schulze (2006)
Problem detection	An initial sensing that a problem requiring attention exists or will soon exist.	Larson & Christensen (1993) Moreland & Levine (1992)
Conflict resolution/management	“Preemptive conflict management involves establishing conditions to prevent, control, or guide team conflict before it occurs. Reactive conflict management involves working through task and interpersonal disagreements among team members” (Marks, Mathieu, & Zaccaro, 2001, p. 363).	De Lhu & Weingart (2003) Gladstein, 1984 Jehn (1995) Jordan & Troth (2004) Simons & Peterson (2000)
Motivation of others	Generating and maintaining goal directed effort toward completion of the team’s mission	Fleishman & Zaccaro (1992) Marks, Mathieu, & Zaccaro (2001)
Intrateam feedback	The provision of information about or individual performance either before, during, or after a performance episode.	Inzana, Driskell, Salas, & Johnston (1996) Smith-Jentsch, Johnson, & Payne (1998) Smith-Jentsch, Zeisig, Action, & McPherson (1998)

Table 21.1 (Cont'd)

Task-related assertiveness	“The capacity to effectively communicate in interpersonal encounters by sharing ideas clearly and directly” (Pearsall & Ellis, 2006, p. 577).	Marks, Mathieu, & Zaccaro (2001) Pearsall & Ellis (2006) Smith-Jentsch, Salas, & Baker (1996)
Planning	The generation of a proposed sequence of actions intended to accomplish a set goal.	Klein & Miller (1999) Mathieu & Schulze (2006) Militello, Kyne, Klein, Getchell, & Thordsen (1999) Stout, Cannon-Bowers, Salas, & Milanovich (1999)
Coordination	“The process of orchestrating the sequence and timing of interdependent actions” (Marks, Mathieu, & Zaccaro, 2001, pp. 367–368).	Brannick, Prince, Prince, & Salas (1992) Fleishman & Zaccaro (1992) Malone & Crowston (1994) Marks, Mathieu, & Zaccaro (2001) Smith-Jentsch, Johnston, & Payne (1998)
Team Leadership	“Ability to direct and coordinate the activities of other team members, assess team performance, assign tasks, develop team knowledge, skills, and abilities, motivate team members, plan and organize, and establish a positive atmosphere” (Salas, Sims, & Burke, 2005, p. 560).	Burke, Stagl, Klein, et al. (2006) Day, Gronn, & Salas (2004) Salas, Sims, & Burke (2005) Stagl, Salas, & Burke (2006) Zaccaro, Rittman, & Marks (2001)
Problem Solving	The process of (1) identifying and representing a discrepancy between the present and desired state of the environment and (2) discovering a means to close this “gap.”	Bonner (2004) Jordan & Troth (2004) Oser, Gualtieri, Cannon-Bowers, & Salas (1999)
Closed loop communication/information exchange	A pattern of communication characterized by (1) a message being initiated by the sender, (2) the message being received, interpreted, and acknowledged by the intended receiver, and (3) a follow-up by the sender ensuring that the message was received and appropriately interpreted.	Bowers, Jentsch, Salas, & Braun (1998) McIntyre & Salas (1995) Salas, Sims, & Burke (2005) Smith-Jentsch, Johnston, & Payne (1998) Smith-Jentsch, Zeisig, Acton, & McPherson (1998)
Cognitions		
Rules for matching a situation with an appropriate action (cuestrategy associations)	Team members have a repertoire of performance strategies and courses of action associated with frequently occurring situations and problems.	Cannon-Bowers & Salas (1997) Kline (2005) Stout, Cannon-Bowers, Salas, & Milanovich (1999)
Accurate problem models	“Shared understanding of the situation, the nature of the problem, the cause of the problem, the meaning of available cues, what is likely to happen in the future, with or without action by the team members, shared understanding of the goal or desired outcome, and a shared understanding of the solution strategy” (Orasanu, 1994, p. 259).	Fiore & Schooler (2004) Orasanu (1990, 1994) Orasanu & Salas (1993) Salas, Rosen, Burke, Nicholson, & Howse (2007)

(Continued)

Table 21.1 Teamwork competencies (Cont'd)

Proposed Competencies	Description	Sources
Accurate and shared mental models (transactive memory and team situational awareness)	“An organized knowledge structure of the relationships among the task the team is engaged in and how the team members will interact” (Salas, Sims, & Burke, 2005, p. 561)	Artman (2000) Cannon-Bowers & Salas (1997) Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995) Endsley (1995) Klein, Feltovich, Bradshaw, & Woods (2005) Klirnoski & Mohammed (1994) Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers (2000) Salas, Cannon-Bowers, Fiore, & Stout (2001) Salas, Prince, Baker, & Shrestha (1995) Salas, Sirns, & Burke (2005) Stout, Cannon-Bowers, & Salas, (1996)
Team mission, objectives, norms, resources	An understanding of the purpose, vision, and means available to the team for reaching the team objectives and completing the mission as well as the “shared expectations that constrain and drive the action of group members” (Graham, 2003, p. 323).	Cannon-Bowers & Salas (1997) Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995) Marks, Mathieu, & Zaccaro (2001)
Understanding of multiteam system (MTS) couplings	An understanding in the team of how their performance (inputs, processes, and outcomes) is tied to the larger organizational structure, including other teams.	Hoegl, Weinkauff, & Gemueden (2004) Marks, DeChurch, Mathieu, Panzer, & Alonso (2005) Williams & Mahan (2006)

(Adapted from Salas, et al., 2007)

(Kozlowski & Klein, 2000). Most recently, Ilgen and colleagues (2005) have advanced a new form of the model, which focuses on the cyclical nature of team functioning: the input, mediator, output, input IMOI model (see Figure 21.3).

The IMOI model of team effectiveness adds to the original I-P-O framework by addressing the increased complexity that teams are facing today. Substituting “M,” or mediator, for “P” illustrates the broader range of variables that influence teams,

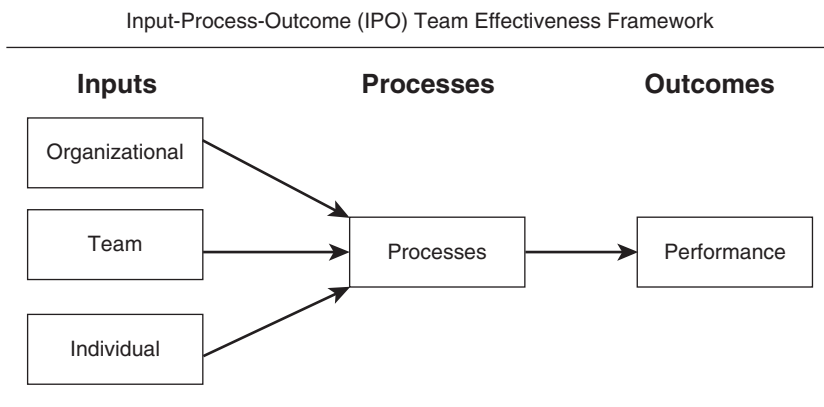


Fig. 21.2 Reprinted from Mathieu, Maynard, Rapp, & Gilson (2008).

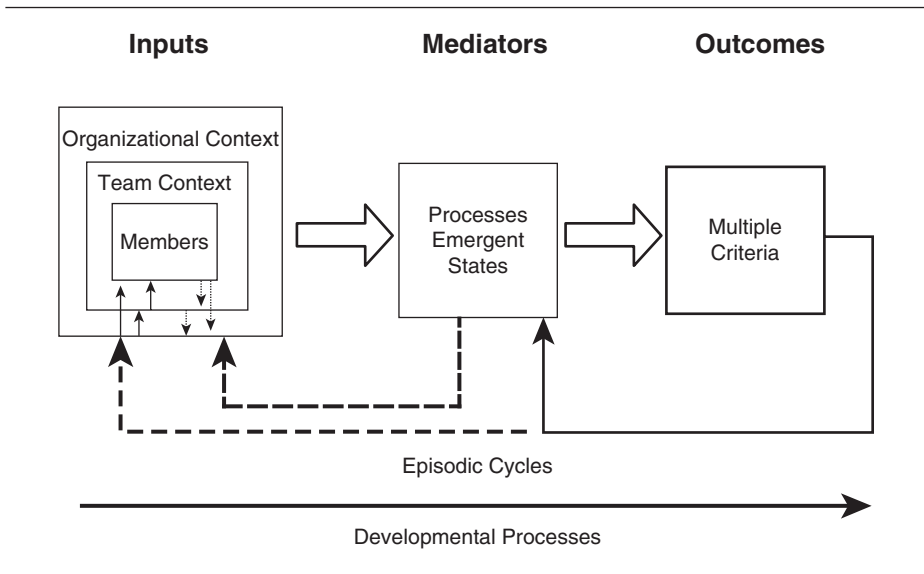


Fig. 21.3 Reprinted from Mathieu, Maynard, Rapp, & Gilson (2008).

their processes, and their outcomes (Ilgen et al., 2005). Additionally, the inclusion of another “I” illustrates the fact that the framework is cyclical, with feedback occurring to inform the next iteration. Finally, the removal of hyphens represents that the model is not linear or additive, but is in fact nonlinear or conditional.

For the military community, understanding the role of the IMOI framework in relation to teams is important to successful operation and team performance, in that it delineates how inputs and mediators influence team outcomes. In the following sections, we detail specific inputs and mediators that have been shown to influence team outcomes relevant to military performance. Furthermore, we will highlight current research in team training designed to improve the effectiveness of teams, primarily through influencing the effectiveness of team processes. Certainly, the effectiveness of teams cannot be viewed as the outcome of a single, linear process, but instead as resulting dynamically from numerous inputs, mediators, and processes that arise throughout task performance. Therefore, utilizing models such as those presented here can provide us with a more accurate understanding of the interplay of these team performance variables.

Summary

In sum, team dynamics research has advanced over the past several decades, which has several implications for understanding military team performance.

Many models and frameworks have been developed to explain, not only the development of teams, but also to understand the factors that influence their performance and effectiveness. The growth of knowledge regarding the competencies necessary for team functioning has implications for military team training, as does the conceptual shift from an I-P-O framework to an IMOI model that places greater emphasis on the wide range of factors that may impact team performance and effectiveness. The cyclical nature and iterative feedback that is now incorporated into the framework better captures the complexity of team processes. Overall, it is clear from this brief review of team constructs and frameworks that there are many factors that can influence team performance and success, especially for military teams. In the following section, we highlight some of the most important factors that can impact military team performance and are identified in current research.

What Factors Influence Military Team Effectiveness?

There are many factors that can influence the effectiveness of military teams. Given the previous discussion of the input-process/mediator-output approach to understanding teams, we follow a similar framework in terms of highlighting specific factors that can influence military team performance. To do so, we draw upon the framework of the conditions and processes of team performance developed by Salas and colleagues (2007; see

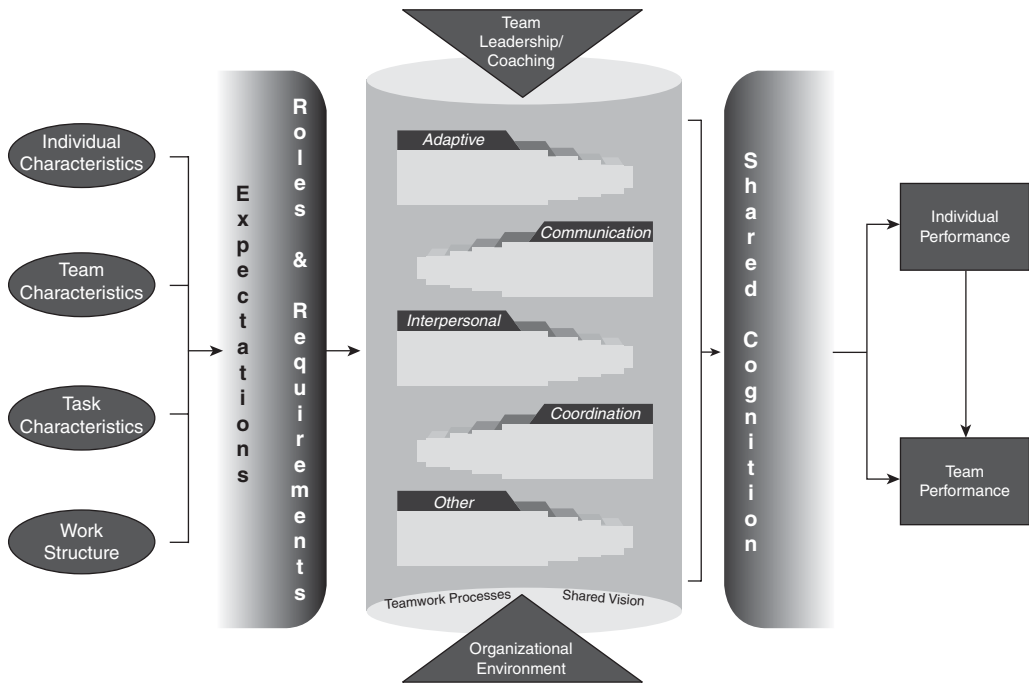


Fig. 21.4 The conditions and processes of team performance.

Figure 21.4). First, we review several key team inputs that may influence team performance, including individual characteristics, team characteristics, and task characteristics. Next, we highlight some critical team processes and emergent states, including team adaptability, transition and action behaviors, shared mental models, and team cohesion. We also briefly discuss the role of leadership in teams. Finally, we conclude by examining some of the situational and contextual factors that may influence team performance.

Team Inputs

There are many factors considered to be “inputs” that can influence team processes and performance. Team members themselves bring their own personalities, backgrounds, and experiences, which can influence how the team subsequently functions as a whole. In addition, the team as a whole can be influenced by its size, how it is structured, and how interdependent the team is. Finally, characteristics of the task can also serve as an input to influence the team and its ability to function. The following section is a discussion of each of these factors and how they may be particularly important to understanding military teams.

TEAM MEMBER CHARACTERISTICS

Individuals entering teams bring in their own unique individual characteristics, which can then

influence team performance. This may include diversity in cultural or national backgrounds (Earley & Mosakowski, 2000), functional background (Bunderson, 2003), personality traits (Carson, Tesluk, & Marrone, 2007), collective orientation (Driskell et al., 2006), and motivation (Neal & Griffin, 2006). All of these individual inputs can combine to subsequently influence team performance. For example, Koman and Wolff (2008) found that emotional intelligence (the awareness of and ability to regulate emotions) in military aircrew teams can influence the development of team norms, which subsequently influences team performance. Therefore, it is important to consider individual characteristics in team composition when selecting and developing teams, especially military teams that may require differing degrees of experience, personality traits, and abilities in order to effectively perform in highly stressful and complex operations.

TEAM CHARACTERISTICS

In addition to individual factors, there are also team-level characteristics that can be considered inputs that influence subsequent team processes and outcomes (Shuffler et al., 2010). This can involve structural factors such as the size of the team, and the interdependence of team members in terms of goals, tasks, and feedback (Saavedra et al., 1993), the degree of autonomy in terms of how much control

team members have over the team design, structure, and accomplishment of work (Sundstrom et al., 1990), and the communication structure by which communication occurs among team members (Dyer, 1984). All of these factors have been found to have a significant impact on the performance of teams (Mathieu et al., 2008). Furthermore, as will be discussed in a later section, the degree to which teams are trained can also positively affect both team processes and outcomes (Salas & Cannon-Bowers, 2001). Overall, team characteristics can have a strong impact on the success of teams, and continued research in this area is merited.

TASK CHARACTERISTICS

The team task is defined in terms of the nature of work performed by the team, but not the manner in which the team performs that work (McGrath, 1962). In other words, the team task focuses on the kind of work done rather than how it is done. Task characteristics can include factors such as team task type, task interdependency, and task complexity. Each of these facets can have a strong influence on team processes and outcomes, especially in terms of moderating relationships among inputs, processes, and outputs.

For example, a complex task is one in which high cognitive demands are placed on the task-doer (Campbell, 1988, p. 43; Jehn, 1995; Kankanhalli et al., 2006). This dimension of team task has been mentioned in prior taxonomic literature (Bell & Kozlowski, 2002) as well as the general team literature as having a significant impact on team

functioning. Jehn (1995) found that task conflict is sometimes beneficial in complex tasks, but it is always detrimental in routine tasks. Furthermore, the complexity of the task can influence several other critical aspects of team performance, such as the processes necessary to complete the task, the level of interdependence, or the type of training needed.

Team Processes and Emergent States

These initial inputs into teams influence subsequent team processes and emergent states (Marks et al., 2001). Over the past decade, increasing attention has been paid to these processes and states that can be used to explain why and how team inputs influence team effectiveness and outcomes (Ilgen et al., 2005). In this section, we define and discuss both team processes and team emergent states, highlighting different types of each and describing their role as a mediator connecting team inputs and outcomes.

TEAM PROCESSES

Team process, as previously discussed in relation to the IMOI model, refers to the functions performed by team members to accomplish team goals (Marks, Mathieu, & Zaccaro, 2001). While traditionally team process was simply divided into taskwork and teamwork, Marks and colleagues (2001) advanced this view by developing a taxonomy of processes that includes three higher-order categories: transition, action, and interpersonal (see Table 21.2). The following provides a brief discussion of these three categories and the types of variables within each that have been found to influence team outcomes.

Table 21.2 Team processes and emergent states

Term	Definition	Source
Action Processes		
Coordination	The process of orchestrating the sequence and timing of interdependent actions.	Marks et al., 2001
Communication	Exchanging information between a sender and a receiver, irrespective of the medium.	Salas et al., 2005
Mutual Performance Monitoring	Developing common understandings of the team environment and applying appropriate task strategies to monitor team performance.	Salas et al., 2005
Backup Behavior	Anticipating other team members' needs through accurate knowledge about their responsibilities. This includes shifting workload among members to achieve balance during periods of high workload or pressure.	Salas et al., 2005

(Continued)

Table 21.2 (Cont'd)

Term	Definition	Source
Adaptation	Adjusting strategies based on information gathered from the environment through the use of backup behavior and reallocation of intra-team resources. Altering a course of action or team repertoire in response to changing conditions (internal or external).	Salas et al., 2005
Team Leadership	Directing and coordinating the activities of other team members, assessing team performance, assigning tasks, developing team knowledge, skills, and abilities, motivating team members, planning and organizing, and establishing a positive atmosphere.	Salas et al., 2005
Transition Processes		
Mission Analysis, Formulation, and Planning	Interpreting and evaluating the team's mission, including identifying its main tasks as well as the operative environmental conditions and team resources available for mission execution.	Marks et al., 2001
Goal Specification	Identifying and prioritizing goals and subgoals for mission accomplishment.	Marks et al., 2001
Strategy Formulation	Developing alternative courses of action for mission accomplishment.	Marks et al., 2001
Interpersonal Processes		
Conflict Management	Establishing conditions to prevent, control, or guide team conflict before it occurs, and working through task and interpersonal disagreements among team members.	Marks et al., 2001
Motivation and Confidence-Building	Generating and preserving a sense of collective confidence, motivation, and task-based cohesion with regard to mission accomplishment.	Marks et al., 2001
Affect Management	Regulating member emotions during mission accomplishment, including (but not limited to) social cohesion, frustration, and excitement.	Marks et al., 2001
Emergent States		
Team Orientation	Propensity to take others' behavior into account during group interaction and the belief in the importance of team goals over individual member goals.	Salas et al., 2005
Mutual Trust	The shared belief that team members will perform their roles and protect the interests of their teammates.	Salas et al., 2005
Shared Mental Models	An organizing knowledge structure of the relationships among the tasks the team is engaged in and how the team members will interact.	Salas et al., 2005

First, the transition phase of team process involves a focus upon activities that prepare the team for engaging in action at a later time (Mathieu et al., 2008). This includes processes such as mission analysis, planning, goal specification, and formulating strategies. While transition processes

are important as they provide a foundation for future actions, this type of process has received the least amount of attention in the research. Of the studies that do exist, these transition variables have been linked to team performance. Mathieu and Schulze (2006) found that dynamic planning was

positively related to team performance. Furthermore, Hiller and colleagues (2006) found that the enactment of collective leadership, operationalized by planning and organizing, was also positively related to team performance. However, further research is necessary to more clearly delineate the relationship of different types of transition processes to team outcomes.

The second phase of team process is the action phase, which has received a significant amount of attention in the literature (Mathieu et al., 2008). Action processes involve team members working on accomplishing tasks, monitoring and adjusting behaviors, coordinating with team members, and monitoring and backing up one another. Critical action processes that have been found to influence team performance include communication and coordination (LePine et al., 2008). Additionally, Porter (2005) showed the importance of backup behaviors in decision-making performance.

Finally, interpersonal processes involve the interpersonal functioning of team members across both transition and action phases of team process. Interpersonal processes can include conflict, motivation, confidence building, and affect (Mathieu et al., 2008). Research has been conducted on all of these factors, finding that they can each differentially influence the success of teams. For example, De Dreu and Weingart (2003) found that conflict, both relationship and task, has a strongly negative correlation with team performance as well as team member satisfaction. Furthermore, research has demonstrated the positive impact of feedback on team motivation, interpersonal trust, and subsequent performance in virtual teams (Geister, Konradt, & Hertel, 2006). In sum, each of these three types of processes can significantly affect team outcomes and should be important to understanding the functioning of military teams.

TEAM EMERGENT STATES

Within the team literature, *emergent states* have been defined as “properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes” (Marks et al., 2001, p. 357). These are cognitive, motivational, and affective states that emerge from the processes of team interaction and have been conceptualized as either moderators of team performance processes (e.g., Ilgen et al., 2005) or as proximal inputs and outputs for team processes (i.e., team interaction produces an emergent state that subsequently influences future team processes; see

Burke et al., 2006; Marks et al., 2001). Much like team process, emergent states have also become an increasing focus of teams research, with attention specifically being paid to team confidence, team climate, cohesion, and trust (Mathieu et al., 2008). As a full review of the motivational, affective, and cognitive emergent states is beyond the scope of the current chapter, we highlight below a critical cognitively based emergent state that is especially influential in military teams: shared mental models.

Shared mental models are defined as “organized knowledge structures that allow individuals to interact with their environment” (Mathieu et al., 2005). Shared mental models help explain how teams are able to effectively cope with difficult and challenging task conditions (Klimoski & Mohammed, 1994). Salas, Prince, Baker, and Shrestha (1995) state that shared mental models are broken into several classifications: understanding of equipment or technology; shared task or job models; shared concepts of how the team interacts; and shared knowledge of the team members’ knowledge, skills, abilities, and other traits.

There is an extensive literature on the development of shared mental models and the effects they have on team outcomes. Mathieu and colleagues (2000) examined both team and task mental models in dyads performing a flight simulation task, and found that similarity in both team and task mental models was predictive of team performance, supporting this notion of the mental model theory. Edwards and colleagues (2006) also provided evidence linking shared mental models to team performance in a laboratory setting. However, Mathieu and colleagues (2000) found that the similarity of the team and task mental models did not converge over time as expected. This calls into question the assumption that mental models converge over time, though the short-term nature of the study may not have allowed enough time for the convergence to occur. Therefore, further research is needed to examine this issue.

Team Leadership

Team leadership is a unique component of teams that can be considered either an input or a mediator, and it plays quite a significant role, especially for military teams who typically have some form of leadership structure. Leadership is a well-studied topic, with many reviews available (see Barling et al., 2010, for a recent review). Leadership is especially critical for the military, given that military teams must often face dangerous situations in which

a leader's ability to direct team members is essential (e.g., *in extremis* leadership, Kolditz, 2007; Baran & Scott, 2010; Yammarino et al., 2010). Therefore, the purpose of this section is not to explore the vast amount of leadership literature, but instead to highlight some of the key issues relevant to military teams.

There is general agreement that leadership can substantially influence team outcomes (e.g., Bass 1996; House, 1977; Yukl, 2006), yet researchers have been criticized regarding the lack of attention to team leadership (Komaki, Desselles, & Bowman, 1989; Marks, Zaccaro, & Mathieu, 2000). The purpose of leadership in any given team is to establish goals and set a direction that will lead to the accomplishment of these goals (Zaccaro, Rittman, & Marks, 2001). Team goals typically require that a collective action be taken, which increases the demands upon the leader, particularly in terms of helping organize the knowledge and thoughts of team members (Zaccaro et al., 2004). Several key leadership responsibilities for team leaders have been identified in recent research. Specifically, Zaccaro and colleagues (2009) provide a summary of the functions of team leadership that should be fulfilled in order for teams to be successful. This includes setting the direction for the team, managing team operations, and developing the team's leadership capacity. Morgeson and colleagues (2010) further elaborate on this framework by separating out the leadership behaviors necessary for the transition and action phases of team processes. This is an important contribution to the team leadership literature, in that it provides more specific guidance in terms of which leadership behaviors are needed when, which can aid in improving team leadership development and training.

Given the number of behaviors that are required for effective team leadership, it is also possible that teams may in fact share leadership among team members (Pearce & Conger, 2003). While the idea of collective or shared leadership has existed for quite some time in the literature, it has gained significant focus in recent research, especially as demands upon teams consistently increase. Yammarino and colleagues (2010) have developed a model of collective leadership specifically for dangerous military contexts. This model highlights the constructs and multiple levels of analysis that are involved in the formation of military teams, which in turn influence the leadership and team dynamics. According to this model, based upon the individual inputs, team leadership may function in terms of its

structure and who enacts which leadership behaviors. While future research is needed to further explore this framework's validity, it provides a step in the right direction in terms of understanding leadership dynamics in military teams, particularly for dangerous military contexts.

Contextual Factors

Teams do not perform in a vacuum. Indeed, much of what influences team inputs, processes, and outcomes is the context in which teams operate (Goodwin & Halpin., 2006). This may be driven by the environment in which the teams are operating, especially for military teams that may operate in highly volatile and constantly changing environments (Kozlowski & Bell, 2003), facets of time and temporality that impact team processes (Marks et al., 2001), and the structure of the team (Dyer, 1984). While there are multiple factors that can be explored in each of these areas, we provide a high-level overview of these three components to encourage future thinking regarding each facet.

ENVIRONMENTAL CHARACTERISTICS

Beyond knowing the type of task a team performs, it is necessary to understand the environment in which this task is performed. For example, a team making decisions under no time constraints or other externally imposed stressors will have to engage in qualitatively different performance strategies to be successful than teams making decisions under high levels of such environmental stressors. The team task environment differs from organizational context because it is not under the direct control of the organization; it is a function of the external environment in which the team performs its task.

Environmental characteristics can include the degree of risk that is prevalent in the environment, the level of autonomy that team members have in their work, stressors such as dangerous work conditions, or uncertainty. Each of these factors can have an influence on how well the team is able to operate in a given environment. For example, environmental uncertainty is experienced by the individual as a sense of doubt that blocks or delays action (Lipshitz & Strauss, 1997). This doubt arises from four characteristics of information from the environment: *missing* information, *unreliable* information, *ambiguous or conflicting* information, and *complex* information (Klein, 1988). If a team is missing information, they will not have all of the information necessary to complete their mission. Unreliable information, on the other hand, is not caused by

lack of information, but instead caused by the poor credibility of the information, such as when teams are unsure of the accuracy of information or are purposefully deceived. Information is ambiguous if it can be interpreted in more than one reasonable way. Lastly, understanding complex information involves taking many separate pieces of information and integrating them into one overall understanding.

TEMPORAL CHARACTERISTICS

Another critical contextual factor in teams is the temporal aspect of that team. It is important to remember that teams are dynamic, and their performance and structure can change over time (Marks et al., 2001). Teams can differ on many temporal characteristics, including team lifespan, performance episode duration, performance episode frequency, performance trigger, and continuity of membership. For example, teams can differ in terms of the continuity of the membership from one performance episode to the next. Membership can be continuous, variable, or completely new. In continuous membership, the team remains relatively stable in terms of its members between performance episodes. In variable membership, some of the team members rotate in and out between performance episodes.

In new membership, the team changes almost completely between performance episodes. For example, in a provincial reconstruction team (PRT), there may be a large team of members who work together often to attain the overarching goals of reconstructing the local community, but when responding to a specific need of the community, only a subset of those members may respond at any given time (Reitjens, 2008). In this situation, the group of team members working together will change, depending on who is assigned to what task. This is an important characteristic to consider when making training decisions, since training transportable teamwork skills may be more advantageous for teams with variable or new membership, while training team-specific skills may be best for relatively continuous teams (Salas & Cannon-Bowers, 1997).

STRUCTURAL CHARACTERISTICS

Finally, team functioning can be influenced by the structural characteristics of the team. *Team structure* refers to the properties of the configurations in which teams are arranged (Dyer, 1984). There are many factors that compose the structural characteristics of a team, including the structure of its leadership (Morgeson, et al., 2010), the communication structure among team members, the division of

work and roles among team members, and the distribution (physical and temporal) of team members (Sundstrom et al., 2000).

Structural characteristics can significantly affect the degree to which teams are effective in accomplishing their tasks. For example, *distribution* involves the degree to which team members are spread out across time and space. This is a very critical dimension to consider when classifying teams, and Bell and Kozlowski (2002) developed a taxonomy devoted specifically to virtual, or distributed, teams. With the increased use of collaborative technologies, team members are often separated in these dimensions, which have been found to impact team communication, leadership, trust, and conflict (Connaughton & Shuffler, 2007). Overall, structural characteristics are worthy of examination in teams, as they may have strong influences on team process and performance.

Summary

Overall, there are many factors that can influence military team functioning and performance. Inputs such as team member personalities, the type of task being performed, and the composition of the team can have a significant impact on the effectiveness of subsequent team processes and emergent states. The publication of Marks and colleagues' (2001) taxonomy of team processes and emergent states has led to a significant focus in teams research on understanding the differentiation of transition, action, and interpersonal processes, as well as the development and influence of emergent states. Team leadership is a somewhat unique component of teams and is especially critical to military teams. Finally, given the complex contexts in which military teams currently operate, attention to environmental, temporal, and situational factors is merited, as these factors can determine the eventual success or failure of such teams. Indeed, all of these factors provide a wealth of information regarding how teams function, but the sheer number of potentially influential factors can prove to be challenging in terms of developing and managing successful teams.

Improving Military Teams: Designing, Developing, and Delivering Team Training

Based on the discussion in the previous sections, it is clear that there are many factors that can influence successful team performance. Given this extensive number of factors, it is important to find ways to improve and enhance team processes and functioning through interventions aimed at training and

building successful teams. Team developmental interventions such as team training can be critical to fostering team effectiveness (Noe, 2002). As a topic of great importance to the military community, team training has been heavily studied over the past decades. Team training has been defined “as a set of tools and methods that, in combination with required [team-based] competencies and training objectives, form an instructional strategy” (Salas & Cannon-Bowers, 1997, p. 313). Team training enables team members to learn and practice requisite team knowledge, skills, and abilities (KSAs) while receiving feedback on their performance. Moreover, similar to individual training, team training involves identifying the optimal combination of tools (e.g., team task analysis), delivery methods (e.g., practice-based, information-based, demonstration-based), and content (e.g., knowledge, skills, attitudes) required to improve teams (Salas & Cannon-Bowers, 1997).

Today, the process of team training is well understood, with numerous team training approaches and taxonomies available in the literature. However, the successful theoretical and applied concepts of team training must be applied in practice in order to be useful to organizations as a whole. Thankfully, the team training community has provided a number of methodological advances that can be harnessed for effective team training in the military. The three primary techniques and topics that must be considered for successful training are needs analysis, individual differences of trainees, and specific training methods.

Training-Needs Analysis

For any team or individual training to be successful, the development of a team training solution must be informed by the context for which the training is being created. The first step of training development, then, is the analysis of the task and organization that is being trained for. Training-needs analysis is the process by which this analysis takes place. In the most general sense, training-needs analysis examines where training is needed, what needs to be conveyed in training, and to whom training must be delivered (Goldstein & Ford, 2002). This analysis is conducted in three phases of decreasing organizational complexity: organizational analysis, task analysis, and person analysis (Salas & Cannon-Bowers, 2001). Furthermore, when developing team training, it is also important to conduct a team task analysis in order to ensure that team-level KSAs and tasks are captured. Each of these analyses is described in further detail below.

ORGANIZATIONAL ANALYSIS

In an organizational analysis, the characteristics of the organizational environment are examined for their potential effects on training. More specifically, organizational analysis focuses on organizational goals, resources, support, and constraints (Salas & Cannon-Bowers, 2001). The goals of an organization have profound implications for the development of training. In the military, doctrine may need to be embedded throughout training. Similarly, the disposition the organization has toward training and the organization’s general climate of flexibility (i.e., willingness or ability to adopt new information into their work) impacts how training is approached and delivered. In the military, training is inherently an ongoing process (i.e., a “continuous learning culture”; Goldstein & Ford, 2002), which suggests higher receptiveness to training. However, the constraints and attitudes of individual branches or segments of the targeted organization must be examined if the training environment is to be properly addressed.

TASK ANALYSIS

The next level of training-needs analysis moves to the actual job or task being trained for. Task analysis is most immediately relevant to the actual training being developed, as it results in an in-depth description of the job and the requirements (i.e., KSAs and competencies) thereof. KSAs—the knowledge, skills, and attitudes (or knowledge, skills, and abilities) required to complete a task—are inherently linked to tasks via their impact on that task. For example, the ability to comprehend standard NATO symbology (e.g., APP-6A) affects a soldier’s ability to understand course-of-action plans provided by the commander. One method by which these KSAs and competencies are identified is cognitive task analysis (CTA), which is a technique that focuses on the mental components of a task. While the goal of CTA is to inform training for non-experts, it is conducted by interviewing subject-matter experts (SMEs). Through interviews, concept mapping, and think-aloud protocols, subject-matter experts provide information to shape the development of an expert method by which to complete a task. This information can also be obtained by referring to previously developed task documentation or other organizational knowledge resources.

PERSON ANALYSIS

The final step in training-needs analysis is the person analysis, which focuses on which individuals require

training and what type of training they require. While the organization analysis has established the general constraints upon the training, and task analysis has determined what KSAs and competencies must be conveyed in training, person analysis provides the insight that is required to actually develop and deploy training (Goldstein & Ford, 2002). The first step of person analysis is effectively performance assessment. By assessing the competency of the individuals in an organization, it is possible to determine what KSAs are insufficiently represented. Given that so much training is now focused on the team rather than the individual, person analysis may also be conducted by treating the team as the “individual unit” that must be trained—similar processes are then used to assess the capacities of the team and determine what gaps are present across teams. For example, Baker and Salas (1996) assessed individual aircrew teams’ teamwork capabilities through custom-developed teamwork inventories. This focus on teams reveals additional teamwork KSAs, which should be identified during the task analysis portion of the needs analysis (e.g., cohesiveness, communication; Salas, Bowers, & Cannon-Bowers, 1995). Once the various KSA gaps present in the organization’s workers are identified, training techniques by which to remedy these gaps can be formulated or selected.

TEAM TASK ANALYSIS

In many ways, team task analysis is similar to an individual-level needs analysis, widely used by organizations to assist in selection and training development. A team task expands beyond this individual-level information, however, as it incorporates both the taskwork and teamwork skills, challenges, and interdependences required in team interactions (Baker, Salas, & Cannon-Bowers, 1998). Identifying this information along both sets of behavioral tracks (i.e., taskwork and teamwork) is necessary as these two components capture different yet equally important sets of cues, conditions, and standards involved in team processes and performance (Burke, 2005). Furthermore, team needs analysis provides a systematic approach to gathering information from current team members to ensure an accurate portrayal of the skills, challenges, and interdependencies that may not be fully captured through other means. While team-level KSAs may be more challenging to “bring out” due to their more implicit nature, techniques such as critical incident gathering and cognitive interviews can be useful in revealing these types of information.

Critical incidents can provide situations that SMEs have experienced themselves, enabling team interactions to be drawn out through cognitive interview questions that make use of retrieval cues and mental images to extract this information. Additionally, observation of teams performing their daily duties can also aid in determining these critical team interactions.

Individual Differences

Some of the most significant developments in team training research fall within the domain of individual differences. Characteristics of individuals can influence how successful team training will be, in that different team members may respond differently to the training being provided. Studies into how the characteristics of individuals affect the efficacy and feasibility of training have uncovered a number of effects, with constructs such as motivation, self-efficacy, cognitive ability, and goal orientation drawing considerable attention.

MOTIVATION

Motivation is one of the most recognizable concepts in the field of psychology. Within the context of training, motivation is the drive, effort, and persistence that trainees tap in order to engage in learning activities and reflection upon those activities (Salas & Cannon-Bowers, 2001). Training motivation is key to the actual success of trainees, with empirical studies indicating its relationship to not only skill acquisition and retention, but also the eventual transfer of learned information to on-the-job practice (Martocchio & Webster, 1992; Tannenbaum & Yukl, 1992). However, research also indicates that training motivation is not a simple one-dimensional construct. Conceptually, motivation can be divided into two major categories: intrinsic motivation and extrinsic motivation. Whereas *intrinsic motivation* refers to motivation that is derived from an inherent satisfaction with a task or other internal driver (Ryan & Deci, 2000), *extrinsic motivation* is created through some external reward, threat, or consequence (Shaw, 1976). Generally, intrinsic motivation is the preferable dimension of motivation to target, as extrinsic motivation does not have the same degree of effectiveness, especially for ensuring transfer of training (Ryan & Deci, 2000).

SELF-EFFICACY

The concept of self-efficacy is closely related to motivation, as it influences the degree to which learners may be intrinsically motivated by a learning

task (Quinones, 1995). Self-efficacy is the belief that one is capable of achieving a task goal through behaviors and actions (Salas & Cannon-Bowers, 2001). As a construct, self-efficacy has been repeatedly linked to performance. Additionally, self-efficacy beliefs mediate the relationship between training and adjustment to a new task environment for new workers (Saks, 1997), which may be of special interest to the military context, where deployment to new environments is commonplace. Similarly, technology self-efficacy influences whether trainees are likely to use the training technologies provided to them (Christoph et al., 1998). All the training technology in the world does little good if individuals are not willing and able to engage with it.

COGNITIVE ABILITY

General cognitive ability, also referred to as *g*, or general intelligence, has been empirically linked to knowledge attainment and task performance (Ree et al., 1995). As a construct, cognitive ability is thus extremely useful from a selection standpoint. Because cognitive ability promotes learning, performance, and skill acquisition (Salas & Cannon-Bowers, 2001), it can be used as the basis by which to assign more complicated training and responsibilities. However, the impact of low *g* must also be considered when developing training. For the military context, it is important that trainees in particular tasks all achieve a baseline level of competency. Developing training that is effective even for low-cognitive-ability trainees is essential to ensuring that an organization is adequately trained. Unfortunately, research on cognitive ability in training has generally focused on the relationships between *g*, training, and performance, and has not produced mature guidelines for training low- and high-cognitive-ability trainees together.

GOAL ORIENTATION

Like many of the constructs developed through industrial-organizational psychology research, goal orientation has ties to motivation. Goal orientation is the framework an individual uses to inform their thoughts and behavior in relation to training and performance (Salas & Cannon-Bowers, 2001). Two goal orientations that are useful to examine when discussing training are mastery orientation and performance orientation. Learners with a mastery orientation seek to acquire skills and develop competence, whereas learners with a performance orientation seek external recognition of their competence (e.g., positive performance evaluations;

Salas & Cannon-Bowers, 2001). It is unclear whether these two orientations are mutually exclusive (Buttom et al., 1996), but the impact of goal orientation on training success is clear. Mastery orientation has been empirically linked to training success with regard to knowledge outcomes (Fisher & Ford, 1998).

Training Methods

The quest for effective team-training methods has resulted in the creation of many techniques with proven efficacy. Team training methods are similar to individual training methods in that they can focus on information-based, demonstration-based, or practice-based methods. Information-based methods are team training methods that focus on the delivery of concepts, facts, knowledge, or theories through methods such as lectures or slide presentations. The focus of this method is to present information as distinct from providing practice or building skills. Demonstration-based methods are rooted in illustrations of behaviors, actions, or strategies to be learned. The use of demonstration-based methods gives the team the opportunity to passively observe the required behaviors, actions, or strategies for a given task.

Practice-based methods are methods that give the team hands-on practice as well as feedback on their progress. Utilization of practice-based methods is critical to team training, as providing teams with guided practice, feedback, and coaching allows the team to understand, organize, and digest the learning objectives (Salas & Cannon-Bowers, 1997).

There are numerous strategies that have emerged in the literature of team training that have incorporated the various methods previously discussed. One method that has been especially prominent in the military team-training literature is crew resource management (CRM) training. However, other techniques are well represented scientifically, and may serve as useful military team training methods. For example, simulation-based training (SBT) has gained considerable traction in civilian, corporate, and military enterprises. Other techniques such as the event-based approach to training (EBAT), cross-training, and competency-specific methods provide additional means by which to create targeted team-training programs. These techniques are briefly reviewed here in order to provide an overview of the types of methods available for team training.

CREW RESOURCE MANAGEMENT

CRM was originally developed for use by flight deck crews, but is now employed for a variety of

contexts, including naval vessels and hospital operating rooms (Flin, 1997). CRM training is generally non-technical, focusing instead on the “soft” team skills that allow a team to properly apply their technical knowledge. Thus, CRM includes training on skills such as team communication, leadership, decision making, and teamwork (Flin, 1997). Based on a review of 58 CRM training studies, Salas, Burke, Bowers, and Wilson (2001) concluded that CRM training is effective in engendering attitude and knowledge-learning outcomes. More importantly, the body of literature reviewed by the authors strongly indicated that CRM training results in actual behavior changes, indicating its utility for directed team training (Salas et al., 2001).

SIMULATION-BASED TRAINING

SBT is a general approach to team training that can be used across a wide range of contexts. In the most basic sense, a *simulation* is a combination of rules and fiction that provide an abstraction of reality (Juul, 2007). Today, “simulation” is often synonymous with “computer simulation,” though simulation exercises can also be conducted via role-playing or other non-digital techniques (Salas & Cannon-Bowers, 2001). Because virtual environments are relatively low-cost to maintain after their creation, they are especially useful for training that would be expensive if conducted in the real world (e.g., pilot training, naval command center training, etc.). When conducting simulation-based training within a team context, there are many options for how to allow team members to work together. Co-located teams may perform tasks together, as in the case of the Navy’s AEGIS threat-diagnosis training (Zachary et al., 1999). In cases where the real-world task is distributed among different members or when the team must train but is not physically in the same place, distributed training can be conducted in virtual environments that are networked together (Elliott, Cardenas, & Schifflett, 1999).

EVENT-BASED APPROACH TO TRAINING

The EBAT is a special type of scenario-based training (not to be confused with simulation-based training) that focuses on simple measurement of team performance. An EBAT requires demonstration, practice, and feedback segments, though it is the practice (i.e., performance) and feedback (i.e., evaluation) segments that compose EBAT (Fowlkes & Burke, 2005). The distinguishing characteristic of EBAT is the transition from checklist-style performance assessment to feedback. For example, the

scales used in the Targeted Acceptable Responses to Generated Events or Tasks (TARGETs) methodology allow even relatively novice observers to appropriately rate team behavior and provide targeted feedback (Fowlkes et al., 1994). These rating scales are developed with the assistance of subject-matter experts and target specific observable behaviors, exhibited knowledge, and critical skills.

CROSS-TRAINING

Cross-training is the process by which team members are exposed to the role-specific training that their team members are provided with. When a team is cross-trained, each team member emerges with a working knowledge of each other team member’s role (Marks et al., 2002). The goal of cross-training is to provide a more consistent and complete team mental model and increase situation awareness during actual task performance. Evidence suggests that teams who cross-train outperform teams that do not cross-train, as the cross-trained teams engage in more efficient communication and interact more effectively with each other (Cannon-Bowers & Salas, 1998). Cross-training studies with action teams (i.e., a team where expertise, information, and tasks are distributed throughout the team) have shown similar effects (Marks et al., 2002), indicating the potential usefulness of cross-training to military contexts.

GUIDED TEAM SELF-CORRECTION

Self-correction training is a strategy developed to enable teams to enhance their performance by diagnosing their problems and developing effective solutions to these identified problems (Salas, Nichols, & Driskell, 2007; Smith-Jentsch et al., 1998). Blickensderfer, Cannon-Bowers, and Salas (1997) defined team self-correction as a four-step process in which team members: (1) debrief in order to highlight what occurred during their performance session, (2) identify the errors that occurred and engage in problem-solving, (3) exchange feedback with one another, and (4) plan for improvement. The basis of self-correction training lies in building shared mental models within the team and engaging in effective feedback and problem-solving.

Designing Team Training

The science of team training, when combined with what is known about training individuals, has been instrumental in understanding how to maximize performance gains in teams (Cannon-Bowes et al., 1995). For example, the information gained from

team task analyses can be used to identify team competencies, specify team training objectives, and develop and deliver realistic scenarios for practice (Salas & Cannon-Bowers, 1997). Just as individual task proficiency is related to team performance, training interventions that enhance individual capabilities and characteristics (e.g., task KSAs, motivation) should also contribute to team performance (Tannenbaum, Beard, & Salas, 1992). At the same time, team performance requires more than individual task proficiency (e.g., Steiner, 1972); the ability of team members to coordinate their work and communicate effectively with one another is the hallmark of effective teams. Thus, training in “teamwork skills” should also enhance team performance for tasks requiring coordination and adaptation.

In terms of designing team training for performance gains, pairing team-training content with appropriate training delivery and design methods is critical, as such a match ensures that the training is suited to the nature of team performance. For example, simulation-based training (SBT) is particularly beneficial for team training because it promotes the development of teamwork in a safe environment that also allows for practice, feedback, and remediation (Gorman et al., 2007). In order to best decide the proper training design, it is important to begin with a thorough analysis of the skills to be trained, the interdependencies among team members that require teamwork, and the targeted members for training (Burke, 2005). Once this information is determined, the best training method can be derived based on the knowledge, skills, and abilities to be developed.

Furthermore, team training is typically designed using well-established principles of learning that aid in ensuring long-term transfer of training to the work environment. These principles involve utilizing the most appropriate team training strategies based on the phase of training. For example, prior to receiving training, teams should be given advanced organizers that prepare them for learning with an overview of the training content. Once training is developed and the appropriate strategies implemented, team training should be evaluated, particularly in terms of how much was learned, the transfer of behaviors to the workplace, and long-term organizational results (Kraiger, Ford, & Salas, 1993). Additional detail is provided later in this chapter in regard to how team performance is best measured for these types of evaluations.

Overall, team training is a science-driven, useful intervention for developing effective teams.

There are several strategies and methods that can be used to design effective team training. When team training is designed and implemented, it must be rooted in the science of training and carefully matched to the team’s needs. Careful attention to all elements of the design and delivery of training should result in a team that possesses the critical knowledge, skills, and attitudes necessary for efficient team processes.

Effectiveness of Team Training Interventions

As team training interventions have grown increasingly popular, especially in the military, it is important to understand if they are in fact effective in terms of improving team performance. Many narrative and quantitative reviews of team training and its impact on team outcomes have been conducted (Denson, 1981; Dyer, 1984; Marks, Zaccaro, & Mathieu, 2000; Mathieu et al., 2000; Salas et al., 2001, 2007). In terms of the most recent contributions, however, team training has been the subject of three meta-analyses published in the past four years, each examining different aspects. First, Salas and colleagues (2007) examined three specific training strategies: cross-training, team coordination and adaptation training, and guided team self-correction training. This meta-analysis examined seven studies with 28 effect sizes, and found that across the three training strategies, team performance did improve. Specifically, their performance improved as measured by both subjective and objective ratings, with team coordination and adaptation training, and team guided self-correction having the largest effects on performance.

Salas and colleagues (2008) expanded upon this work further by incorporating different meta-analytic techniques as well as moderators of the relationship between team training and outcomes. Variables examined included the relative effectiveness of all types of team training on team cognitive, affective, process, and performance outcomes, as well as the potential moderating factors of team size, training content, and team member stability. In examining 93 effect sizes representing 2,650 teams, the researchers found that moderately positive relationships existed between team training interventions and all outcomes. Another more recent meta-analysis by Delise and colleagues (2010) has further investigated the effects of specific moderators on the link between team training and team outcomes.

Examining affective, cognitive, subjective task-based, objective task-based, and teamwork skill outcomes, Delise and colleagues again confirmed

that team training was positively related to team outcomes. Furthermore, they found that the type of team (i.e., military or civilian) did not moderate the relationship between team training and team outcomes. When considering the evaluation setting as a moderator, it was found that team training had stronger effects on cognitive outcomes for transfer applications than for training applications. Finally, Delise and colleagues did not find significant results for the impact of other methodological factors (i.e., training content, training designer, duration of training) or publication bias as moderators of the relationship between team training and outcomes. In sum, team training appears to be a successful approach to improving, not only team performance, but also team processes.

Summary

Team training is an effective approach to improving military teams, but only if it is designed, developed, and delivered in an appropriate manner. Following the science of training is critical for the development of effective military team training. This includes incorporating a training-needs analysis, determining the appropriate type of training given the training needs, and ensuring that the training is properly evaluated so that any necessary adjustments can be made. The various types of team training that have been developed over the years for the military community and similar organizations have all been quite successful in terms of improving team performance, but only when guided by the science behind team training. Therefore, it is critical that future team training efforts are informed by this system of developing training.

Measurement of Military Team Performance

The notion of team training carries with it a particularly complicated secondary issue: the measurement of team performance. To determine whether team training is successful, some sort of team-level evaluative measure is necessary. This is much less complicated when the training in question is on an individual level—an individual's performance can be assessed with a variety of well-established techniques (Kozłowski & Klein, 2003). Team performance measurement, on the other hand, is conceptually nebulous. What does it mean to be “an effective team”? How does an individual's performance contribute to team performance? From context to context, the answers to these questions are likely to change. A team is a collective that is greater than the sum of its parts, created to solve problems

that individuals alone cannot (Salas, Burke, & Cannon-Bowers, 2000). It follows, then, that simple aggregation of individual performance is often an inappropriate gauge of team performance, especially when individual team members are highly varied (Cooke et al., 2000). Fortunately, the science of training has produced a number of methods that are effective in determining the performance levels of entire teams. These various techniques are explained in greater detail below, alongside a discussion of their limitations and considerations for use.

The Event-Based Approach to Training (EBAT)

The Event-Based Approach to Training (Fowlkes Dwyer, Oser, & Salas, 1998) is a general simulation approach that links training objectives, task design, and assessment. This linkage of objectives, events, and feedback forms the core of EBAT and provides the means by which EBAT tasks are designed. EBAT is employed in training contexts where demonstration, practice, and feedback are possible (Fowlkes & Burke, 2005). In such contexts, EBAT is used as the practice and feedback segments of training. In EBAT, the analysis of training requirements informs the design of specific simulation scenarios. These scenarios are designed to allow trainees to engage in required behaviors, present necessary knowledge, or demonstrate specific skills. For example, in an aviation training scenario, one of the behavior goals might be the pilot asking ground control for clarification in response to a particular adverse event.

During an EBAT simulation scenario, trainees are assessed based on these performance criteria in order to determine whether they have performed adequately. Based on this assessment, feedback is provided to the learner in order to guide them toward future success or make them aware of the quality of their performance. While this description of EBAT is fairly similar to the description of many simulation approaches, EBAT's focus on objectively definable criteria makes it much more administrator-friendly than other observational techniques. Observers in an EBAT task need not vigilantly record and catalogue a variety of potential behaviors, but only assess whether key event–response linkages were properly made.

One of the most recognizable examples of EBAT is the Targeted Acceptable Responses to Generated Events or Tasks methodology. In the TARGETS methodology, events are paired with targets (i.e., required behaviors) based on determined critical behaviors, knowledge, skills, and attitudes (Fowlkes

et al., 1998). For example, in aircrew coordination training, skill areas such as mission analysis, leadership, and communication are instantiated as event-behavior pairs that evoke these skill areas (e.g., “Section leader calls for lead change”; “Pilot-flying uses standard terminology during lead change”; Fowlkes et al., 1998). These events and behavior pairs are established *a priori*, based on task analysis, consultation with subject matter experts, and referenced documentation. Because both the events that will arise during the simulation and the required response are known to the observer before training even begins, assessment is relatively simple. In a team training exercise, teams can be assessed based on how many target behaviors were “hit” and how many were “missed.”

Implementing TARGETs is a six-step process (Fowlkes & Burke, 2005a). First, the measurement objectives that will drive the development of the scenario are determined. Next, the scenarios and events that are part of the task are developed. In team evaluation and training, these events can be fully scripted to occur at specific times or partially scripted to occur when appropriate, based on team interactions (Fowlkes & Burke, 2005a). Third, a behavioral checklist is developed. This checklist lists each event that will occur, the time it will occur (or the event that triggers it), and the acceptable behavioral responses to the event. Once the behavioral checklist has been developed, the remaining steps of TARGETs are much more applied. In the fourth step, scenario control measures are developed. These measures ensure that the scripted events occur without the team’s knowing they are being “led down a path.” After this, pilot testing is performed in order to verify the event script. Finally, the actual measurement is performed using the designed TARGETs.

A more applied example of EBAT within a military context is the Shipboard Mobile Aid to Training and Evaluation (ShipMATE) tool. ShipMATE is a handheld device that assists in instructor-guided team training on an Aegis-class ship (Zachary et al., 1999). Using ShipMATE, an instructor is able to assess a team engaging in EBAT, using the provided prompts and cues to determine whether the learners are succeeding. After the exercise, ShipMATE provides guidance for instructor-delivered feedback, guiding the user through debriefing, after-action review, and performance assessment.

Though EBAT and its instantiated examples are convenient from an assessment standpoint, the method is not without flaws. Because it relies on the observation of specific behaviors in response to

scripted events, EBAT is less useful in a non-controlled environment, as the advantage of knowing when events and responses will occur is lost. EBAT is also very behavior-focused, and is thus not particularly suited to assessing cognitive states or affective response. Nonetheless, as a tool to assess competency or perform team training, it is effective and reliable.

Behaviorally Anchored Rating Scales (BARS)

EBAT is not the only technique that focuses on subjective observation of team behavior. A number of techniques that work to guide raters in providing effective judgments of individual and team behavior exist. Like the Event-Based Approach to Training, Behaviorally Anchored Rating Scales (BARS) require an external observer to assess performance. The BARS method tasks expert observers with classifying and rating behavior according to a predefined numerical scale. Unlike some other observational techniques, BARS includes a rating of quality rather than just a running tally of the number of times a behavior occurs. Each scale is anchored with examples of low- and high-quality behaviors on either end of a Likert-style numerical range (Smith & Kendall, 1963). These anchors are provided by subject-matter experts, and ensure that some insight into the effectiveness of exhibited behaviors is captured by the observer ratings.

BARS is well suited for use in military settings due to its highly codified nature. Observers using BARS need only check to see if a particular behavior is present, then situate the quality of the behavior along the numerical scale. One example of BARS in a military context is the observer-based measurement component of the Adaptive Architectures for Command and Control (A2C2) program’s team performance measure (Entin & Entin, 2001). Using this measure, single or multiple observers record notes on team behavior and rate these behaviors along the provided scales after team performance is complete. An example item on the measure the authors provided was for the “clear SAMs” (surface-to-air missiles) objective. Raters would indicate where the team’s behavior fell along the range of “very poor” to “superior” along a seven-point scale. The scale indicated superior performance was contingent upon the team’s using appropriate assets in a suitable time frame. Poor performance was characterized by failure to completely destroy the SAM sites, use of inappropriate assets, poor time planning, or heavy casualties (Entin & Entin, 2001).

Like EBAT, measurement with BARS requires observers to check whether—and how—specific types of behaviors have occurred. However, unlike EBAT, the scenarios in which BARS can be employed are broader, as specific scenario restrictions are not imposed during BARS. Whereas EBAT is a process for training and analysis, BARS is only a tool—because of this, care must be used when employing BARS, as it may inadvertently cause raters to focus on observing only the behaviors that have been outlined in the scale (Kendall & Salas, 2004).

Communication Analysis

BARS and EBAT both require observation of actual team behavior in a simulated or live environment. Because of the logistical difficulty of having expert observers available during training, or the costliness of training observers to reach the necessary level of expertise with the subject matter, such behavioral measurement may not always be appropriate for the military context. One technique that eschews behavioral observation entirely is communication analysis. As the name suggests, communication analysis involves examining the exchange between team members as they complete a task. This analysis is generally performed post-hoc, based on communication transcripts, reducing the logistical constraints on training imposed by subject-matter experts (Salas et al., 2008).

By analyzing the content and flow of team communication, it is possible to assess the degree to which a team is engaging in effective team behavior. In content analysis, the actual semantic content of the team communications is extracted, allowing examination of the topics of discussion, the number of times specific kinds of exchanges occurred, the frequency of specific words, and so on. Based on semantic content, this analysis can also reveal which specific team behaviors, such as backup behavior, are occurring. Flow analysis, meanwhile, examines the directionality of communication rather than the content thereof. In flow analysis, the pattern of communication is revealed, showing how questions and responses are exchanged in the team and how team members contribute information (e.g., at what rate, whether they are prompted, etc.).

Beyond content and flow analysis, other forms of communication analysis are also possible. Low-level analysis of speech can provide insight into the emotional state of the speaker (Bachorowski, 1999), their level of assertiveness (Lum et al., 2007), or the intensity of their communication (Scherer, 1986). Because of variations in pitch, loudness, and tempo,

it is possible to derive such insights solely from recordings of individual voices. This vocalization analysis is one example of automated communication analysis—the process by which audio data of team communication are transformed into usable data without costly manual transcription and coding. A semi-automated method of communication analysis is Latent Semantic Analysis (LSA; Landauer, Foltz, & Latham, 1998). In LSA, content data of vocalizations (i.e., transcriptions of communication) are processed by a computer model that assesses co-occurrence of words in order to create representations of communication that can be compared across team members (Cooke et al., 2004). Other semi-automated approaches include Clustered Hypothesized Underlying Models in Sequence (CHUMS; Kiekel et al., 2004), which allows for flow analysis based on shifts of data between team members. Unfortunately, fully automated communication analysis is still nascent, as speech-recognition technology is not yet sophisticated enough to consistently understand human speech at an acceptable level for team performance assessment.

While communication analysis can provide insights that behavioral observation cannot, as a team performance measure it is somewhat limited. Unless the task being performed by the team is inherently tied to communication, communication analysis will only be able to provide information relating to the effectiveness of their teamwork behavior, and will be unable to lend insight into the “external” behavior that the team is engaging in. Because of this, communication analysis is best used for assessment when the task or training pertains to teamwork behavior or a communication-heavy task (e.g., a command-and-control simulation).

Summary

Team performance measurement has greatly improved in recent decades. While observer-based team performance ratings tend to have low inter-rater reliability (Fowlkes et al., 1998), the observational methods described previously focus on more robust methods of assessing team performance. For example, the EBAT measures performance based on the exhibition of objectively identifiable behaviors. More traditional behavioral measurement techniques such as BARS task the raters with rating and classifying observed behavior based on behavior quality. Physically enacted behaviors may be overlooked entirely in performance measurement using techniques such as communication analysis. Similarly, the reliance on human observers is

resolved in automated team performance measurement techniques. Overall, understanding team performance measurement and its related issues is critical to military teams, as it enables us to better assess how military teams are functioning and what needs to be done in terms of team development and training.

Emerging Challenges and Research Needs

As can be seen in this review, team research has come a long way in the past several decades. However, there are still many future challenges and research needs, especially for military teams, as military operations continue to change and require different competencies of team members. The following section provides a summary of several of the major future challenges, including factors that can influence military team effectiveness, such as multiculturalism, distribution, and shared leadership. We next address future measurement issues, followed by a discussion of the challenges related to training military teams. Finally, we will address the overarching challenge of converting science to practice that arises when applying scientific research to real-world military team situations.

Factors Influencing Military Team Effectiveness

MULTICULTURAL TEAMS

There are many components of culture that can influence team effectiveness. First, culture has become a critical issue in military teams. The joint operations that combine American and foreign militaries have become even more prevalent given the current state of foreign affairs and the requirement of unified strategies to prevent the unnecessary loss of life and friendly fire incidents (Wilson et al., 2007). Standing Joint Force Headquarters (SJFHQ) are a prime example of this, in that they consist of a collection of multinational individuals from a variety of backgrounds, including both different military branches and different countries (Peck, 2005). While bringing together individuals from different cultures has become the norm for much of the military, these teams are not without their own problems. Indeed, multicultural teams—whose team members have diverse values and beliefs based on their own cultures—tend to have cooperation issues (Kirkman & Shapiro, 2001), communication problems (Connaughton & Shuffler, 2007), conflict issues (Elron, 1997; Mortensen & Hinds, 2001), and issues with team performance (Elron, 1997; Gibson, 1999; Kirkman & Shapiro, 2001; Matveev

& Milner, 2004). However, the challenges inherent in leading and working within teams in which individuals have vastly different backgrounds, traditions, motivations, and concerns are often overlooked (Dinwoodie, 2005). Multiculturalism in military teams is therefore a pressing future challenge that requires additional research in order to address these potential issues and reduce the negative aspects of such teams, while enhancing their positive benefits.

DISTRIBUTED TEAMS

The prevalence of technology and the increasing distribution of team members is also an issue in need of additional research. Distribution of team members has become commonplace in U.S. military operations, and it is the focus of a growing body of academic research across multiple disciplines. Although distribution is often characterized by the terms “virtual” or “dispersed,” we adopt the term “distributed,” as it best depicts the construct and is becoming more prevalent in its use, particularly for military contexts (Goodwin & Halpin, 2006). The distributed (or virtual) team has been defined as a “team or group whose members are mediated by time, distance, or technology” (Driskell, Radtke, & Salas, 2003, p. 297). This definition illustrates the major features of distribution: the use of technology to bring together team members who may be spatially distributed (i.e., not co-located), or temporally distributed (i.e., interacting asynchronously; Bell & Kozlowski, 2002).

Distribution is an important factor in team functioning as it can change how team members interact. It has been shown that full distribution can have constraining effects on collaboration and its relevant affective, behavioral, and cognitive components, such as trust (e.g., Jarvenpaa & Leidner, 1999), information exchange (e.g., Cramton, 2001), and communication (e.g., Cogburn & Levinson, 2003). Studies that have examined partially distributed teams have found that the balance of distribution matters significantly in terms of team outcomes (see Polzer et al., 2006; O’Leary & Mortenson, 2005; Ocker et al., 2008; Huang & Ocker, 2006; Bos et al., 2006). As military teams may often be geographically dispersed, distribution is an important factor to understand in military team performance. However, the research regarding the specific influences of distribution is very limited, especially in terms of partial distribution as well as the combined influences of distribution and virtuality. Given the rise towards distributed teams relying

upon technology to communicate, it is critical that attention be paid to this issue.

MULTI-TEAM SYSTEMS

A third challenge to future military team research is the concept of teams of teams, or multi-team systems. Multi-team systems (MTSs) are defined as “two or more teams that interface directly and inter-dependently in response to environmental contingencies toward the accomplishment of collective goals” (Mathieu, Marks, & Zaccaro, 2001, p. 290). While MTSs are becoming more prevalent, understanding how they operate is a new challenge for researchers, especially in terms of the identity challenges faced by the individuals on such teams. Individuals in MTSs have multiple memberships and multiple groups to which they belong (DeChurch & Mathieu, 2009). For instance, individuals working in an MTS belong to their component team as well as the larger multi-team system. Each individual belongs to at least one organization, and they may belong to a specific functional or professional unit as well. In addition, MTSs often comprise teams from several organizations. While each of these social entities (team, organization, MTS) may be trying to achieve the same overarching MTS-level goal, they may also have competing distal goals that can put both individuals and teams at odds in terms of which goal to focus their efforts on. This is especially true for the military, where MTSs are quickly becoming a common conformation, such as in provincial reconstruction teams that comprise civil-military teams that must work together to revive and reconstruct a region (Rietjens, 2008). Therefore, understanding the implications of these MTSs on military functioning and performance is a significant future research challenge.

SHARED LEADERSHIP

A final factor that requires additional research in terms of its potential influence on military team effectiveness is the concept of shared leadership. As discussed previously, leadership is an important component of team success, in that leaders provide direction and a vision for team members while also assisting in solving problems and ensuring team success (Zaccaro et al., 2009). While team leadership has been recognized as significant, less attention has been paid to the concept of shared or distributed leadership in military teams. Leadership in teams is typically assumed to be a role fulfilled by a single individual; however, given the dynamic complexity of teams, it is more reasonable to expect

that leadership behaviors and responsibilities may be shared among team members (Shuffler et al., 2010). Work on shared leadership recognizes the complexity that is present in organizational settings and follows the perspective that “those who are doing the job are [often] in the best position to improve it” (Jackson, 2000, p. 16). While some initial research has shown that leadership can in fact be shared and that the sharing of leadership responsibilities can improve team performance (Ensley, Hmieleski, & Pearce, 2006; Pearce et al., 2004; Pearce & Sims, 2002), very little empirical evidence exists to fully explore shared leadership. This is particularly an issue for military teams, where leadership may rotate among members based on expertise or ability during a mission, or where a leader may be lost and someone else must step in to fulfill leadership responsibilities. Thus, understanding the premise of shared leadership and what it means for military team performance is a critical issue for future research.

Military Team Training and Development

As with measurement, there is still much to be learned in the team training realm. Though the science of training has become quite sophisticated (Salas & Cannon-Bowers, 2001), the training requirements of teams continue to evolve. As teams continue to be tasked with performing increasingly complex jobs, the techniques used to train them must remain applicable.

Simulations are one of the most prominent tools for training. The science of simulation has progressed to create a vast literature base that informs the design, deployment, and assessment of a variety of simulation applications. However, simulation-based training is still in need of significant research. While past work has indicated that simulations are useful learning environments, and that simulations can perform across a range of fidelities (Maran & Glavin, 2003), the understanding of how learning occurs in simulation environments has not yet reached maturity. In other words, the field must address the mechanisms by which learners are able to acquire knowledge and skill through the use of simulation-based training.

Measurement of Military Team Performance

While advances in measurement over recent years have led to increasingly effective behavioral and communication analysis techniques, much remains to be done in order to effectively integrate measurement with training and performance. The measurement

techniques previously described in this chapter are effective, but they are external to any training or performance. Integrating measures with simulation, for example, will create more unified training and assessment solutions. Examples of such fused performance-feedback simulation systems can be found in the numerous after-action review (AAR) solutions that have arisen in recent years.

The need to reduce the reliance on expert observers is concurrent with the fusion of simulation and measurement. While integrating measurement solutions into simulations is one method of reducing the need for observers, other methods exist. For example, the BARS and TARGETs techniques described in this chapter allow less-expert observers to effectively assess performance. However, other ways to reduce this reliance on experts must be developed. As the military's demand for truly effective training increases, so, too, will its reliance on such observers. Given the logistical issues in using observers, the high cost of SMEs, and the time requirement for training non-experts up to expert level in order to function as observers, the cost to organizations of relying on human observers is significant.

Overarching Challenge: Translation of Science into Practice

One of the universal challenges of scientific research is the transition from basic science into practical application. Basic science is all research performed for its own sake—the development of knowledge in order to understand. Applied science, on the other hand, is research performed with some goal in mind, such as propulsion research working towards creating a working space vehicle. While the divide between basic and applied science has been the topic of considerable debate within the scientific literature (e.g., Reagan, 1967; Slavin, 1978), in the military realm, the line between basic and applied science is less distinct.

Regardless of the semantic distinction between basic and applied science, the underlying implication of this theoretical divide is simple: in order to be useful to the military organization as a whole, scientific research must result in meaningful changes in military practice. Whether this takes the form of new equipment, updated procedures, or refined personnel selection processes, it is this transition to the world outside of the laboratory that makes science practically useful. Thus, it is the responsibility of the scientific community and the military organizations engaged in research partnerships to work

together to ensure that advances such as the Event-Based Approach to Training (Fowlkes et al., 1998) are made into useful real-world solutions such as the Shipboard Mobile Aid to Training Evaluation (Zachary et al., 1999).

Conclusion

Given the increasingly complex operations that today's military finds itself engaged in, it is unlikely that teams as a structure will be disappearing any time in the near future. Thankfully, the science of teams has provided a considerable scientific base from which to draw best practices for successful team composition and performance. However, as discussed in this review, there is much ground left to cover. Only through continued research efforts will our understanding of teams continue to grow. As the complexity of team tasks continues to increase, this understanding will be of ever greater importance. Extrapolating from the past successes of the science of teams, this challenge should be well within the capabilities of the field. Though teams are complex, their benefits are salient and tangible. It is the responsibility of the field to ensure that the science continues to inform the successes of military teams in the years to follow.

References

- Bachorowski, J. A. (1999). Vocal expression and perception of emotion. *Current Directions in Psychological Science*, 8(2), 53–57.
- Baker, D. P., & Salas, E. (1996). Principles for measuring teamwork skills. *Human Factors*, 34(4), 469–475.
- Baker, D., Salas E., & Cannon-Bowers J. (1998). Team task analysis: Lost but hopefully not forgotten. *Industrial/Organizational Psychology*, 35(3), 79–83.
- Baran, B. E., & Scott, C. W. (2010). Organizing ambiguity: A grounded theory of leadership and sense-making within dangerous contexts. *Military Psychology*, 22(1), S42–S69.
- Barling, J., Christie, A., & Hopton, A. (2010). Leadership. In S. Zedeck et al. (Eds.), *Handbook of industrial and organizational psychology* (pp. 183–240). Washington, D.C.: American Psychological Association.
- Bass, B. M. (1996). *New paradigm of leadership: An inquiry into transformational leadership*. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Bell, B. S., & Kozlowski, S. W. J. (2002). A typology of virtual teams: Implications for effective leadership. *Group and Organization Management*, 27(1), 14.
- Blickensderfer, E. L., Cannon-Bowers, J. A., & Salas, E. (1997). Theoretical bases for team self-correction: Fostering shared mental models. In M. Beyerlein, D. Johnson, & S. Beyerlein (Eds.), *Advances in interdisciplinary studies in work teams series* (Vol. 4, pp. 249–279). Greenwich, CT: JAI Press.
- Boies, K., & Howell, J. M. (2009). Leading military teams to think and feel: Exploring the relations between leadership, soldiers' cognitive and affective processes, and team effectiveness. *Military Psychology*, 21(2), 216–232.

- Bos, N., Olson, J. S., Nan, N., Shami, N. S., Hoch, S., & Johnston, E. (2006). "Co-location blindness" in partially distributed groups: Is there a downside to being co-located? Proceedings of the SIGCHI conference on Human Factors in computing systems, April 22–27, 2006, Montréal, Québec, Canada. doi 10.1145/1124772.1124969.
- Bunderson, J. S. (2003). Management team learning orientation and business unit performance. *Journal of Applied Psychology*, 88(3), 552.
- Burke, C. S. (2005). Team task analysis. In N. Stanton, H. Hendrick, S. Konz, K. Parsons, & E. Salas (Eds.), *Handbook of human factors and ergonomics methods* (pp. 56–51–56–58). London: Taylor & Francis.
- Burke, C. S., Stagl, K. C., Salas, E., Pierce, L., & Kendall, D. L. (2006). Understanding team adaptation: A conceptual analysis and model. *Journal of Applied Psychology*, 91(6), 1189–1207.
- Burke, C. S., Wilson, K. A., & Salas, S. (2003). Teamwork at 35,000 feet: Enhancing safety through team training. *Human Factors and Aerospace Safety*, 3(4), 287–312.
- Buttom, S. B., Mathieu, J. E., & Zajac, D.M. (1996). Goal orientation in organizational research: A conceptual and empirical foundation. *Organizational Behavior & Human Decision Processes*, 67(1), 26–48.
- Campbell, D. J. (1988). Task complexity: A review and analysis. *Academy of Management Review*, 13(1), 40–52.
- Cannon-Bowers, J. A., & Salas, E. (1998). Team performance and training in complex environments: Recent findings from applied research. *Current Directions in Psychological Science*, 7(3), 83–87.
- Cannon-Bowers, J. A., Tannenbaum, S. I., Salas, E., & Volpe, C. E. (1995). Defining team competencies: Implications for training requirements and strategies. In R. Guzzo & E. Salas (Eds.), *Team effectiveness and decision making in organizations* (pp. 333–380). San Francisco: Jossey-Bass.
- Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal*, 50(5), 1217–1234.
- Driskell, J. E., Goodwin, G. F., Salas, E., & O'Shea, P. G. (2006). What makes a good team player? Personality and team effectiveness. *Group Dynamics: Theory, Research, and Practice*, 10(4), 249–271.
- Christoph, R. T., Schoenfeld, G. A., Jr., & Tansky, J. W. (1998). Overcoming barriers to training utilizing technology: The influence of self-efficacy factors on multimedia-based training receptiveness. *Human Resource Development Quarterly*, 9(1), 25–38.
- Cogburn, D. L., & Levinson, N. S. (2003). U.S.–Africa virtual collaboration in globalization studies: Success factors for complex, cross-national learning teams. *International Studies Perspectives*, 4(1), 31–54.
- Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, 23(3), 239–290.
- Connaughton, S. L., & Shuffler, M. (2007). Multinational multicultural distributed teams: A review and future agenda. *Small Group Research*, 38(3), 387–412.
- Cooke, N. J., Salas, E., Cannon-Bowers, J. A., & Stout, R. J. (2000). Measuring team knowledge. *Human Factors*, 42(1), 151–173.
- Cooke, N. J., Salas, E., Kiekel, P. A., & Bell, B. (2004). Advances in measuring team cognition. In E. Salas & S. M. Fiore (Eds.), *Team cognition* (pp. 83–106). Washington, D.C.: American Psychological Association.
- Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12(3), 346–371.
- De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology*, 88(4), 741–749.
- DeChurch, L., & Mathieu, J. (2009). Thinking in terms of multi-team systems. In E. Salas, J. Goodwin, & C. S. Burke (Eds.), *Team effectiveness in complex organizations* (pp. 267–292). New York: Taylor Francis Psychology Press.
- Delise, L., Gorman, C. A., Brooks, A. M., Rentsch, J. R., & Steele-Johnson, D. (2010). The effects of team training on team outcomes: A meta-analysis. *Performance Improvement Quarterly*, 22(4), 53–80.
- Denson, R. W. (1981). *Team training: Literature review and annotated bibliography* (Final Report AFHRL-TR-80–40). Brooks Air Force Base, TX: HQ Air Force Human Resources Laboratory.
- Dinwoodie, D. L. (2005). Solving the dilemma: A leader's guide to managing diversity. *Leadership in Action*, 25(2), 3–6.
- Driskell, J. E., Radtke, P. H., & Salas, E. (2003). Virtual teams: Effects of technological mediation on team performance. *Group dynamics: Theory, research, and practice*, 7(4), 297–323.
- Dyer, J. L. (1984). Team research and team training: A state-of-the-art review. In F. A. Muckler (Ed.), *Human factors review* (pp. 285–323). Santa Monica, CA: Human Factors and Ergonomics Society.
- Earley, P. C., & Mosakowski, E. (2000). Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management Journal*, 43(1), 26–49.
- Edmondson, A. C., & Roloff, K. S. (2009). Overcoming barriers to collaboration: Psychological safety and learning in diverse teams. In E. Salas, G. F. Goodwin, & C. S. Burke (Eds.), *Team effectiveness in complex organizations: Cross-disciplinary perspectives and approaches* (pp. 183–208). New York: Taylor & Francis Group.
- Edwards, B.D., Day E.A., Arthur, W., & Bell, S. (2006). Relationships among team ability composition, team mental models, and team performance. *Journal of Applied Psychology*, 91(3), 727–736.
- Elliott, L. R., Cardenas, R., & Schiflett, S. G. (1999). Measurement of AWACS team performance in distributed mission scenarios. Available online at: http://www.Dodccrp.Org/1999ccrts/Pdf_Files/Track_3/013ellio.Pdf.
- Elron, E. (1997). Top management teams within multinational corporations: Effects of cultural heterogeneity. *Leadership Quarterly*, 8(4), 393–412.
- Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *Leadership Quarterly*, 17(3), 217–231. doi: 10.1016/j.leaqua.2006.02.002.
- Entin, E. E., & Entin, E. B. (2001). Measures for evaluation of team processes and performance in experiments and exercises. Proceedings of the June, 2001, Command and Control Research and Technology Symposium. Naval Academy, Annapolis, MD.
- Fisher, S. L., & Ford, J. K. (1998). Differential effects of learning effort and goal orientation on two learning outcomes. *Personnel Psychology*, 51(2), 392–420.

- Flin, R. H. (1997). Crew resource management for teams in the offshore oil industry. *Team Performance Management*, 3(2), 23–27.
- Fowlkes, J. E., & Burke, C. S. (2005). Event-based approach to training (EBAT). In N. Stanton, H. Hendrick, S. Konz, K. Parsons, & E. Salas (Eds.), *Handbook of human factors and ergonomics methods* (pp. 47–1–47–5). London: Taylor & Francis.
- Fowlkes, J. E., Dwyer, D. J., Oser, R. L., & Salas, E. (1998). Event-based approach to training (EBAT). *International Journal of Aviation Psychology*, 8(3), 209–221.
- Fowlkes, J. E., Lane, N. E., Salas, E., Franz, T., & Oser, R. (1994). Improving the measurement of team performance: The TARGETs methodology. *Military Psychology*, 6(1), 47–61.
- Geister, S., Konradt, U., & Hertel, G. (2006). Effects of process feedback on motivation, satisfaction, and performance in virtual teams. *Small Group Research*, 37(5), 459–489.
- Gibson, C. B. (1999). Do they do what they believe they can? Group efficacy and group effectiveness across tasks and cultures. *Academy of Management Journal*, 42(2), 138–152.
- Goldstein, I. L., & Ford, J. K. (2002). *Training in organizations: Needs assessment, development, and evaluation* (4th ed.). Monterey, CA: Brooks/Cole Publishing Co.
- Goodwin, G. F., & Halpin, S. M. (2006, May). Multinational, multicultural teams: Leadership challenges in the U.S. Army. In S. J. Zaccaro, T. Koehler, & G. Yun (Chairs), Global at work, but local at heart! Symposium presented at the Society for Industrial and Organizational Psychology Annual Conference, Dallas, Texas.
- Gorman, J. C., Cooke, N. J., Amazeen, P. G., et al. (2007). Knowledge training versus process training: The effects of training protocol on team coordination and performance. In *Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting—2007* (pp. 382–387). Santa Monica, CA: Human Factors and Ergonomics Society.
- Guzzo, R. A., & Dickson, M. W. (1996). Teams in organizations: Recent research on performance and effectiveness. *Annual Review of Psychology*, 47(1), 307–338.
- Hackman, J. R., & Morris, C. G. (1975). Group tasks, group interaction process and group performance effectiveness: A review and partial integration. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 8, pp. 47–99). New York: Academic Press.
- Hiller, N. J., Day, D. V., & Vance, R. J. (2006). Collective enactment of leadership roles and team effectiveness: A field study. *Leadership Quarterly*, 17(4), 387–397.
- House, R. J. (1977). A 1976 theory of charismatic leadership. In J. G. Hunt & L. L. Larson (Eds.), *Leadership: The cutting edge* (pp. 189–207). Carbondale, IL: Southern Illinois University Press.
- Huang, H., & Ocker, R. (2006). Preliminary insights into the in-group/out-group effects in partially distributed teams: An analysis of participant reflections. Presentation, April 13. SIGMIS-CPR 2006, Claremont, California.
- Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in organizations: From input-process-output models to IMOI models. *Annual Review of Psychology*, 56(1), 517–543.
- Jackson, S. (2000). A qualitative evaluation of shared leadership barriers, drivers, and recommendations. *Journal of Management in Medicine*, 14(3/4), 166–178.
- Janis, I. L. (1982). *Groupthink: Psychological studies of policy decisions and fiascoes* (2nd ed.). Boston: Houghton Mifflin.
- Jehn, K. A. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40(2), 256–282.
- Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly*, 44(4), 741–763.
- Juul, J. (2007). A certain level of abstraction. In *Proceedings of DiGRA 2007 Conference, Situated Play* (pp. 510–515). Tokyo: University of Tokyo.
- Kankanhalli, M. S., Wang, J., & Jain, R. (2006). Experiential sampling in multimedia systems. *IEEE Trans. on Multimedia*, 8(5), 937–946.
- Kendall, D. L., & Salas, E. (2004). Measuring team performance review of current methods and consideration of future needs. In J. W. Ness, V. Tepe, & D. Ritzer (Eds.), *The science and simulation of human performance* (Vol. 5, pp. 307–326). New York: Elsevier.
- Kiekel, P.A., Gorman, J. C., & Cooke, N. J. (2004). Measuring speech flow of co-located and distributed command and control teams during a communication channel glitch. *Proceedings of the Human Factors and Ergonomics Society 48th Annual Meeting*, Sept. 20–24, 2004, New Orleans, LA.
- Kirkman, B. L., & Shapiro, D. L. (2001). The impact of cultural values on job satisfaction and organizational commitment in self-managing work teams: The mediating role of employee resistance. *Academy of Management Journal*, 44(3), 557–569.
- Kolditz, T. A. (2007). In *extremis leadership: leading as if your life depended on it*. San Francisco, CA: Jossey-Bass.
- Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 3–90). San Francisco, CA: Jossey-Bass.
- Klein, G. (1988). *Sources of power: How people make decisions*. Massachusetts: The MIT Press.
- Klimoski, R., & Mohammed, S. (1994). Team mental models: Construct or metaphor? *Journal of Management*, 20(2), 403–437.
- Komaki, J. L., Desselles, M. L., & Bowman, E. D. (1989). Definitely not a breeze: Extending an operant model of effective supervision to teams. *Journal of Applied Psychology*, 74(3), 522–529.
- Koman, E. S., & Wolff, S. B. (2008). Emotional intelligence competencies in the team and team leader: A multi-level examination of the impact of emotional intelligence on team performance. *Journal of Management Development*, 27(1), 55–75.
- Kozlowski, S. J. W., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. Klimoski (Eds.), *Comprehensive handbook of psychology. Vol. 12: Industrial and organizational psychology* (pp. 353–376). New York: Wiley.
- Kraiger, K., Ford, J. K., & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology*, 78(2), 311–328.
- Landauer, T. K., Foltz, P. W., & Laham, D. (1998). An introduction to latent semantic analysis. *Discourse Processes*, 25(2), 259–284.
- LePine, J. A., Piccolo, R. F., Jackson, C. L., Mathieu, J. E., & Saul, J. R. (2008). A meta-analysis of teamwork processes:

- Tests of a multidimensional model and relationships with team effectiveness criteria. *Personnel Psychology*, 61(2), 273–307.
- Lipshitz, R., & Strauss, O. (1997). Coping with uncertainty: A naturalistic decision-making analysis. *Organizational Behavior and Human Decision Processes*, 69(2), 149–163.
- Lum, H.C., Smith-Jentsch, K., Sims, V., & Flood, M. (2007). Vocal analysis and heart rate as measures of assertiveness and aggression. *Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting—2007* (pp. 1224–1226). Santa Monica, CA: Human Factors and Ergonomics Society.
- Maran, N. J., & Glavin, R. (2003). Low- to high-fidelity simulation: A continuum of medical education? *Medical Education*, 37(Suppl. 1), 22–28.
- Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, 26(3), 356–376.
- Marks, M. A., Sabella, M. J., Burke, C. S., & Zaccaro, S. J. (2002). The impact of cross-training on team effectiveness. *Journal of Applied Psychology*, 87(1), 3–13.
- Marks, M. A., Zaccaro, S. J., & Mathieu, J. E. (2000). Performance implications of leader briefings and team interaction training for team adaptation to novel environments. *Journal of Applied Psychology*, 85(6), 971–986.
- Martocchio, J. J. (1992). Microcomputer usage as an opportunity: The influence of context in employee training. *Personnel Psychology*, 45(3), 529–552.
- Mathieu, J. E., & Schulze, W. (2006). The influence of team knowledge and formal plans on episodic team process-performance relationships. *Academy of Management Journal*, 49(3), 605–619.
- Mathieu, J. E., Maynard, M. T., Rapp, T. L., & Gilson, L. L. (2008). Team effectiveness 1997–2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, 34(3), 410–476.
- Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and effectiveness. *Journal of Applied Psychology*, 85(2), 273–283.
- Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Cannon-Bowers, J., & Salas, E. (2005). Scaling the quality of teammates' mental models: Equifinality and normative comparisons. *Journal of Organizational Behavior*, 26(1), 37–56.
- Mathieu, M., Marks, M. A., & Zaccaro, S. J. (2001). Multi-team systems theory. In N. Anderson, D. Oniz, & C. Viswesvaran (Eds.), *The international handbook of work and organizational psychology* (pp. 289–313). London: Sage Publications.
- Matveev, A. V., & Milter, R. G. (2004). The value of intercultural competence for performance of multicultural teams. *Team Performance Management*, 10(5/6), 104–111.
- McGrath, J. E. (1962). *Leadership behavior: Some requirements for leadership training*. Washington, D.C.: U.S. Civil Service Commission, Office of Career Development.
- Merket, D., Bergondy, M., & Salas, E. (1999). Making sense out of team performance errors in military aviation environments. *Transportation Human Factors*, 1(2), 231–242.
- Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management*, 36(1), 1–39.
- Mortensen, M., & Hinds, P. J. (2001). Conflict and shared identity in geographically distributed teams. *International Journal of Conflict Management*, 12(3), 212–238.
- Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology*, 91(4), 946–953.
- Noe, R. A. (2002). *Employee training and development* (2nd ed.). Boston: McGraw-Hill.
- Ocker, R. J. (2008). The impact of personality on virtual team creativity and quality. In S. Kelsey & K. St. Amant (Eds.), *Handbook of research on computer mediated communication* (Vols. 1–2, pp. 647–655). Hershey, PA: Information Science Reference/IGI Global.
- O'Leary, M., & Mortensen, M. (2005). Subgroups with attitude: Imbalance and isolation in geographically dispersed teams. Paper presented at the Academy of Management Annual Conference, Aug 5–10, Honolulu, HI.
- Pearce, C. L., & Conger, J. A. (2003). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage.
- Pearce, C. L., & Sims, H. P. (2002). Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational, and empowering leader behaviors. *Group Dynamics: Theory, Research, and Practice*, 6(2), 172–197.
- Pearce, C. L., Yoo, Y., & Alavi, M. (2004). Leadership, social work, and virtual teams: The relative influence of vertical versus shared leadership in the nonprofit sector. In R. E. Riggio & S. S. Orr (Eds.), *Improving leadership in nonprofit organizations* (pp. 180–203). San Francisco, CA: Jossey-Bass.
- Peck, M. (2005). Joint staff officers often unprepared for jobs. *National Defense*, 90(12), 56.
- Polzer, J. T., Crisp, C. B., Jarvenpaa, S. L., & Kim, J. W. (2006). Extending the fault-line model to geographically dispersed teams: How co-located subgroups can impair group functioning. *Academy of Management Journal*, 49(4), 679–692.
- Porter, C. O. L. H. (2005). Goal orientation: Effects on backing up behavior, performance, efficacy, and commitment in teams. *Journal of Applied Psychology*, 90(4), 811–818.
- Prince, C., & Salas, E. (1999). Team processes and their training in aviation. In D. Garland, J. Wise, & D. Hopkins (Eds.), *Handbook of aviation human factors* (pp. 193–213). Mahwah, NJ: Lawrence Erlbaum Associates.
- Quinones, M.A. (1995). Pretraining context effects: Training assignment as feedback. *Journal of Applied Psychology*, 80(2), 226–238.
- Ree, M. J., Caretta, T. R., & Teachout, M. S. (1995). Role of ability and prior job knowledge in complex training performance. *Journal of Applied Psychology*, 80(6), 721–730.
- Reagan, M.D. (1967). Basic and applied research: A meaningful distinction? *Science*, 155, 1383–1386.
- Rietjens, S. J. H. (2008). Managing civil–military cooperation: Experiences from the Dutch provincial reconstruction team in Afghanistan. *Armed Forces & Society*, 34(2), 173–207.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
- Saavedra, R., Earley, P. C., & van Dyne, L. (1993). Complex interdependence in task-performing groups. *Journal of Applied Psychology*, 78, 61–72.
- Saks, A. M. (1997). Transfer of training and self-efficacy: What is the dilemma? *Applied Psychology*, 46(4), 365.
- Salas, E., Burke, C. S., Bowers, C. A., & Wilson, K. A. (2001). Team training in the skies: Does crew resource management (CRM) training work? *Human Factors*, 43(4), 641–674.

- Salas, E., & Cannon-Bowers, J. A. (2000). The anatomy of team training. In S. Tobias & J. D. Fletcher (Eds.), *Training and retraining: A handbook for business, industry, government, and the military* (pp. 312–335). New York: Macmillan Reference.
- Salas, E., & Cannon-Bowers, J. A. (2001). Teamwork and team training. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences* (pp. 15487–15492). New York: Elsevier.
- Salas, E., & Cannon-Bowers, J. A. (1997). Methods, tools, and strategies for team training. In M. A. Quinones & A. Ehrenstein (Eds.), *Training for a rapidly changing workplace: Applications of psychological research* (pp. 249–280). Washington, D.C.: APA.
- Salas, E., Cooke, N. J., & Rosen, M. A. (2008). On teams, teamwork, and team performance: Discoveries and developments. *Human Factors*, 50(3), 540–547.
- Salas, E., Diaz-Granados, D., Klein, C., et al. (2008). Does team training improve team performance? A meta-analysis. *Human Factors*, 50(6), 903–933.
- Salas, E., Bowers, C. A., & Cannon-Bowers, J. A. (1995). Military team research: Ten years of progress. *Military Psychology*, 7(2), 55–75.
- Salas, E., Burke, C. S., & Cannon-Bowers, J. A. (2000). Teamwork: Emerging principles. *International Journal of Management Reviews*, 2(4), 339–356.
- Salas, E., Burke, C. S., Bowers, C. A., & Wilson, K. A. (2001). Team training in the skies: Does crew resource management (CRM) training work? *Human Factors*, 43(4), 641–674.
- Salas, E., Stagl, K. C., Burke, C. S., & Goodwin, G. F. (2007). Fostering team effectiveness in organizations: Toward an integrative theoretical framework of team performance. In J. W. Stuart, W. Spaulding, & J. Poland (Eds.), *Modeling complex systems: Motivation, cognition and social processes, Nebraska Symposium on Motivation* (pp. 185–243). Lincoln, NE: University of Nebraska Press.
- Salas, E., Kosarzycki, M. P., Tannenbaum, S. I., & Carnegie, D. (2004). Principles and advice for understanding and promoting effective teamwork in organizations. In R. Burke & C. Cooper (Eds.), *Leading in turbulent times: Managing in the new world of work* (pp. 95–120). Malden, MA: Blackwell.
- Salas, E., Nichols, D. R., & Driskell, J. E. (2007). Testing three team training strategies in intact teams: A meta-analysis. *Small Group Research*, 38(4), 471–488.
- Salas, E., Prince, C., Baker, D. P., & Shrestha, L. (1995). Situation awareness in team performance: Implications for measurement and training. *Human Factors*, 37(1), 123–136.
- Salas, E., Rosen, M., Burke, S., & Goodwin, G. (2009). The wisdom of collectives in organizations: An update of team competencies. In E. Salas, G. F. Goodwin, & C. S. Burke (Eds.), *Team effectiveness in complex organizations: Cross-disciplinary perspectives and approaches* (pp. 39–79). New York: Taylor & Francis Group.
- Salas, E., Sims, D., & Burke, C. S. (2005). Is there a 'big five' in teamwork? *Small Group Research*, 36(5), 555–599.
- Scherer, K. R. (1986). Vocal affect expressions: A review and a model for future research. *Psychological Bulletin*, 99, 143–165.
- Shaw, M. (1976). *Group dynamics: The psychology of small group behavior*. New York: McGraw-Hill.
- Shuffler, M. L., Rosen, M. A., Wildman, J. L., & Salas, E. (2010). Practically applying statecharts to understand time's complex influence on teams. Paper presented at the Academy of Management Annual Conference, Vancouver, Canada, August 2010.
- Shuffler, M. L., Wiese, C. W., Salas, E., & Burke, C. S., (2010). Leading one another across time and space: Exploring shared leadership functions in virtual teams. *Journal of Work and Organizational Psychology*, 26(1), 3–17.
- Slavin, R. E. (1978). Student teams and comparison among equals: Effects on academic performance and student attitudes. *Journal of Educational Psychology*, 70(4), 532–538.
- Smith, P. C., & Kendall, L. M. (1963). Retranslation of expectations: An approach to the construction of unambiguous anchors for rating scales. *Journal of Applied Psychology*, 47(2), 149–155.
- Smith-Jentsch, K. A., Zeisig, R. L., Acton, B., & McPherson, J. A. (1998). Team dimensional training: A strategy for guided team self-correction. In J. A. Cannon-Bowers & E. Salas (Eds.), *Making decisions under stress: Implications for individual and team training* (pp. 271–297). Washington, D.C.: American Psychological Association.
- Steiner, I. (1972). *Group process and productivity*. New York: Academic Press.
- Sundstrom, E., DeMeuse, K. P., & Futrell, D. (1990). Work teams: Applications and effectiveness. *American Psychologist*, 45(2), 120–133.
- Sundstrom, E., McIntyre, M., Halfhill, T., & Richards, H. (2000). Work groups: From the Hawthorne studies to work teams of the 1990s and beyond. *Group Dynamics: Theory, Research, and Practice*, 4(1), 44–67.
- Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43(1), 399–441.
- Tannenbaum, S. I., Beard, R. L., & Salas, E. (1992). Team building and its influence on team effectiveness: An examination of conceptual and empirical developments. In K. Kelley (Ed.), *Issue, theory, and research in industrial/organizational psychology* (pp. 117–153). Amsterdam: Elsevier.
- Van Dick, R., Tissington, P. A., & Hertel, G. (2009). Do many hands make light work? *European Business Review*, 21(3), 233.
- Wilson, K. A., Salas, E., Priest, H. A., & Andrews, D. (2007). Errors in the heat of battle: Taking a closer look at shared cognition breakdowns through teamwork. *Human Factors*, 49(2), 243–256.
- Yammarino, F. J., Mumford, M. D., Connelly, M. S., & Dionne, S. D. (2010). Leadership and team dynamics for dangerous military contexts. *Military Psychology*, 22(suppl 1), S15–S41.
- Yukl, G. (2006). *Leadership in organizations* (6th ed.). Englewood Cliffs: Prentice-Hall.
- Zaccaro, S. J., Heinen, B., & Shuffler, M. (2009). Team leadership and team effectiveness. In E. Salas, G. F. Goodwin, & C. S. Burke (Eds.), *Team effectiveness in complex organizations: Cross-disciplinary perspectives and approaches* (pp. 83–111). New York: Routledge.
- Zaccaro, S. J., Ardison, S. D., & Orvis, K. L. (2004). Leadership in virtual teams. In D. V. Day, S. J. Zaccaro & S. M. Haplin (Eds.), *Leader development for transforming organizations: Growing leaders for tomorrow* (pp. 267–292). Mahwah, NJ: Lawrence Erlbaum Associates.
- Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2001). Team leadership. *Leadership Quarterly*, 12(4), 451–483.
- Zachary, W., Cannon-Bowers, J., Bilazarian, P., Kreckler, D., Lardieri, P., & Burns, J. (1999). The Advanced Embedded Training System (AETS): An intelligent embedded tutoring system for tactical team training. *International Journal of Artificial Intelligence in Education*, 10(1452), 257–277.

Boredom

Groundhog Day as Metaphor for Iraq

Morten G. Ender*

Abstract

This chapter explores the meaning of the film *Groundhog Day* relative to social-psychological elements of boredom. The chapter presents the popular film *Groundhog Day* featuring actor Bill Murray as a metaphor for American soldiers' experiences in Iraq. American soldiers and others in Iraq referred to their experience as akin to the film. *Groundhog Day* is a spatio-temporal displacement film, a comedic love story featuring personal redemption in order for the main character to successfully transform. *Groundhog Day*—the day—has spiritual and nature roots and represents the transition to springtime. All religions find utility in the film's *leitmotif*, and Bill Murray represents a character regularly cast in transitional roles. The chapter highlights direct references to the film from those with experience in Iraq and presents some interpretations of the film itself that are illustrative of the American experience in Iraq. The chapter concludes with some future directions for research by social psychologists and applications for practitioners interested in soldiering, film, and boredom.

Keywords: Boredom, Iraq, American soldiers, film, *Groundhog Day*

All of us are just sitting around bored out of our minds, waiting for the Colonel to send us out. I guess being shot at is better than boredom.

—SGT Seth Connors (2007)

In the Iraq War, American soldiers referred to their daily missions—indeed their daily existence in Iraq—as akin to *Groundhog Day* (Albert & Ramis, 1993) starring Bill Murray. The *Groundhog Day* film provided a cogent reference to describe in a nutshell the day-to-day existence of soldiers in Iraq. In this

sense, there was routine, monotony, and boredom in their activities. Each day was similar to the day before—sometimes off the Forward Operating Base (FOB) but always on, with an unbearable heat, tan-colored vehicles, similar meals, the same people, and predictable, and hopefully uneventful, days.

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In this chapter, I use the film *Groundhog Day* as a metaphor for boredom in the day-to-day living and working of many soldiers in Iraq. The film not only signifies the life-world of Iraq for American soldiers as Groundhog Day-ish—it also dramatizes themes that transcend the mundaneness of everyday existence there and captures dimensions of the broader socio-political missions. The film *Groundhog Day* is a metaphor for assisting soldiers, their families, significant others, and various publics to understand the experience of Iraq through an analogous film made, not after the war, but prior to it. Furthermore, researchers interested in the day-to-day experiences of people on the ground in a military theater of operations should gain insights from the simulated experiential medium—film.

Films provide insight into experiences of the military, but often after the fact. Thousands of films have portrayed and re-portrayed the experiences of soldiers in American wars (Anderegg, 1991; Doherty, 1993; Suid, 2002). Charles Moskos (1970) began his book about soldiers in Vietnam—*The American Enlisted Man*—with a chapter on films that fictionalize service members and their experiences. More recently, Bård Mæland and Paul Brunstad (2009) used the 2005 film about the first Gulf War—*Jarhead* (Fisher, Wick, & Mendes, 2005)—to highlight the force of boredom in the military. Indeed, visual representations help define, describe, and now represent the mission of soldiers in past wars—particularly World War II and Vietnam (Malo & Williams, 1994; Shull & Wilt, 1996). In a less explicit way, this chapter implicitly uses *Groundhog Day* as one analogy for why and how we “fight” in Iraq.

I visited Iraq in the summer of 2004 with a small group of military officers. In addition to consulting with Iraqi researchers to establish social and behavioral science research centers and conduct research on the Iraqi population (Carlton-Ford, Ender, & Tabatabai, 2008), I carried out a separate study of the American soldiers in Iraq (Ender, 2009). I conducted survey research and observed the day-to-day lives of soldiers in Iraq from their vantage point, including going on patrols in and around Baghdad, called “deep hanging out” (Madison, 2005). One uses insider knowledge, intuition, and one’s skills as a sociologist to interpret the context and culture of a particular subculture. Insider knowledge is used appropriately to ground findings in the previous work of scholars. There is a long history of sociologists and social psychologists conducting qualitative research in forward-deployed military contexts

dating back to World War II (see Ender, 2009, for a review).

This chapter channels the spirit of film. In this spirit, it implies that we often use the drama of film in conversation to describe, represent, and compare social realities. People bring film into play as a metaphor for their experiences, especially extreme events, with comments such as, “I felt like I was in a movie.” Thus, we share films because they are collectivist, common, and dramatic. Social experiences become analogous to film. In *The Cinematic Society*, sociologist Norman Denzin (1995) argues even more persuasively that cinema plays a profound role in our lives, and film images essentially have an impact on the reality of the self, others, and society. We have a cinematic self defined as “... that larger-than-life self that gazed back from the theatre’s screen” (p. 28). The everyday self interplays with the cinematic self in gendered representations and shapes, produces, and reinforces our perceptions of self. Viewing film is not a solitary experience. It is an event as well, wherein we have a common, collective, and popular cultural product that is socially experienced—many times by an entire generation (Bulman, 2005). This hyper-reality is transferable to the military. Herr (1977) observed that American soldiers in Vietnam were raised on a steady diet of post-World War II war films featuring the likes of John Wayne and Audie Murphy and carried those screen images in their social consciousness into combat.

This chapter is not about a literal connection between the war in Iraq and the film *Groundhog Day*. However, the qualitative significance and the ongoing connection between them can be instructive—especially for understanding the film’s *leitmotif* of boredom. The chapter begins with a social-psychological discussion of boredom more generally. Next, elements of *Groundhog Day* are examined in some detail, including a synopsis of the film (Albert & Ramis, 1993), a review of the day itself, perspectives on the film, a discussion of Bill Murray as a transformative character actor, the broader significance of the film, and finally, a metaphorical connection between the film and soldiers in Iraq. The conclusion features some future directions of research for social psychologists interested in boredom more generally, and at the intersection of soldiering and film.

Boredom

In his reflections on boredom from a sociological perspective, Conrad (1997) links the social history of the Western self with increased leisure and

boredom. Today, boredom is both social and psychological and involves an absence of flow of human experience, no future, and unmet social expectations. Boredom is a social construction. It is clearly a negative social milieu and a negative psychological condition. Furthermore, dimensions of boredom include repetition, lack of interaction, and minimal variation. Boredom is also constructed in time and space. Most significantly, Conrad concludes that a feeling of entrapment may intensify the feelings and context of the boredom experience. Undergraduates identify under-stimulation and disconnection as the dominant forms of boredom they experience (Conrad, 1997).

In his extensive analysis of boredom and “overload,” Klapp (1986) locates boredom and overload on a continuum between two extremes—redundancy and noise. Even an advanced society can become, despite the extensive and detailed forms of information and entertainment available, bored. Boredom is simply defined by Klapp as “a deficit in the quality of life” (p. 127). Klapp further holds that an information-oriented society degrades the sense of meaning. “Noise” is defined as “any signal or stimulus that increases the receiver’s uncertainty about a state of affairs because it interferes with (competes with, distracts from, blurs, or confuses)—hence precludes—better information that receiver wants; that is, information in one context is perfectly capable of acting as noise in another” (p. 127). Redundancy comes, according to Klapp, in two relative forms—good and bad. Good redundancy (GR) is “warm and meaningful, and absolutely essential for personal identity and social life” (p. 71). GR includes the past, enthusiasm for souvenirs, heirlooms, antiques, and genealogical roots. GR is functional, provides continuity, aids in communication, provides identity, and has social resonance. Ritual forms and language serve to preserve social continuity. GR aids in communication, and the resonance creates warm human relations.

Bad redundancy (BR) weakens and disrupts social and personal continuity. BR hinders communication, weakens identity, and dampens resonance. BR makes “experience insipid and the environment an emotional flatland” (p. 71). Boredom is akin to satiation, habituation, and desensitization. Essentially, information overload and boredom are linked. Boredom has both a psychological and a sociological dimension—something inherent in individuals and in social structures. Boredom is mostly characterized as stemming from a kind of “underload”—monotony, restriction, sensory

deprivation, isolation, repression, insufficient complexity, disappointment in expectations, or a lack of meaning. As societies become more complex, they move from underload to overload. There is a shift in information from scarcity to overload as modern media systems generate more information than people can assign meaning to. Examples are *underload*, *overload of redundancy*, and *overload of variety*—taciturnity, repeating a few cliché views, and rambling trivia. Klapp asserts that the “media system has helped bring about this imbalance in which people listen more than they talk or sing; the load from the media is so heavy that it is stifling human expression while overwhelming our ears; it denies us a voice. Boredom is a symptom of such a condition, and also a tactic—one of the means by which we fend off excessive information” (1986, pp. 50–51).

Thus, the twenty-first-century world thus far, according to Friedman (2005), is flat. Media overload creates a sense of sameness that is overcoming the world. The speed of information transmission around the world is creating a “creeping banality” where cultural banality is the norm rather than the exception. This creates cultural homogenization and ultimately, cultural ethnocide. People need “flow”—the opposite of mass media that make people passive, where everything is taken in and nothing is put out. Where is significance in the world of creeping sameness? Bad rather than good redundancy creates monotonous repetition, a banality. The variety of good redundancy becomes the noise of bad redundancy. Loss of communication (no news) on both ends produces boredom. According to Klapp, “the average person may feel well informed, with news media keeping him posted hourly about world events, advertisers pumping sales pitches at him, junk mail piling at the door, and magazines and books in drugstores and supermarkets as well as libraries and schools. But the feeling may be an illusion if most of the information is so poor in quality and so random as to be noise-like and very little is an answer to any question asked” (p. 84). Pseudo-information is the result. It “purports to tell something but in fact tells nothing” (p. 95). Meaning arrives late. It takes time. Klapp (1986) defines a “meaning gap” as “an inability of people in the same society to agree on larger patterns, purposes, and values, even when they share the same factual information, which is piling up at a rate faster than they can agree on purposes and values, and may lead to a sense of absurdity (p. 110). Meaning comes from thinking, pondering,

wondering, dreaming, discussion, talk, rumor, brainstorming, counseling, chat, ritual, ceremony, and vicarious experience—what we might call emotional hitchhiking on the experiences of others.

According to Klapp, there are two motivating forces working in boredom: (1) people are searching for meaning (where boredom creates an existential vacuum); and (2) entropy works constantly toward disorder and meaninglessness—boredom occurs when we go too far in either direction (Klapp, 1986, pp. 119–121). *Groundhog Day* depicts this boredom, or at least the perception of boredom, when the actor Bill Murray perceives sameness through noise in Punxsutawney, Pennsylvania.

Bård Mæland and Paul Brunstad (2009) provide the most comprehensive study to date on military boredom. In their book *Enduring Military Boredom: From 1750 to Present*, the authors first mine references to military boredom by walking through the history of wars via memoirs, biographies, and accounts of soldiers' and sailors' boredom—what they call a fragmented review of boredom in military history. Most notably they utilize the more general theoretical work of boredom by sociologists Orrin Klapp (1986) and Martin Doehlemann (1992)¹ as the framework for explaining boredom in a military context. Furthermore, they provide three separate full descriptions of boredom among Norwegian soldiers in Afghanistan, Norwegian naval academy cadets at sea, and Norwegian submarine commanders, via triangulating qualitative methods such as interviews, participant observation, and diaries. Finally, Mæland and Brunstad offer social strategies such as familiar and popular entertainment and psychological strategies such as resiliency and hardiness for coping with boredom.

Mæland and Brunstad define *military boredom* as “the enduring inner enemy of soldiers at all times” (2009, p. 1)—a form of “barracks sickness” (p. 2). Boredom has, they argue, both social and psychological dimensions that can reduce, distort, and pervert both situational and ego awareness for soldiers. Potential links with boredom and military training include mission success, morale, cohesion, loneliness, deprivation, discipline, and operational tempos. Taking a lead from Klapp, Doehlemann, and others, they highlight many forms of boredom in a military context including “simple boredom,” “hyperboredom,” “superficial boredom,” “situational boredom,” “existential boredom,” “creative boredom,” “intolerable boredom,” and “public boredom.”

More recently, I identified five forms of relative boredom in Iraq (Ender, 2009). Building on the

boredom factor of previous research from peacekeeping missions and the first Gulf War (see Segal & Harris, 1985), the elements include lack of privacy, underutilization, cultural deprivation, isolation, and loss of spatio-temporal reality. Boredom in the military has popularly been conceived as “*la cafard*”² in Vietnam as discussed by Mæland and Brunstad (2009) and labeled “Creeping Bedouin Syndrome” during peacekeeping missions in the 1980s. Soldiers and others in Iraq have come to characterize boredom there through the popular film *Groundhog Day*.

Groundhog Day **Film Synopsis**

The film *Groundhog Day* (Albert & Ramis, 1993) is a romantic comedy—at least on the surface—that takes place in real time, across three days—February 1 through 3. Film historian Kristin Thompson (1999) offers the perfect 25-word description of the *Groundhog Day* film: “An obnoxious weatherman finds himself living the same unpleasant Groundhog Day repeatedly until he improves enough to be worthy of the sexy woman he idolizes” (p. 154). The film stars actor Bill Murray as Phil Connors. He plays a weatherman for a local Pittsburgh, Pennsylvania, television station, and has become bored, cynical, and frustrated over the years with having to report on mundane events such as Groundhog Day in Punxsutawney, Pennsylvania, on February 2.³ After covering the story with his producer, Rita Hanson (played by Andie MacDowell) and his cameraman Larry (played by Chris Elliott), they drive toward Pittsburgh in the media van but are turned back to Punxsutawney at the edge of town by a police officer. They are stuck in Punxsutawney for at least the evening because of a snowstorm that Phil, coincidentally and ironically, failed to predict. Phil returns to his bed and breakfast inn and is awakened the next day at 6:00 a.m. by the radio deejay and the opening lyrics from a popular Sonny and Cher song from the 1960s. This is the beginning of a replaying of the previous Groundhog Day. He will relive this day over and over throughout the film, and only he realizes it. By the film's end, he has become selfless through the performance of good deeds, wins the woman's heart, and only then does time progress forward to the next day.⁴ Repetition is the main subject matter of *Groundhog Day*: Klapp (1986) would call it extreme redundancy. Descriptors of the *Groundhog Day* film by many reviews include “brilliant,” “moral fable of love,” and “living in the

moment.” It clearly reflects destiny, identity, and moral seriousness.

Groundhog Day: The Day

“Punxsutawney Phil” is the name of the groundhog in Pennsylvania’s official celebration of Groundhog Day, which first began on February 2, 1886, with a proclamation in the local newspaper *The Punxsutawney Spirit*—the hometown of Punxsutawney, Pennsylvania, considered the “Weather Capital of the World” (Stormfax, 2006). Groundhog Day is February 2 and is not a U.S. federal holiday. German immigrants known as the Pennsylvania Dutch brought the tradition to America in the eighteenth century. They imported the Candlemas traditions to the United States, commemorating the ritual purification of Mary 40 days after the birth of Jesus. Candlemas is one of the four “cross-quarters” of the year, occurring halfway between the first day of winter and the first day of spring. In this sense, Groundhog Day has spiritual roots. The four quarters of Candlemas morphed into one period with a badger as the sign of the change from winter to spring, and eventually became a groundhog. Indeed, some reviewers have argued that the groundhog in the *Groundhog Day* film represents Jesus (see Bronski; cited in Goldberg, 2005, p. 35).

Groundhog Day: The Film

The original screenplay for *Groundhog Day* (Albert & Ramis, 1993) had prepared for Phil’s redemption through undergoing Elisabeth Kübler-Ross’s five stages of death and dying: denial, anger, bargaining, depression, and acceptance (Gilbey, 2004). Others continue to refer to Phil’s transformation by conjuring Kübler-Ross’s conceptualizations (Daughton, 1996). This would be consistent with Kristin Thompson’s analysis of the film that there are four sections to the film—The set-up, the complicating action, the development, and finally the climax and epilogue (Thompson, 1999, p. 154). The set-up more or less corresponds to the five stages of dying, but it is somewhat connected with the four seasons of the environment as well.⁵ In essence, *Groundhog Day* is a time and space dilemma (Howe, 1993).⁶ In terms of time, Thompson (1999, p. 154) argues that the film covers 42 days—filling out the six weeks of remaining winter.⁷

Groundhog Day Transformative Character: Bill Murray

In the 1980’s popular film *Stripes* (Goldberg & Reitman, 1981), Bill Murray plays an earlier

incarnation of the transformation role that he later brings to Phil Connors in *Groundhog Day*.⁸ Phil in *Groundhog Day* is called a “rat” early in the film, linking him to rodents. Phil Connors, the character, shares his name with Punxsutawney Phil, the groundhog. Furthermore, his initials are P.C., short for “political correctness,” a popular and self-mockery term coined by progressives in the 1980s promoting a socially enforced alteration of language and behavior in response to past injustices and discrimination of traditionally marginalized groups in society. In this sense, Phil represents and exposes the white male’s masculine identity decline so prevalent in the 1990s (Davies, 1995). In the film, Phil Connors is non-P.C., and the film is about his conversion to the P.C. ideal envisioned by many during the period but more importantly by Rita—the female lead. Phil’s language and behavior insults and excludes groups and individuals such as women, rural Americans, the aged and the young, the poor, and people with questionable ability. His change is a transformation to a throwback form of masculinity, out of touch with modernity—to a sensitive, considerate, and somewhat de-masculinized male who now appreciates, validates, and legitimizes others.

The Significance of Groundhog Day

Groundhog Day continues to be examined, referenced, and analyzed years after being released (Bacha, 1998). Professor Stanley Fish (2009) lists *Groundhog Day* among the top 10 best American films ever made. The film has had pedagogical utility in a number of academic disciplines around the country, from philosophy (Voeltz, 1998), to film studies (Thompson, 1999), to theology (Kuczynski, 2003). A 2008 Google search combining the terms “syllabus” and “Groundhog Day” yielded 3,940 hits. Examples of course titles adopting the *Groundhog Day* film include “Agony and Ecstasy: Spirituality through Film and Literature” (Duke University); “Language and Culture” (Florida International University); “Ancient Cultures of Middle America” (University of Minnesota); “Romanticism and Buddhism” (University of Michigan); “Introduction to Ethics” (Tufts University); “Time, Space, and Society” (University of Wyoming); and “Introduction to Psychology” (Rockhurst University). The Museum of Modern Art in New York City had a special exhibit on film and faith and featured *Groundhog Day* as the headliner film (Kuczynski, 2003).⁹ Virtually all of the approximately 95 online reviews of *Groundhog*

Day consolidated on the Rotten Tomatoes website are positive (<http://www.rottentomatoes.com/>). Goldberg (2005) says *Groundhog Day* is the best “cinematic moral allegory popular culture has produced in decades—perhaps ever” (p. 36). In his *Washington Post* online review, Hinson (1993) refers to *Groundhog Day* as a film in “the great tradition of American trash surrealism.” Gilbey (2004, p. 84) considers it “a commercial hit, but it has also quickly emerged as one of the most broadly influential films in modern cinema.” Finally, the popular online website Wikipedia (2010) links *Groundhog Day* to the military. Using references in descriptions of the film, it notes, “In the military, referring to unpleasant, unchanging, repetitive situations as ‘Groundhog Day’ was widespread very soon after the movie’s release in February 1993.” Used by soldiers, sailors, and even former U.S. president Bill Clinton, the film is traceable back to American involvement in Somalia, Bosnia, and Iraq.

Groundhog Day and Soldiers

Content analysis is a methodology used by social scientists and humanities scholars to analyze the content of communication. “Googling” is a recent and popular term for using the Google search engine (or others) on the Internet to locate specific information. Googling provides a crude first-step technique for summarizing information content. In the present case, I used the “exact phrase” option in the advanced search feature of Google. In September 2006, I linked two key and disparate statements—“Groundhog Day” and “soldiers in Iraq” yielding over 13,000 hits. The hits included news articles, blogs, letters home from soldiers, and the like.

Below is a sampling of some select web text equating the day-to-day life of American soldiers in Iraq with the film. One article about soldier experiences in Baghdad includes the film among a list of terms representing the language used by Americans in Iraq to describe their existence (KFI, no date): “Groundhog Day—A term referring to the repetitive and often frustrating nature of daily operations in Iraq. Refers to the movie where a TV weatherman character played by Bill Murray lives one day over and over.”

In a *National Review* re-review of the film, the critic notes that soldiers in Iraq use “Groundhog Day” as shorthand for and translated fittingly to “same stuff, different day” (Goldberg, 2005). “Troops in Iraq regularly use it as a rough synonym for ‘SNAFU,’ which also translated fittingly to ‘situation normal: all fouled-up.’”

Soldiers interviewed for articles and writing their own on-line diaries liken their experience to *Groundhog Day*. An American soldier in Iraq from Nakoosa, Wisconsin, writing for the *Wisconsin Rapid Daily Tribune* (Moody, 2005) newspaper penned: “As for my daily routine, it’s like the movie ‘Groundhog Day.’ It’s the same routine day-in and day-out. Before you know it, another week has gone by! At this pace, I’ll be home soon, at least in my mind.” Another soldier quoted in a *San Antonio Express-News* newspaper article captures the time-space dilemma, observing (Christianson, 2004): “The world keeps turning back home in the States, but here we’re stuck in *Groundhog Day*,’ referring to a film in which actor Bill Murray’s character keeps reliving the same day.” A soldier quoted in *The Stars and Stripes* newspaper shares (Jontz, 2003): “More importantly, tankers try to stay sharp even when the doldrums of repetition could dull them. ‘When it’s not *Groundhog Day*, it’s wonderful,’ joked tank commander Staff Sgt. Phillip Johnson, 31, referring to a movie in which the lead character relives the same day over and over.” An Army nurse interviewed on the CBS television newsmagazine *60 Minutes* related her experience in Iraq, commingling two films to describe her experience (CBS News, 2005): “I felt like I was in a ‘M*A*S*H’ movie with *Groundhog Day* over and over again since February,’ says Raymond. ‘I mean, I still can’t believe that this volume of patients is still here and it’s gone on as long as it has.’”

In their writings, reporters refer to Iraq as a *Groundhog Day* experience. Thomas Friedman (2004) titled an editorial piece in the *New York Times* “Groundhog Day in Iraq.” In the article he compares a battle and a war—the 2004 liberation of Fallujah in Iraq by U.S. Marines and the “liberation” of all of Iraq in 2003, noting, “But the ‘déjà vu all over again’ battle for Fallujah only reminds me that I still have the same questions I had before the Iraq war started.”

Most writings on *Groundhog Day* appear to be apolitical. Other writings on the web use the film *Groundhog Day* in a political context as Friedman had, and range from both the right and left political wings. For example, Buzz Patterson (2005) declares: “The same plight has befallen the Democratic Party. Every day, instead of *Groundhog Day*, is Tuesday, April 22, 1971. For liberals, Murray’s *Groundhog Day* is the day John Kerry delivered his infamous testimony to the overtly dovish Senate Committee on Foreign Relations.” A counter to the right-wing rhetoric above is a more left-wing use of *Groundhog*

Day, stating (Levinson, 2004): “It feels a bit more like Groundhog’s Day than Hanukkah. Last Wednesday, the Bush Administration peered it’s [sic] head out of it’s [sic] hole, saw that it had a shadow, and went back in, only to return next election cycle, probably. Perhaps you know what I mean.”

Reporters reflecting on their own experiences coupled with soldier comments confirmed references to experiences in Iraq and Kuwait as like *Groundhog Day*. In his *Christian Science Monitor* dispatches from Iraq, Ben Arnoldy (2003) communicates: “In the desert, the landscape was simple, repetitive, and boundless. And so was time. I frequently lost track of the day of the week. ‘Every day is Groundhog Day here,’ I heard several soldiers say. Over in Kuwait and Iraq, there were no scheduling conflicts, just the conflict.”

Even the military leadership recognizes the analogy, and uses *Groundhog Day* as a metaphor for the day-to-day events. A U.S. Army chaplain writing a blog from Iraq with an American audience in mind states (Lewis, 2005):

It could be called several very appropriate names. The most popular of which is unquestionably, “The Global War on Terrorism” or GWOT. It’s a good name. After all, we are here to fight terror. Peace loving people from many nations are dead because of terror. And the goal is to defeat the scourge of terror around the world. It’s a good name and a good goal. It could also be called “Groundhog Day.” Each day is a near carbon copy of the day before. In fact, it can be outright boring. Sure there are the occasional heart-stopping experiences that seem to come out of nowhere, but the mundane, everyday stuff is nothing to write home about.

Finally, in an open letter to military families of the 101st Airborne Division at Fort Campbell, Kentucky, Major General David Patraeus (no date) stated: “But we’re all working to make life as livable as possible for our Soldiers, to provide them an occasional break from what inevitably is a ‘groundhog day’ existence, and to ensure that there are opportunities to relax in reasonable surroundings during downtime.”

Groundhog Day in Iraq

The above section provides a content analysis of select websites that link the *Groundhog Day* film and American soldiers in Iraq. It highlights some direct connections via writers experienced in Iraq and their view of the film in relation to Iraq. The next section offers an interpretative analysis and presents some playful metaphoric links between the content of

Groundhog Day and American soldier experiences in Iraq. It peels back layers of the 101 minute movie to expose why soldiers might find utility in having it represent their experience in Iraq. Reviews of the military film literature are abundant and available elsewhere (see Anderegg, 1991; Doherty, 1993; Ender, 2005; Malo & Williams, 1994; Shull & Wilt, 1996; Suid, 1996; 2002).

First, there are indirect connections to the military and *Groundhog Day*. Frank Capra directed the black and white holiday classic *It’s a Wonderful Life* (Capra, 1946), which is often compared to *Groundhog Day* (Albert & Ramis, 1993). In that film, James Stewart plays George Bailey—the main character, who sacrificed larger dreams in faraway places and worked his whole life to make good in a small town, only at midlife to feel he has failed. He considers taking his own life but is distracted from his own suicide by Clarence, the angel, jumping into the river. Roles reverse and he saves his guardian angel from drowning. The angel then flashes him back across his life to show how his family and community would have been without him. Resembling *It’s a Wonderful Life* (Capra, 1946), *Groundhog Day* is a fantasy displacement film (Thompson, 1999), involving the transformation of a male lead character. Similarly, the film *A Christmas Carol* (Hurst, 1951) depicts a male character—Scrooge—transformed through his displacement experiences facilitated by a collection of spirits.¹⁰

Frank Capra was also the director of the seven-part *Why We Fight* (Capra, 1943–1945) film series of World War II. Using archival footage and a host of other sources, Capra weaves a seven-part film series designed to shift attitudes and motivate—to win the hearts and minds of Americans—both service members and the American public—to rally behind the war efforts. *It’s a Wonderful Life* (Capra, 1946) was his first film on the heels of the *Why We Fight* series.

In *Stripes* (Goldberg & Reitman, 1981), both Bill Murray and Harold Ramis star as wayward men lacking job opportunities or rent, and are physically unfit. They enlist in the U.S. Army for selfish reasons but transform throughout the film to become selfless heroes, having saved their comrades. Ramis also has writing credits on *Stripes*.

Another military connection in *Groundhog Day* involves Phil Connor’s love interest, Rita (actress Andie MacDowell), who quotes a poem by Sir Walter Scott. It is notable that Scott’s work deals with culture wars and military wars. His most famous works include *Rob Roy* (Scott, 1817),

Ivanhoe (Scott, 1819), and *The Talisman* (Scott, 1825) which are about conflict between Christians and Muslims.¹¹

Punxsutawney, Pennsylvania, could represent Baghdad, Iraq, in *Groundhog Day*. First, the weather plays a significant role in terms of its extremity—while unlike the very dry heat of Southwest Asia, Punxsutawney is cold. The heat of hell in Iraq has essentially frozen over. The connection to heat comes with a comment by Phil the weatherman during his report in the first scene of the film. He says the nation's hotspot is where he would like to be—Elko, Nevada—a place where the terrain and weather are fairly similar to Iraq's. Extreme weather immobilizes the social situation. Iraq represents hell and purgatory for many soldiers and many Americans, similar to small rural towns, where people want to escape the doldrums of winter in their small towns filled with simplicity, dullness, boredom, and repetition. Furthermore, since Phil does see his shadow, the cold will continue for six weeks. This is not dissimilar to soldiers and families receiving news that the redeployment home date has been extended and they will need to remain in Iraq another six to twelve weeks (Burns, 2006).¹²

Missions were *not* accomplished both in Iraq and Punxsutawney. Phil and his weather crew of producer Rita and cameraman and driver Larry head out of Punxsutawney after the Groundhog Day festivities. They believe they have essentially completed their mission. The mission is however only almost over, as they encounter some snowfall and a police blockade. In the scene, a large tractor-trailer has jackknifed and blocked the traffic. The trailer has "American" written on the side of it in large, bold letters. Phil exits the van with no jacket, shivering, and walks up to the officer and blocking vehicle. He asks the police officer, with teeth chattering from the cold, "Hey commander, what's going on?" The officer says the highways are closed and Phil will need to go "back to Punxsutawney or freeze to death. It's your choice. What's it gonna be?" The impending blizzard that Phil failed to predict is moving across Pennsylvania. Phil responds, "I'm thinkin'," but does return to the van and Punxsutawney. They must remain in Punxsutawney for at least one night.

The blizzard in *Groundhog Day* signifies the coming insurgency in Iraq after the end of major hostilities in May 2003. On May 1, 2003, from aboard the deck of the USS *Abraham Lincoln*, President Bush declared that the major combat operations in Iraq were over. The police officer in

the movie represents the senior leadership—Commander-in-Chief George W. Bush. Phil uncharacteristically calls the police officer "commander" as he stands on the roadside without the proper cover. Phil is exposed to the insurgency blizzard without a jacket (Kevlar or armor) and is presented with a life-or-death situation by the commander. Ironically, by the end of the film, Phil, who despises the cold weather and wanted to leave Punxsutawney—indeed, was even considering risking death rather than going back, had aspirations to leave Pittsburgh and "make it" in an even larger city, with a bigger network—decides to remain in Punxsutawney, a place he initially despised. Similarly, success in Iraq—from the perspective of Americans—will exist when soldiers desire a tour there similar to the popularity of being stationed in Korea, England, Germany, and Italy during the Cold War. Notably, while recruitment was a problem in the mid-2000s, thousands of soldiers have reenlisted in Iraq. They appear to be keen on the mission.

Bill Murray thus represents the American soldier. In the opening scene of *Groundhog Day* (Albert & Ramis, 1993), weatherman Phil Connors is prognosticating the weather on the evening local Pittsburgh news station using typical Doppler weather tracking imagery from television news programs. He painfully fails at predicting the impact of a huge storm that is clearly approaching Pennsylvania from the Midwest. Again, the storm can be a metaphor for the Iraqi insurgency, and the civilian leadership on behalf of soldiers grossly underestimated its potential. Similarly, when Phil walks over to the female news-anchor at the anchor desk to conclude the weather with some transitional chat, she underestimates the number of times he has covered Groundhog Day in Punxsutawney—thinking it was three when it was actually four. This exchange signifies the coming crisis of multiple deployments and repeated tours to come for American troops returning to Iraq. Furthermore, much of the film is about poor prognosticating and not quite understanding the future—often resting our hopes on unscientific resources, inexperience, and ideology. However, later in the film, neither a medical doctor nor a psychiatrist can ultimately help Phil with his time-displacement experience—so even science cannot account for the future. At this writing, the future of Iraq is unclear.

So what of the infamous improvised explosive devices (IEDs)?¹³ On his first day in Punxsutawney, Phil walks to the town square to report on the day's activities. He walks with conceit and carries

nothing—no accoutrements from his profession. On the first occasion of his walking across a street, Phil steps into an above-the-knee, deep puddle of slushwater and muck, just off the curb. A weatherman who can't see water! Ned Ryerson (played brilliantly by Stephen Tobolowsky), the insurance salesman Phil consistently and rudely cuts-off from speaking, tells him, laughing, "Watch out for that first step, it's a doozy!" The puddle might correspond to the roadside bombs encountered by coalition forces in Iraq.

Phil Connors, whose initials are P.C., for "politically correct," is hopelessly not. Again, his character is selfish, self-centered, hedonistic, egotistical, and dismissive of others. He calls his co-anchor "Hairdo." She tells him to "have fun in Punxsutawney, Phil" equating him with a groundhog—a rodent. Larry, his cameraman, twice refers to P.C. as a prima donna. On the ride to Punxsutawney, Phil states: "Someday, somebody is going to see me interview a groundhog and think I don't have a future." He belittles and dehumanizes the locals in Punxsutawney, calling them "hicks" and "morons." He refuses to stay in the same hotel with his team—requiring the more sophisticated quarters of a local bed-and-breakfast for the evening. He later dismisses an elderly beggar, a fellow guest at the hotel, the bed-and-breakfast matron, and a high school chum turned life insurance salesman, referring to him as "a giant leech." Phil believes he actually "makes the weather"—a blasphemous statement suggesting he is God. He calls his office in Pittsburgh thinking he should have freedom to pass other cars on the snowed-in highways because he's a "celebrity." He refers to the groundhog, Punxsutawney Phil, which he shares a name with, as a "rat"—again, the rodent connection.

On his third Groundhog Day, Phil begins to embrace the time displacement and manipulates it for selfish reasons. He drives recklessly, shows no respect for police officers, goes to jail, eats, drinks alcohol, and smokes indiscriminately, robs an armored car, seduces a woman using information from the previous day, engages in conspicuous consumption, and commits statutory rape. He even refers to himself as "Godlike."

Phil develops an interest in Rita and begins a campaign of seduction using previous Groundhog Day knowledge to win her heart. But she claims, "Phil Connors only loves himself," and he responds, "That's not true, I don't even like myself." She continually rejects him because by the end of each day she sees through his campaign to seduce her.

Frustrated, Phil becomes completely self-absorbed and kidnaps Phil—the groundhog. In the chase scene, both the Phils plummet over a cliff, with the human Phil trying to kill himself and perceiving Phil—the groundhog—as Jesus. If he can sacrifice "Jesus" he might save himself. However, he only wakes up again at 6:00 a.m. on Groundhog Day. This begins a series of scenes of suicide attempts, including electrocution, jumping in front of a truck, and throwing himself off a building, among many other ways—only to continually awaken the next day.

Again, P.C. comes to believe he's godlike and develops a born-again perspective as he realizes he does love Rita. Note that in ancient Hinduism, *Rita* is the name for the proper order of a sacrifice, cosmic law, moral order, and truth. Sacrifices performed for the gods or *devas* are crucial in order for humans to obtain material benefits from the gods. Sacrifices must be performed in the proper order to have efficacy or power (*brahman*). *Rita* is a key concept in the Indian worldview.

Phil comes to realize death is not an option for him, and his future is eternity. He gives up on his destiny. He says to Rita, "I've killed myself so many times I don't even exist anymore." He makes the first attempt to reconnect with someone—to allow someone onto his island, and it is Rita. She agrees to spend the day and the night with him to see how he turns out. He shares his love with her while she sleeps—indicating to the viewer that he is true, honest, and sincere. It is the first sacrifice. He makes amends. Because he has spoken to someone who cannot reply (she's asleep)—the feelings are portrayed as authentic.

The next day is Groundhog Day (again) but Phil is "a new man, he's got a whole new plan" (according to the commentary voiceover provided by director Harold Ramis on the DVD). Phil begins to read more. He has a new lot in life. He learns to play piano and sculpt ice, touches people with an emotionally stirring report of Groundhog Day, catches a young boy falling from a tree, changes a tire for an elderly couple, saves a choker with the Heimlich maneuver, lights a woman's cigarette, plays piano at a party, helps a couple marry and gives them prized Wrestlemania tickets, tries to save an old man from dying, fixes a guy's back, buys all of Ned's life-insurance policies, allows himself to be sold at auction, and finally, carves an ice-sculpture of an angelic replica of Rita. Ultimately he gets the girl, all the while being humble about his accomplishments. He becomes P.C.—he has lived up to his

name—he is transformed and saved from living the Groundhog Day existence.

Akin to Phil, American soldiers in Iraq moved from being insufferable warriors and preoccupied invaders to the politically corrected and occupying foreign guests in a relatively sovereign nation. American soldiers became peacekeepers and conducted missions where the rules of engagement require politically correct reactions rather than a guns-blazing mentality. Phil Connors is only successful when he accepts the P.C. nature of his existence—he is no longer stuck in the past as a relic of a bygone era. Similarly, American soldiers in Iraq adapted to a postmodern era that required sensibilities that are positive and respectful of the people of Iraq. In this sense, the mission and the attitudes of soldiers have been transformative. They have gone from relatively xenophobic to culturally relative. For example, the young boy falling from the tree in *Groundhog Day* represents Iraqi children. The homeless man Phil tries to save represents the elder Iraqis. Initially, during the invasion, America was perceived as the aggressor. With time, Americans on the ground came to realize success for them involved good deeds in their everyday experiences. While the larger war and its purpose seemed vague, soldiers found meaning and significance in their daily tasks. So they built soccer fields, mosques, homes, and developed numerous civic projects not regularly lauded in the press.¹⁴

Very early in the film, Phil refers to the local people as hicks and morons. Similarly, American soldiers have historically demeaned local peoples. Germans were “Krauts” and the Japanese “Japs” during World War II. During Vietnam, the locals were “Gooks.” In the first Gulf War, Muslims were called “towelheads.” While few, if any, negative terms were used in Iraq, with the exception of the affectionately labeled “Hajji”—in reference to people who have completed the once-in-a-lifetime Muslim pilgrimage to the holy city of Mecca in Saudi Arabia—there are few negative names or labels that are used (Moskos, 2006). By the end of the film, Phil begins to show some general sensitivity towards the local inhabitants of Punxsutawney. Phil gets to know them on a personal level and understands, appreciates, and even comes to value them. When all American soldiers (and American citizens) acclimatize to a cultural relativist position, they too will begin to make significant inroads into the character of Iraqis. We will befriend them and then win their hearts and minds. Such a position is not unlike Americans’ experiences in other places such as Germany, Italy, Japan, and Korea—nations

that have embraced and adored American soldiers (and American ideals) for decades.

Time-displacement is a major theme in the film *Groundhog Day*. Indeed, it is the theme of the film. Similarly, soldiers in Iraq quickly experience a displacement of time and space after a few days on the ground in Iraq. This time and space sensory deprivation is known as “Creeping Bedouin Syndrome” in previous U.S. deployments in deserts (Ender, 2009). It involves feelings of dislocation and disorientation. The open spaces, sometimes even a feeling of lost-in-a-desert orientation, and lack of weekly rhythms in Iraq, remind soldiers of the film *Groundhog Day*. Examples of repetition in the film include the movie *Heidi II* on the city movie marquee (referring to remakes of films—of course, *Heidi II* has not been made). Also, in the opening sequence of the film, clouds move very quickly, the Sonny and Cher song repeats ad nauseam, the character Ned Ryerson says “right” over and over again, and the Bill Murray character lives the same day over and over again. Soldiers in Iraq awoke every day to the sameness—the terrain, weather, colleagues, tan vehicles, and food—in essence, the extreme lack of variety and diversity many soldiers are accustomed to back home in the United States was missing.

The multiple suicides in the film *Groundhog Day* (Albert & Ramis, 1993) are evident in Iraq. American suicides were higher than normal early in the war.¹⁵ Many suicides are unique because they are committed in the workplace rather than at home—peers and leaders discover the victims. As one former company commander told me—“I held her while she died just after she shot herself.” By committing suicide, soldiers lose their resolve. It is the ultimate selfless act. We have asked too much of them. Some have rejected themselves and their heroic status—they go too far. Indeed, Iraqis initially viewed the Americans in their up-armored vehicles and full-battle rattle with Kevlar vests, Wiley-X sunglasses, and night vision goggles mounts on their helmets—as immortal. Indeed, as one commander told me, “they [the Iraqis] thought we were cyborgs like Schwarzenegger in *Terminator*.” Of course, soldiers do not view themselves in this way. Soldiers, in the vein of Phil, are not God, but see themselves ultimately doing God’s work. Ironically, insurgents perhaps view them as infidels—anti-Godlike.

Conclusion

The Gettysburg National Military Park opens its website about living in camps during the American

Civil War with a quote: “Soldiering is 99 percent boredom and one percent sheer terror,’ a soldier wrote his wife” (National Park Service, 2010). Most studies of soldiers and war focus on the one percent. This chapter examines boredom and links the 1993 film *Groundhog Day* with the lived experiences of American soldiers and others in Iraq. Many soldiers and a host of others who deployed to Iraq referred to their daily existence as *Groundhog Day*-like. The reference to the film includes not only boredom but the accomplishments of soldiers from day to day. I have taken the metaphor of the film *Groundhog Day* (Albert & Ramis, 1993) at face value and legitimated it by probing deeper to develop an appreciation for what soldiers and others in Iraq meant by referencing this one specific film as the best representation of their social situation. Again, this is not a literal connection between Iraq and the film. It is however instructive to peel away elements of the film relative to boredom to understand better how soldiers experienced Iraq.

The boredom factor remains a prevalent feature of military forward deployments and should continue to be studied by psychologists and sociologists. Boredom appears especially prevalent in nontraditional military contexts such as peacekeeping and enforcement, humanitarian and disaster relief, nation-building, and even fighting counterinsurgencies. Boredom is linkable to a whole range of elements essential for how military commanders define success. In the extreme, boredom could lead to atrocity (e.g., Abu Ghraib). Service members and their leaders need to find balance between boredom and overload—between redundancy and noise. Redundancy is vital in military training. Dramaturgist Erving Goffman argues that we use “aways”—games to occupy ourselves—to move away from idleness and overcome boredom. Certainly, video games, films, television, and the abundance of communication technology on the forward operating bases provided a variety of aways (Ender, 2009; Wong & Gerras, 2006). However, removing oneself too far from boredom can create overload, and it, too, can undermine meaning. In their review of the history of military boredom, Mæland and Brunstad (2009) offer resiliency and personality hardiness as psychological antidotes to boredom. On a social level, military field manuals have come to address boredom—especially in more recent U.S. military missions involving peacekeeping and counterinsurgency. After the war was won in Iraq, Americans sought to win the peace, and boredom crept into the mix. Studying and applying new lessons by

giving training and expectations with lived experience will better prepare soldiers to cope with boredom. Soldiers can be socialized to anticipate the reality of the social situations they encounter in wars.

How soldiers collectively experience and perceive their deployment is real for them. The *Groundhog Day* film can be an instructive education and training tool for those who have not experienced Iraq or Afghanistan. *Groundhog Day* is a multi-layered film. Humor on the surface makes the many-layered themes beneath somewhat invisible on initial viewing. Inspiration and promise lie beneath the surface (under the flesh) of the humor in the film (Jewett, 1997). Brussat and Brussat (2005) in their review of *Groundhog Day* noted that “the questions posed by Phil’s predicament are deeply spiritual.” A collective screening of the film can influence the viewer(s) to do the right thing, try to achieve success, and persevere for positive meaning, not social or psychological destruction. Meaning for living within the happiness of those around us can be gleaned from the film—a cultural universal of all religions.

Notes

1 Martin Doehlemann’s work is currently only available in Norwegian (1992) and originally in German (1991).

2 *La cafard* is a French term that literally means “cockroach” or “beetle.” Mæland and Brunstad refer to it in the metaphysical sense as “it designates a combination of monotony, misery, hardship, and fatigue—a deep form of boredom” (2009, p. 35).

3 Indeed, Thompson (1999) makes the point that the ability to describe *Groundhog Day* (1993), indeed any film, in a short summary identifies it as a “high-concept” film. *Groundhog Day* (1993) is a high-concept film but also classical in the Hollywood tradition. Other examples of high-concept films with the fantasy of displacement include *Pleasantville* (Kilik, Soderbergh, & Ross, 1998) and *The Truman Show* (Feldman, Niccol, Rudin, Schroeder, & Weir, 1998).

4 *Groundhog Day* continues to be studied, examined, referenced, and analyzed over a decade after being released (Bacha, 1998). Many religious people appear to acclaim the film’s usefulness, including Buddhists, Jews, and Christians, as well as minority spiritual groups such as Wiccans and the Chinese Falun Gong.

5 The set-up, according to Thompson (1999, p. 154), covers four days: February 1st prior to Groundhog Day, February 2nd, the original Groundhog Day, and Phil’s first two repetition days. The complicating action begins when Phil consciously realizes that there is no tomorrow; he accepts it, and begins to behave within this new reality. The complicating action section ends when Phil realizes suicide is not an option and the development section begins when Phil shares his consciousness with Rita by stating that he is a god. Phil begins his transformation here—essentially, he is reborn and has two goals—to move from selfishness to selflessness and to prove himself worthy of Rita’s love, not her sexual conquest. The climax and epilogue is a traditional Hollywood ending, with Phil, the boy, getting the girl (Thompson, 1999, p. 154).

6 Some note that the premise for *Groundhog Day* is not original but borrowed from a number of sources, including a short science fiction story by Richard A. Lupoff called *12:01 P.M.*; an episode of the 1961 television *Twilight Zone* series called “Shadow Play” and written by Charles Beaumont, directed by John Brahm; a short film by Jonathan Hepp; and a television thriller by Jack Sholder (Antulov, 1999; Leeper, no date).

7 Harold Ramis is the co-writer and director and suggests that the original script called for 10,000 years of repetitive days in Punxsutawney but that it was probably more like 10 years. There is some evidence in the film of the number of repetitive days. Phil tells Rita it takes six months to learn how to throw a deck of 52 playing cards into a hat. In terms of space, the entire film purportedly takes place in Punxsutawney, Pennsylvania—although the actual location is Woodstock, Illinois, because of a more “authentic” Main Street set of the downtown (Gilbey, 2004).

8 Harold Ramis, the director and co-writer of *Groundhog Day*, and Bill Murray have appeared together in *Ghost Busters* (Reitman, 1984), *Ghost Busters II* (Reitman, 1989), and *Stripes* (Goldberg & Reitman, 1981). *Ghost Busters* and *Ghost Busters II* were directed by Ivan Reitman and written by Dan Aykroyd and Harold Ramis. *Stripes* (Goldberg & Reitman, 1981) was directed by Ivan Reitman and written by Len Blum and Daniel Goldberg, and featured Ramis in a supporting actor role. All three films starred Bill Murray. In *Stripes*, he plays an out-of-shape, apolitical, unemployed and unlucky, self-indulgent bachelor converted into a military leader and hero who does not however in the end sacrifice his individuality, and he gets the girl. Similarly, in an earlier role he brings the role and the rodent with him. The groundhog in *Groundhog Day* comes from the film *Caddyshack* (Kenney & Ramis, 1980). Also written and directed by Ramis, *Caddyshack* featured a 29-year-old Bill Murray in a subplot playing an assistant golf greenskeeper who obsessively pursues a gopher terrorizing the greens. The gopher is essentially a rodent, similar to a rat or squirrel or, notably, a groundhog.

9 Mainstream religions acclaim the film’s usefulness. Followers of the Chinese Falun Gong sect hold that the spiritual self lacks development until it learns from past mistakes. For Wiccans, the actual Groundhog Day is one of the four quarters of the year that cross—in this case, it occurs roughly halfway between the first day of winter and the first day of spring. Groundhog Day can fall somewhere between the end of January and early February. For Buddhists, there are links to *samsara*—a suffering that humans must try to escape. It is rebirth and ultimately the achievement of nirvana. In the Jewish faith, we see the commitment to *mitzvahs* (good deeds). Christians view doing good deeds as the way to earning one’s place in heaven.

10 The 1951 film was remade as *Scrooged* (Donner & Linson, 1988), starring Bill Murray.

11 Walter Scott’s books include *Rob Roy* (1817), *Ivanhoe* (1819), and *The Talisman* (1825).

12 One of many examples is the 172nd Brigade out of Alaska. See Robert Burns (2006).

13 An improvised explosive device [IED] “can be almost anything with any type of material and initiator. It is a ‘homemade’ device that is designed to cause death or injury by using explosives alone or in combination with toxic chemicals, biological toxins, or radiological material. IEDs can be produced in varying sizes, functioning methods, containers, and delivery methods. IEDs can utilize commercial or military explosives, homemade explosives, or military ordnance and ordnance components.” IEDs are usually roadside bombs designed to explode

when a vehicle or group of vehicles with troops pass by. See *Globalsecurity.org* (2005).

14 Numerous print media papers were reporting such stories. Two examples include John Koopman (2004) and Ryan Clark (2004).

15 For a discussion of American suicides in Iraq, see Office of the Surgeon General, 2006.

References

- Albert, T. (Producer), & Ramis, H. (Producer/Director). (1993). *Groundhog Day* [motion picture]. United States: Columbia Pictures Corp.
- Anderegg, M. A. (Ed.). (1991). *Inventing Vietnam: The war in film and television*. Philadelphia, PA: Temple University Press.
- Antulov, D. (1999). *Groundhog Day*: A film review. Retrieved May 1, 2005, from <http://reviews.imdb.com/Reviews/206/20639>.
- Arnoldy, B. (2003, May 6). Coming home. *Christian Science Monitor*. Retrieved from <http://www.csmonitor.com/specials/kuwait/>.
- Bacha, C. S. (1998). *Groundhog Day*: The individual, the couple, the group, and space in between. *Psychodynamic Counseling*, 4, 383–406.
- Brussat, F., & Brussat, M. A. (2005, April 30). Movie review. *Spirituality and health*. Retrieved September 18, 2006, from <http://www.spiritualityhealth.com/newsh/items/movieireview>.
- Bulman, R. C. (2005). *Hollywood goes to high school: Cinema, schools, and American culture*. New York: Worth Publishers.
- Burns, R. (2006, Aug. 26). Rumsfeld defends extended tours in Iraq. *Washington Post*. Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2006/08/26/AR2006082600459.html>.
- Capra, F. (Producer/Director). (1946). *It’s a Wonderful Life* [motion picture]. United States: RKO Radio Pictures.
- Capra, F. (Producer/Director). (1943–1945). *Why We Fight* [motion pictures]. Series 1–7. United States: War Department.
- Carlton-Ford, S., Ender, M. G., & Tabatabai, A. (2008). Iraqi adolescents: Self-regard, self-derogation, and perceived threat in war. *Journal of Adolescence*, 31, 53–75.
- CBS News. (2005, June 30). *60 Minutes*: The long road home from Iraq [video transcript of television series episode]. Retrieved from <http://www.cbsnews.com/stories/2003/12/01/60II/main586138.shtml>.
- Christenson, S. (2004). Gung-ho from the get-go. *MySA.com*. Retrieved September 18, 2006, from <http://www.mysanan-tonio.com/specials/battlefield/stories/MYSA080904.1A.gung-ho.b2032a8.html>.
- Clark, R. (2004, Jan. 12). Mississippi soldiers make a difference. *The Clarion-Ledger*. Retrieved from <http://www.clarion-ledger.com/>.
- Connors, Sergeant S. A. (2007). *Boredom by day, death by night: An Iraq war journal*. Wheaton, IL: Tripping Light Press.
- Conrad, P. (1997). It’s boring: Notes on the meanings of boredom in everyday life. *Qualitative Sociology*, 20, 465–475.
- Daughton, S. M. (1996). The spiritual power of repetitive form: Steps toward transcendence in *Groundhog Day*. *Critical Studies in Mass Communication*, 13, 138–151.
- Davies, J. (1995). Gender, ethnicity, and cultural crisis in *Falling Down* and *Groundhog Day*. *Screen*, 36, 214–232.

- Denzin, N. K. (1995). *The cinematic society: The voyeur's gaze*. Newbury Park, CA: Sage.
- Doehlemann, M. (1992). *Kedsomhed: Tolkning af et udbredt fænomen*. [Boredom: Meaning of a wider phenomena]. Copenhagen, Denmark: Hans Reitzel (orig. *Langeweile? Deutung eines verbreiteten phänomens* (Frankfurt am Main, Germany: Suhrkamp, 1991).
- Doherty, T. (1993). *Projections of war: Hollywood, American culture, and World War II*. New York: Columbia University Press.
- Donner, R. (Producer/Director), & Linson, A. (Producer). (1988). *Scrooged* [motion picture]. United States: Paramount Pictures.
- Ender, M. G. (2009). *American soldiers in Iraq: McSoldiers or innovative professionals?* London and New York: Routledge.
- Ender, M. G. (2005). Military brats: Film representations of children from military families. *Armed Forces & Society*, 32, 24–43.
- Feldman, E. S. (Producer), Niccol, A. (Producer), Rudin, S. (Producer), Schroeder, A. (Producer), & Weir, P. (Director). (1998). *The Truman Show* [motion picture]. Los Angeles: Paramount Pictures.
- Fish, S. (2009, Jan. 4). The 10 best American movies. *New York Times*. Retrieved from <http://opinionator.blogs.nytimes.com/2009/01/04/the-10-best-american-movies/>.
- Fisher, L. (Producer), Wick, D. (Producer), & Mendes, S. (Director). (2005). *Jarhead* [motion picture]. Los Angeles: Universal Pictures.
- Friedman, T. L. (2004, Nov. 11). "Groundhog Day" in Iraq. *New York Times*. Retrieved from <http://www.christusrex.org/www1/news/nyt-11-12-04b.html>.
- Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Straus, & Giroux.
- Gilbey, R. (2004). *Groundhog day*. London: British Film Institute.
- Globalsecurity.org. (2005). Improvised explosive devices (IEDs)/booby traps: IED overview. Retrieved September 18, 2006, from <http://www.globalsecurity.org/military/intro/ied.htm>.
- Goldberg, D. (Producer), & Reitman, I. (Producer/Director). (1981). *Stripes* [motion picture]. Los Angeles: Columbia Pictures Corp.
- Goldberg, J. (2005, Feb. 14). A movie for all time. *National Review*, pp. 35–37.
- Herr, M. (1977). *Dispatches*. New York: Knopf.
- Hinson, H. (1993, Feb. 12). "Groundhog Day." *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-srv/style/longterm/movies/videos/groundhogdaypghinson_a0a7e9.htm.
- Howe, D. (1993, Feb. 12). "Groundhog Day." *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-srv/style/longterm/movies/videos/groundhogdaypghowe_a0af6c.htm.
- Hurst, B. D. (Producer/Director). (1951). *A Christmas Carol* [motion picture]. England: Nettlefold Studios.
- Jewett, R. (1997). Stuck in time: Kairos, chronos, and the flesh in *Groundhog Day*. In C. Marsh & G. Ortiz (Eds.), *Explorations in theology and film* (pp. 155–166). Oxford, England: Blackwell.
- Jontz, S. (2003, June 5). Tanks' bulky presence helps keep the peace in Kirkuk. *Stars and Stripes*. Retrieved from <http://anysoldier.com/brian/Iraq/91.html>.
- Kenney, D. (Producer), & Ramis, H. (Director) (1980). *Caddyshack* [motion picture]. United States: Orion Pictures Corporation.
- KFI. (no date). *Soldier talk: Modern military lingo used by our troops in Iraq, Afghanistan, and elsewhere in the global war on terrorism* [audio podcast]. Retrieved from <http://www.kfi640.com/soldiertalk.html>.
- Kilik, J. (Producer), Ross, G. (Producer), Soderbergh, S. (Producer), & Ross, G. (Director) (1998). *Pleasantville* [motion picture]. Los Angeles: New Line Cinema.
- Klapp, O. (1986). *Overload and boredom: Essays on the quality of life in the information society*. New York: Greenwood Press.
- Koopman, J. (2004, August 14). U.S. soldiers throw Iraq school a lifeline. *Seattle Post-Intelligencer*. Retrieved from http://seattlepi.nwsource.com/national/186277_kids14.html
- Kuczynski, A. (2003, December 7). Groundhog almighty. *New York Times*. Retrieved from <http://nytimes.com/2003/12/07/fashion/07HOG.html>
- Leeper, M. R. (no date). Groundhog Day. *Internet Movie Database*. Retrieved May 1, 2005, from <http://reviews.imdb.com/Reviews/171765>
- Levinson, B. (2004, December 10). Bush, cabinet ignore soldiers need for basic mission status report. *The Triangle: The Student Newspaper of Drexel University*. Retrieved from <http://www.thetriangle.org/main.cfm>
- Lewis, C. (2005, April 5). The global war against Groundhog Day. *Training for Eternity* [Web log post]. Retrieved from <http://chaplain.blogspot.com/>
- Madison, D. S. (2005). *Critical ethnography: Methods, ethics, and performance*. Thousand Oaks, CA: Sage Publications.
- Mæland, B., & Brunstad, P. (2009). *Enduring military boredom from 1750 to the present*. New York: Palgrave Macmillan.
- Malo, J., & Williams, T. (1994). *Vietnam war films*. Jefferson, NC and London: McFarland & Company, Inc., Publishers.
- Moody, D. (2005, July 4). Soldiers make a difference each day in Iraq. *Wisconsin Rapids Daily Tribune*. Retrieved from <http://www.wisinfo.com/dailytribune/wrdtlocal/317876090500859.shtml>
- Moskos, Jr., C. C. (2006). *American military interaction with locals in OIF/OEF: Preliminary draft*. Electronic-mail communication with Generals Peter Pace, John Abizaid, James Jones, and Peter Schoomaker, (March 7). (Unpublished document available from the author).
- Moskos, Jr., C. C. (1970). *The American enlisted man*. New York: Russell Sage Foundation.
- National Park Service (2010). *Living in camp*. Retrieved December 25, 2010, from <http://www.nps.gov/history/museum/exhibits/gettex/index.htm>
- Office of the Surgeon General. (2006, May 29). *Mental health advisory team (MHAT-III): Operation Iraqi Freedom 04–06 REPORT*. Multi-National Force Iraq: Baghdad, Iraq and United States Army Medical Command: Washington, DC. Retrieved from the U.S. Army Medical Department website: http://www.medicine.army.mil/news/mhat/mhat_iii/MHATIII_Report_29May2006-Redacted.pdf
- Petraeus, D. H. (no date). *Letter to families of the 101st, from General Petraeus*. Retrieved September 18, 2006, from http://screamingeagles-327thvietnam.com/general_petraeus.htm
- Patterson, B. (2005, February 2). *Democrats' Groundhog Day: "In a fashion reminiscent of Genghis Khan. . ."* Retrieved October 9, 2006, from <http://www.humaneventsonline.com/article.php?id=6484>
- Reitman, I. (Producer/Director). (1984). *Ghost Busters* [Motion Picture]. Los Angeles: Columbia Pictures Corp.
- Reitman, I (Producer/Director). (1989). *Ghost Busters II* [motion picture]. Los Angeles: Columbia Pictures Corp.

- Scott, W. (1817/1995). *Rob Roy*. New York: Penguin Classics.
- Scott, W. (1819/2000). *Ivanhoe*. New York: Tor Books.
- Scott, W. (1825/2002). *The talisman*. San Bernardino, CA: Borgo Books.
- Segal, D. R., & Harris, J. (1985). Observations from the Sinai: The boredom factor. *Armed Forces & Society*, 11, 235–248.
- Shull, M. S., & Wilt, D. E. (1996). *Hollywood war films, 1937–1945*. Jefferson, NC, and London: McFarland & Company.
- Stormfax Weather Almanac. (2006). *Groundhog Day*. Retrieved September 18, 2006, from <http://www.stormfax.com/ghoGroundhogDayay.htm>.
- Suid, L. (1996). *Sailing on the silver screen: Hollywood and the U.S. Navy*. Annapolis, MD: Naval Institute Press.
- Suid, L. (2002). *Guts and glory: The making of the American military image*. Lexington, KY: University of Kentucky Press.
- Thompson, K. (1999). *Storytelling in the new Hollywood: Understanding classical narrative technique*. Cambridge, MA: Harvard University Press.
- Voeltz, R. A. (1998). *Groundhog Day*, déjà vu, and the myth of eternal recurrence. *Interdisciplinary Humanities*, 15, 179–186.
- Wikipedia (2010). *Groundhog Day (film)*. Retrieved January 9, 2010, from http://en.wikipedia.org/wiki/Groundhog_Day_movie.
- Wong, L., & Gerras, S. (2006). CU @ the FOB: How the forward operating base is changing the life of combat soldiers. Retrieved from Strategic Studies Institute website: <http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB645.pdf>.

Minorities in the Military

Karin De Angelis and David R. Segal*

Abstract

As American society becomes more socially diverse, the composition of the all-volunteer military, which is built through recruitment and retention, reflects this diversity. In this chapter, we examine the role of minorities in the military, with an emphasis on African Americans, Hispanics, women, and individuals who embody multiple minority characteristics. We begin with a discussion of the key macro- and micro-theoretical perspectives guiding research on minorities, including issues of social representation and legitimacy. Then, we discuss the integration experiences of racial and ethnic minorities and women, by focusing on formal policies regarding their participation, past and current concerns, and demographics. We transition to key arguments involving cohesion and military effectiveness used both for and against greater diversity in the ranks, followed by an examination of the interconnectedness among minorities, status, and power in military organizations. We conclude with future debates that address both current and future minority groups in a wartime military.

Keywords: Diversity, social representation, race, ethnicity, gender, cohesion, minorities

Minorities in the Military

Today's military, which consists of approximately 1.4 million active-duty and 800,000 reserve personnel, may be united under a common mission, culture, and organization; however, it is also a diverse force, particularly when analyzed through the lens of social diversity characteristics such as race, ethnicity, and gender (Department of Defense [DOD], 2009). Up until the mid-twentieth century, the military, which relied upon a mobilization model for manning its wartime force, was not a major institutional presence in American society, making it less responsive to major social trends (Segal & Segal, 2004). However, beginning with World War II and continuing through the Cold War until the present time, the American military has emerged as both a

force-in-being and a major social institution, heavily influenced by outside social forces, as well as a leading change-agent capable of influencing the broader society (Segal, 1989).

The military, for example, is often considered a leader in race relations since it integrated four years before *Brown vs. Board of Education* overturned the nineteenth-century "separate but equal" legal doctrine established by *Plessy vs. Ferguson*, and almost a decade prior to the Civil Rights Act, for which *Brown* served as a foundation. Yet, the military also has lagged behind American society generally, and even behind most of our military allies, regarding gender integration (Manning, 2008). As a consequence, the changing composition of the American military, including the presence of minority groups,

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represents the changing demographics of American society, but also represents the influence of broader social trends, as well as the military's willingness to incorporate these trends, in military manpower policy (Segal & Segal, 2004).

Despite its involvement in two concurrent wars in Iraq and Afghanistan, the American military relies on volunteers for its manpower needs. In the past, wars were fought with a mobilized force consisting of draftees, militia members, draft-induced volunteers, and true volunteers, who were mainly male and racially white. The 1973 transition from conscription to an all-volunteer force built around labor market principles brought concerns that the military would become less socially representative as demographic groups who were disadvantaged in the civilian labor market would join the military in disproportionate numbers (Marmion, 1971). In fact, this concern became a reality as the demographics of the force changed substantially with the transition to a volunteer model: the military now has more racial and ethnic minorities and more women than it had under conscription. Certainly this increase in minority groups brings concerns about institutional equity, social mobility, and the consequences of service on an individual's overall life course. However, the increased presence of minorities also means that the American military more accurately reflects the society it defends.

In this chapter, we provide both a historical and current perspective on the status of racial and ethnic minorities and women in the American military. We begin with an overview of the key macro- and micro-theoretical perspectives guiding research on minorities in the military. Then we transition to the integration experiences of specific minority groups, with a focus on past and current policies and demographics, as well as ongoing concerns for each group. We also address the individuals who embody multiple minority characteristics and have to deal with the possibility of being doubly disadvantaged. Finally, we focus on key arguments, used both for and against greater diversity within the ranks, and discuss the interconnectedness among minorities, status, and power in military organizations. We conclude with a discussion of future directions and debates regarding the role of minorities in the American military.

Theoretical Perspectives on Diversity in the Military

As American society has itself become more socially diverse, the composition of the all-volunteer military

also has become more diverse, particularly since the military must grow its force through recruitment and retention, rather than selective conscription. Yet even as the changing demographics of American society directly affect the composition of today's force, the role of diversity in the military remains a contested topic at both the macro- and micro-level, as the military must balance ongoing concerns of legitimacy and citizenship with overall effectiveness.

At the macro-level, the issue of diversity in the military extends to theories on the proper equilibrium between civilians and military service members, since the overall manpower policy adopted by the military may be attributed to broader projections of appropriate civil-military relations (Segal, 1989). Samuel Huntington, a political scientist, argued that objective civilian control, which is grounded in an autonomous professional officer corps, is essential for maximum military effectiveness. In contrast, civil-military relations may also rely on subjective civilian control, which, when combined with a weakened officer corps, may lead to disproportionate influence by special-interest groups at the expense of the military mission. This may lead to a civilianized military that functions as a "mirror of the state" rather than a "tool of the state." (Huntington, 1957, p. 83). As a consequence, the military becomes shaped by broader social currents—which may include calls for broader social representation in the ranks—at the expense of mission effectiveness. Huntington's solution was to prevent turning the military into an arena of ongoing social debate, by allowing it to function independently under the leadership of officers whose overall mindset may diverge from the society they defend.

In contrast to Huntington's perspective, which focused on military effectiveness and the possible negative impact of civilian society, Morris Janowitz, a sociologist, reframed the issue of civilian influence and diversity in the ranks not as a weakening force, but as critical for the institutional legitimacy of the military within a democracy. Rather than have the military operate as a self-contained entity untouched by civilian influence, Janowitz argues that the military must represent the society it defends, and that the officer corps must represent the enlisted force it commands. By having a socially representative force, the military gains legitimacy and prevents social isolation, and thus is better suited to perform its constabulary mission (Janowitz, 1973). Whereas Huntington did not see a greater good in having a diverse military force, and even speculated that it

could lead to a weakened force if prioritized over military objectives, Janowitz argued that diversity in the ranks was essential for a strong military, and that its incorporation would legitimize the military mission overall.

Although Janowitz advanced his perspective on social representation prior to the implementation of the all-volunteer force, his concerns regarding diversity and legitimacy became even more pressing when the military transitioned to a manpower model built upon the domestic labor market. The new model, designed by the President's Commission on an All-Volunteer Armed Force (also known as the Gates Commission), was based on economic principles, and approached recruitment and retention as rational decisions based mainly on financial inducements. With this change, the potential emerged for the reframing of military service as an occupation, rather than as a calling, leading to concerns that military service would no longer be framed as a patriotic duty, but rather as a job (Moskos, 1988; Segal, 1989).

Regarding social representation, the Gates Commission suggested that the racial and ethnic composition of the military would not change significantly with the transition to a volunteer force, even though legal restrictions or racial quotas were no longer viable manpower tools (Segal, 1989). Other social diversity characteristics, such as gender and ethnicity, were not considered at the time, because both women and Hispanics were such a small proportion of the overall force. However, although not predicted, this reliance on labor market dynamics created the unintended consequence of disproportionately attracting groups of people, such as racial minorities, who were disadvantaged in the civilian work force. Thus, within one year of the implementation of the all-volunteer force, which also coincided with an economic recession, African Americans joined and stayed in the military in unprecedented numbers, leading to their disproportionate representation in the armed forces.

The "wartime burdens" of military service are severe, and the military is a demanding institution even during peacetime, yet military service is still desired by many, because of the occupational opportunities it provides and the belief that military service is both a citizenship obligation and right (Binkin & Eitelberg, 1982; Moskos & Butler, 1996; Moskos & Wood, 1988; Segal, 1986). As was the case for African American enlistees in the early 1970s and for later minority groups such as women and Hispanics, the military often is viewed as a desired employer, particularly because it offers "pull

factors" such as standardized pay, equal entry at the bottom ranks, and a willingness to train unskilled personnel (Moore & Webb, 2000). However, the military's willingness to function as an equal opportunity employer also opens the possibility that the United States would fight its wars using an economically disadvantaged force, and that the poor, who were often racial minorities, would be the ones fighting and dying for American society. Thus, the issue of diversity in the military also touches upon citizenship duty, responsibility, and overall equity of service.

The United States maintains a citizen-soldier tradition of military service, originating from the militias of the American Revolution and continuing through the National Guard, which serves both federal and specific state governments. In the spirit of civic republicanism, military participation is viewed as a civic duty that implies shared responsibilities in exchange for equal citizenship (Burk, 1995; Snyder, 2003). For those groups such as women and African Americans, whose social characteristics prohibited them from enjoying full citizenship, military service was viewed as a way of improving their social status. Thus, not only have women and minorities sought to join the military as a way of benefiting from its economic opportunities, but they have also done so as a way of demonstrating their willingness to serve as equal citizens, allowing them, in turn, to claim the benefits of first-class citizenship. Therefore, theoretical perspectives on diversity in the military, as well as the real consequences of the demographics of the force, extend beyond debates of effectiveness and legitimacy to broader claims of citizen obligations and rights, which are issues at the core of America's national identity.

These concerns are reflected in the fact that the social representativeness of the military is reported to Congress annually by the Office of the Assistant Secretary of Defense for Personnel and Readiness; this requirement began in 1974, shortly after the implementation of the all-volunteer force (DOD, 2009). This report focuses on the representation of racial, ethnic, and gender groups among that year's accessions to the force, as well as in the overall force composition. While this chapter focuses on African Americans, Hispanics, and women in the American military as exemplars of the changes that have taken place, these annual reports focus on a wider range of ethnicities, the degree to which they are represented in the force, and the distribution of this representation across services, ranks, and military occupations.

Although we discuss only the largest minority groups, the Department of Defense also tracks the population representation of American Indians and Alaskan Natives, Asian Americans, and Native Hawaiians and Pacific Islanders, as well as the service members who embody multiple racial categories.¹ Asian Americans, for example, tend to be underrepresented in the officer corps, where they comprise only 3.2 percent of the force, compared to 9.4 percent of the comparable civilian population. They also are underrepresented in the enlisted force for all service branches, except the Navy, where they are overrepresented. Interestingly, Asian Americans are 6.15 percent of the active enlisted force for the Navy, which is greater than the civilian comparison group of 4.94 percent. At 1.87 percent, Filipinos are the largest Asian-American ethnic group in the active enlisted force, followed by Koreans at 0.35 percent, and Indians at 0.28 percent (DOD, 2008).

Native Hawaiians and Pacific Islanders, at 0.7 percent, are overrepresented in the enlisted force for all service branches when compared to their civilian representation at 0.4 percent; however, their representation in the officer corps at 0.2 percent is comparable to the civilian comparison group. Two percent of the enlisted force identifies as American Indian and Alaskan Native, which is higher than their civilian representation, at one percent. Their representation of 0.5 percent of the officer corps is on par with their civilian comparison group.

Overall, the Army has the highest proportion of racial minorities in its enlisted ranks, including those who are multiracial; however, if African Americans are removed, the Navy has the greatest number of racial minorities because of higher proportions of Asian Americans, Native Hawaiians and Pacific Islanders, and American Indians and Alaskan Natives. The Marine Corps has the greatest number of racially white service members in both the enlisted and officer corps (DOD, 2009). Thus, even though we focus on only certain minority groups, the Department of Defense tracks several racial groups, including how they intersect with gender and Hispanic ethnicity, in order to track who serves and whether their population representation, which may be influenced by broader social forces, is equitable with their civilian comparison group.

In addition to macro-level concerns on civil-military relations and citizenship, the impact of social diversity and representation in the military extends to other levels of analysis, including organizational processes and group interactions, leading to both theoretical concerns and real consequences at

the micro-level. The social diversity characteristics of race, ethnicity, and gender are considered to be ascribed, rather than achieved characteristics, and their application extends beyond the individual to group categorizations. At the individual level, ascribed characteristics cannot be changed and are constructed through biologically determined attributes such as sex and skin color. Social groups that are defined by these ascriptive characteristics are assigned group-based characteristics that often trump individual merit, thereby influencing individual destiny by group membership (Segal & Kestnbaum, 2002). Depending on their personal social status, these characteristics may open or limit opportunities for individuals. They may also function, as demonstrated throughout military history, by excluding populations from institutional participation, despite achieved, individual skill. Although this is no longer the case, race alone was once a legitimate reason for excluding or segregating entire groups of people from the military (Gropman, 2006). Likewise, regarding gender, women's service has transitioned from complete formal exclusion, through acceptance only as auxiliary members of the force and segregation in gender-defined branches, to an incremental opening of positions and ranks (Manning, 2008). As racial and gender minorities, African American women have had to negotiate multiple statuses and policies, so, even as African American men experienced greater integration in the ranks, African American women were limited from full military participation because of their gender (Moore, 1996).

Regarding all social diversity characteristics, when "closed-ranks" institutions, such as the military, allow individuals of previously excluded groups to join them, the qualities ascribed to that group shape individual opportunities and interactions (Segal & Kestnbaum, 2002). The processes and perceptions shaping interactions also are related to the proportions of different categories of people within the organization as well as the group's overall status (Kanter, 1977). As a result of their composition, organizational groups may demonstrate predictable, visible interactions at the individual level that also influence the larger group culture.

In particular, both women and, at times, African Americans and Hispanics, have functioned as tokens in the military because of their small proportional presence (Kanter, 1977). Tokens encounter certain perceptual phenomena, such as increased visibility and group polarization, and as a consequence, tend to react with typical responses such as high

performance pressures and exaggerated stereotyping (Kanter, 1977). For all newly integrated social groups, proportions and status play prominent roles since individual members must navigate the distorted perceptions that condition their micro-level interactions as well as those that shape their broader organizational role. Thus, the overall impact of diversity and social representativeness extends not just to broader concerns of diversity, effectiveness, and legitimacy, but also to processes of interaction and group dynamics. In short, it has real consequences, which we discuss in the upcoming sections on African Americans, Hispanics, and women in the military.

African Americans in the Military— Past and Present

Historically, the United States has fought its wars using a force that was predominantly male and racially white. However, racial and ethnic minorities, as well as women, have participated in every major conflict, beginning with the Revolutionary War, although they have served under different conditions from their white male peers, as well as from each other. The historical experience of racial and ethnic minorities and women within the United States military are frequently paired as common ventures with similar restrictions, policy changes, and overall treatment. However, despite their common experience as previously excluded groups, the statuses of groups such as African Americans, Hispanics, or women have not been uniform throughout history, nor are their current positions within the institution easily comparable. The historical experiences of these different groups also change for those service members who embody two or more minority characteristics, and thus, because of the intersection of race, ethnicity, and gender, must negotiate multiple identities and restrictions (Collins, 2000; Crenshaw, 1991).

African Americans, who are the largest minority group in the military, are not unique in either their familiarity with individual-level prejudices or in their experience with legally required segregation. However, they are unique regarding the duration and harshness of their conditions of service. From the end of the Civil War up to the Korean War, African Americans served in racially segregated units, including combat units, such as the black cavalry regiments on the Western frontier, known as the Buffalo Soldiers. Yet, despite their high performance, the military kept African Americans in separate units because of concerns regarding their loyalty

and morality, as well as the fear that they would target their white counterparts with misguided violence (Gropman, 2006; Mershon & Schlossman, 1998). These restrictions to specific units placed a low ceiling on their numerical representation. And although they did serve in the combat arms, African Americans predominantly were limited to only a few menial occupations such as servant, laborer, and steward, because of concerns regarding their mental ability. Even the black combat units were frequently assigned to non-combat missions. Thus, the military, as a microcosm of American society, incorporated the legal ruling of “separate but equal” into its own formal policies, leading to institutionalized racism within its ranks. The service of African Americans remained an unresolved issue for both segregationists, who viewed African Americans’ lack of military service as increasing the combat risk of white men, and civil rights activists, who viewed military service, particularly in the combat arms, as a sign of equal citizenship.

Despite the continued enforcement of segregation, African Americans experienced significant policy changes in the 1940s in support of the total mobilization required for World War II (Gropman, 2006). Because of political pressure, the military opened more jobs to African Americans, but these jobs were still segregated and menial (Gropman, 2006; Nalty, 2003). Furthermore, the military opened only a small proportion of military units to African American personnel, as demonstrated by the Army’s dedicated use of only two out of 89 divisions for African Americans, both of which had white commanders (Gropman, 2006). Only a small number of African American men earned commissions, and despite their officer status, the military only reluctantly granted them command over same-race personnel (Nalty, 2003). The lone exception of a segregated combat unit with African American leadership was the Tuskegee Airmen, who only served in combat after much delay in their training and clearance for battle (Gropman, 2006).

In addition to wartime stresses, African Americans also felt pressures from the civilian communities who disapproved of their utilization within the military. African American service members, particularly those stationed in the South, faced incredible racism from the surrounding civilian community and struggled with such basics as housing, spousal employment, and education for their children (Gropman, 2006). This was a particular issue for African-American soldiers from Northern states, since most army training was conducted at

camps in the South. Many soldiers therefore experienced regional relocation, which was associated with differences in regional norms of race relations. When black soldiers were surveyed regarding their preferences for camp location, three quarters of the men from the North expressed preferences for camps in the North, as against seven percent who would have preferred southern assignments. Among black soldiers being trained in the South, two-thirds expressed a preference for the North, as against 18 percent who preferred the South.

Interestingly, among black soldiers from the South, a plurality of those being trained in the North preferred that region (44 percent), but almost a third expressed a preference for the South. And among those being trained in the South, almost two-thirds wanted to stay in that region, while only 14 percent expressed a preference for the North. Both black and white soldiers tended to prefer the regions they came from. It is notable that black soldiers gave very different reasons for these regional preferences. A majority of those expressing a preference for the North cited regional differences in racial treatment (57 percent). Among those who preferred the South, a plurality noted family ties (43 percent), and a quarter noted that the Southern climate was preferable (Stouffer et al., 1949a, pp. 550–556).

The experience of black soldiers in the continental United States contrasted sharply with the African American experience abroad. In her research on the African American members of the Women's Army Corps during World War II, for example, Moore (1996) reports that these women received a warm reception in Great Britain and a somewhat tempered, although not negative, response in France.

After the successful conclusion of World War II, President Truman issued Executive Order 9981, which called for "equality of treatment and opportunity" regardless of race or national origin (Dansby & Landis, 2001; Gropman, 2006, p. 204). This order, which often is credited with desegregating the military, actually did not lead to the integration of units, but rather reinforced the practice of separate units built around the perception of equal opportunity. Rather than from the civilian agencies of government, the real change came later from military leaders who realized that segregated forces were expensive and ineffective and pushed for change within their own service branches.

Uniformed military leaders led integration efforts during the Korean War, not because of a prevailing civil rights mentality, but because of concerns about

bureaucratic inefficiency (Horner & Anderson, 1994). Their decision to integrate came after witnessing the performance of African American troops in World War II in segregated units and in Korea in both integrated and segregated units; social science research did not guide their decision initially (Gropman, 2006). The Air Force desegregated first in 1949 by ending racial quotas, placing personnel in occupations where they qualified, and ending Jim Crow segregation on bases (Gropman, 2006). Integration in the Army began in the combat zone in Korea so that black replacements could be assigned to previously all-white units that had taken combat casualties and fatalities, rather than waiting in replacement depots for openings in black units, and by 1954, the entire Army was integrated. The Marine Corps and Navy began to integrate in 1951, but took much longer to complete the process.

To guide future policies on race relations, the Army conducted surveys studying the attitudes of combat troops in Korea toward racial integration, also known as Project CLEAR (Bogart, 1969). The Army expected the survey to show a preference for a return to segregation; however, since results supporting such a policy were not forthcoming, the Army classified the report of the surveys and withheld it from circulation. As suggested by Allport's "contact hypothesis" (1954), the survey found that soldiers who served in integrated units preferred integration. This hypothesis argues that increased contact between previously separated groups may lead to decreased prejudices if certain conditions are met.² Thus, an important lesson from the Korean War experience is that people learn to accept integration through exposure, mixed-race units are more efficient than segregated ones, and that leadership, particularly from the higher ranks, is critical for successful integration (Bogart, 1969).

The Vietnam War was a particularly tumultuous time in racial integration because of popular opinion that African Americans were disproportionately burdened with fighting and dying in the war. In fact, during the initial months of the war, African Americans suffered 20 percent of combat deaths in theater, despite being only 11 percent of the recruitment population (Segal & Segal, 2004). To combat real and perceived inequalities in the draft system, military leaders reduced the number of African Americans placed in the frontlines by redirecting many to service and service-support occupations. This assignment change reduced the combat death rate of African Americans to 12 percent, making

their wartime burden more in line with their overall population (Segal & Segal, 2004).

Research since the war has revealed that social class, and not race, was the leading determinant of the distribution of casualties for enlisted personnel (Badillo & Curry, 1976). Because of the military's reliance on bureaucratic efficiencies within the assignment process, African Americans were at a disadvantage with occupational placement since they were disproportionately poor, and therefore, less likely to have the testing skills or cultural capital to lobby for or be placed in occupational specialties away from the frontline (Badillo & Curry, 1976). As a result, the poor and lower-middle-class, who were disproportionately African American, suffered an inequitable amount of casualties up until the time when the Pentagon changed its assignment process.

The Vietnam War also brought changes in policy regarding race relations within the institution. The desegregation experienced during the Korean War did not remove the racism which continued to shape the experiences of African Americans and other minority groups. In particular, this racism manifested itself in Vietnam-era race riots aboard several Navy ships, including the carriers USS *Kitty Hawk* and USS *Constellation*, as well as at Travis Air Force Base in California. (Astor, 1998; Dansby & Landis 2001; Gropman, 2006). Following the race riots that occurred at several installations, the Department of Defense mandated race-relations education, complete with equal opportunity officers, to assist commanders with maintaining an unbiased, racially diverse command climate (Dansby & Landis, 2001). It established the Defense Race Relations Institute (DRRI) (now the Defense Equal Opportunity Management Institute [DEOMI]) to train race relations officers and noncommissioned officers (Hope, 1979). This equal opportunity focus later expanded to include ethnicity, national origin, and gender (Moskos, 1994).

With the 1973 implementation of the all-volunteer force, African Americans assumed ever greater representation in the military, a consequence not predicted by those responsible for designing the new military force (Janowitz & Moskos, 1974; Moskos & Butler, 1996; Segal & Segal, 2004). Since African Americans are also more likely to reenlist, their numbers tend to increase with time. Although their numbers allowed the American military to meet its manpower goals, the overrepresentation of African Americans, once again, led to concerns over racial imbalance. There were also calls for increasing

the presence of more advantaged groups, such as middle- to upper-class whites, as a way of indirectly reducing the number of African American recruits and second-termers, leading to a greater racial balance within the force (Janowitz & Moskos, 1974).

When demand for manpower is high, such as during the Vietnam War, the services often lower the aptitude and education requirements for accessions, creating the unintended consequence of increasing the representation of minority groups who tend to have lower test scores and high school graduation rates than their white peers. When demand for manpower decreases, the services tighten their standards, making military enlistment more difficult for disadvantaged groups. Known as the "recruit/reject hypothesis," it has been argued that the services actively recruit racial minorities when faced with manpower shortages and that, when recruitment numbers of whites are high, are quick to exclude African Americans, and thus limit their access to the peacetime benefits of service (De Angelis & Segal, 2009; Gropman, 2006; Moore, 1996).

The military's racial composition continued to change through the 1980s, partly as a reflection of the changing demographics of American society, but also in reaction to military manpower policies, which significantly influence recruitment, occupational placements, and commissioning opportunities (Segal & Verdugo, 1994). The Army, in particular, saw a steady rise in numbers of African American service members through the 1970s, with a peak in 1979 of 40 percent of all enlisted accessions. This increase occurred at the same time that overall base pay failed to keep pace with civilian pay, making military service less attractive for more advantaged members of society, followed by the replacement of the G.I. Bill with a less-attractive contributory educational assistance program. The accession numbers of African Americans slowly began to decline in the 1980s, in line with pay increases and the implementation of new G.I. Bill benefits (Segal & Verdugo, 1994).

The proportional representation of African Americans stabilized during the 1990s at 20 percent and began to decline in 2001; however, they still serve in disproportionate numbers in the enlisted ranks (Segal & Segal, 2004). For example, in Fiscal Year 2004, African Americans composed 20.6 percent of active duty personnel, yet they were only 12.6 percent of the recruiting-age civilian labor force. In Fiscal Year 2006, African Americans were 19.3 percent of active duty personnel compared to

12.6 percent of the civilian labor force. Currently, African Americans make up 19.6 percent of the active duty enlisted force, making them still overrepresented in the armed forces when compared to the overall proportion of African Americans in the civilian labor force (DOD, 2009). African Americans remain underrepresented in the officer corps relative to the total civilian population, but they reflect black representation in the college-graduate population, from which officers are drawn, and their numbers are increasing, particularly as African American officers have higher retention rates than their white counterparts (Hosek et al., 2001).

Contrary to Vietnam-era assumptions, African Americans are concentrated in support and administrative positions, rather than the combat arms. This occupational concentration has implications for African Americans once they transition from the military to the civilian workforce. Specifically, African Americans with work experience in occupations with high civilian transferability may experience a hiring preference over their peers without military experience. However, this preference does not carry over to military veterans, of any race, with combat arms experience. Thus, African Americans' rational attraction to the military as a fair employer with significant civilian applicability may, in fact, create positive occupational opportunities through the veterans' life course (Kleykamp, 2009).

African American service members have served in every major American conflict, even though they have done so under predominantly harsh, discriminatory conditions. Their military participation, particularly during the early years of the Vietnam War, raised questions about the inequities of service, and framed larger concerns about social representation, legitimacy, and citizenship rights and obligations. Furthermore, their service, particularly during the Korean War, answered many micro-level concerns about race relations and military effectiveness by proving the efficacy of integration. With the 1973 transition to the all-volunteer force, African Americans became an important manpower source, demonstrating that their race was only a barrier for service under certain conditions. When the military needed manpower, as it did during the Korean War and the early 1970s, African Americans filled the void.³ Yet, inequities continue as African Americans remain overrepresented in the military, albeit in jobs away from the front lines. However, as the numbers of African Americans decline, Hispanics, who are another minority group, have increased

their proportional representation, particularly in the most combat-oriented occupations. The concentration of Hispanic men in the combat arms reopens the issue of social representation in the ranks, particularly during a time of war.

Hispanics in the Military—Past and Present

Whereas the history of African American service members in the American military has been well scrutinized, the military service of Hispanics has received much less attention. Hispanics were not even identified by the Census Bureau, or by its military equivalent, the Defense Manpower Data Center, as a unique ethnic group until the 1970s. When the Army sought to begin research on Hispanic soldiers in the early years of the volunteer force, it had to screen for Spanish surnames to identify research participants (Barton & Kinzer, 1977). Hispanics have also received much less coverage from military equal opportunity programs, which emerged mainly in reaction to the poor race relations between white and African-American service members. However, despite the relatively recent quantification of their military participation, Hispanics, like African Americans, have served in every major American conflict, with numbers ranging from the service of 10,000 during the Civil War to the more than 250,000 who served during World War II (University of Texas Libraries, 2010; Rosenfeld & Culbertson, 1992). Currently, the military participation of the Hispanic population has become a manpower concern as Hispanics emerge as the fastest growing, and at 12.5 percent, the largest ethnic minority group, in the American population (U.S. Census Bureau, 2010).

It is important to recognize that the term "Hispanic" is an administrative category rather than a single ethnic group, and includes people from a range of cultural backgrounds and immigrant statuses, including Puerto Ricans, Mexican Americans, and Cuban-Americans, among others. At 75 percent, Mexican Americans are the largest group in the American Hispanic population; they also are the largest Hispanic group in the military, at 4.49 percent. Puerto Ricans are the next-largest group at 10 percent of the American Hispanic population, and 1.70 percent of Department of Defense personnel (Asch et al., 2009; DOD, 2008).

The Hispanic population, with its concomitant racial diversity, has a significant impact on the overall demography of American society, and as a result, also has a substantial role in the demographic makeup of the American military. Between the years

of 1980 through 2000, the Hispanic population in the United States increased from about 22.4 million people in 1990 to about 35.3 million people in 2000, and accounts for more than 40 percent of population growth in the United States (Saenz, 2004). Hispanics now account for about one in eight people in the United States, and are also a very young population. Demographic projections suggest that Hispanics will be approximately 20 percent of the American population by 2025, with even greater numbers among 15- to 19-year-olds, who are a key recruiting group (U.S. Census Bureau, 2010). Based on these projections, the increased service of Hispanics in the military is important, not only for building and maintaining a volunteer force, but also for macro-level concerns regarding legitimacy and social representation.

The service of minority groups in the military often comes under scrutiny because of concerns that disadvantaged groups in the population, such as African Americans, disproportionately suffer wartime burdens. However, Hispanics, when compared to their proportional presence within the civilian labor force of comparable age, are underrepresented in the military, mainly resulting from their low rate of high school graduation (Asch et al., 2009). However, when compared to the overall Hispanic population who meet enlistment standards, Hispanics actually are overrepresented in the American military (Segal, Thanner, & Segal, 2007).

Since the 1980s, the proportion of Hispanics in the military has steadily increased, particularly with the rise in second-generation Hispanics who have the linguistic and educational requirements for service, which is viewed as a positive for military manpower (Dempsey & Shapiro, 2009). Hispanics tend to do very well in the military, with lower attrition rates, both during basic training and during their first term of service, than their peers (Hattiangadi, Lee, & Quester, 2004). As a result, military manpower policymakers see the recruitment of Hispanics as a “win-win” situation for the military since the military can focus on recruiting from a group with great propensity to serve as well as a history of success in the organization itself (Hattiangadi et al., 2004). Given the number of pre-military-age Hispanics (and probably an increasing high school graduation rate among them), the representation of Hispanics in the military is likely to increase.

For Hispanics who are non-citizens, military service has become a viable employment option, particularly for those seeking American citizenship. In recognition of the service of non-citizens, and as a

recruiting tactic, the United States government now expedites naturalization requests for non-citizen service members, a group that includes multiple nationalities, but claims a sizeable proportion of Latino immigrants (Hattiangadi et al., 2005). Despite being non-citizens, legal permanent residents are eligible to serve in the American military, although they are not permitted in occupational specialties that require a security clearance and cannot be commissioned. It is estimated that 35,000 non-citizens currently serve in the active component of the military, and that 8,000 non-citizen recruits join the force each year (Hattiangadi et al., 2005). In recognition of the service of non-citizens, as well as the potential to motivate an important recruitment pool, in 2002 President George W. Bush issued an executive order shortening the service requirement for expedited naturalization from three years of service to one day of service during wartime; he also declared the post-9/11 period as a “period of hostilities” (Hattiangadi et al., 2005; Lee & Wasem, 2003, p. 1). This shortened timeline does not apply to service during peacetime, which requires non-citizens to serve in the military for at least one year (Lee & Wasem, 2003). All expedited naturalization requests for military service members are contingent upon successful completion of the initial enlistment contract under honorable conditions. Since the implementation of this provision, the United States Citizenship and Immigration Services has naturalized more than 39,835 service members and has granted posthumous citizenship to 116 members (U.S. Citizenship and Immigration Services, 2008).

Overall, Hispanics are emerging as a very important source of military labor, leading to greater recruitment efforts toward this ethnic community (Gifford, 2005). The increased presence of Hispanics in the armed forces may lead to a military that represents the society it defends, leading to increased social legitimacy (Janowitz, 1960). A diverse military force means that no single group suffers a disproportionate percentage of wartime casualties. However, the increased diversity in the force may not be a fair distribution if Hispanics are in service branches and occupations that are at greater risk for combat service (Gifford, 2005). During Fiscal Year 2007, the Marine Corps had the highest percentage of Hispanic recruits, with 17 percent of male and 22 percent of female recruits self-identifying as such, followed by the Navy with 17 percent of men and 19 percent of women recruits. The Air Force had the lowest percentage of Hispanic recruits, with 11

percent of men and 13 percent of women self-identifying as Hispanic. In contrast, the Army, which has the greatest percentage of African American service members and the second-largest number of ground combat positions, attracted only 11 percent male and 12 percent female Hispanic recruits (DOD, 2009). The Marine Corps also has the highest proportion of Hispanic officers, at six percent, while the Air Force has the lowest, at two percent. These numbers are lower than the comparable group of Hispanic college graduates, which is around 10 percent (Crissey, 2009).

Because of their concentration in the Marine Corps, Hispanics, particularly the men, may be at a disproportionately higher risk of wartime casualty because of their recruitment into the most combat-oriented service branch. This is further exacerbated by the overrepresentation of Hispanic men in the combat occupational specialties, such as infantry, in the Marine Corps. In contrast, African American service members are more likely to serve in support positions, and white service members are more likely to serve in technical positions, although they also have a substantial presence in the combat arms (Segal & Segal, 2004).

Although in the current battlefield there is less of a clear line separating the front line from the rear, certain occupations still have increased combat risk. In his study of combat casualties and race during the first year of the Iraq war, Gifford (2005) found that no racial or ethnic minority has experienced disproportionate casualties. However, during periods of active, aggressive fighting, Hispanic casualties were higher than their representation in ground combat units. Gifford (2005) suggests this may be related to the Hispanic military experience, which has not been studied in detail.

Furthermore, certain occupations, such as infantry, have less transferability into the civilian sector, making the transition from military service member to civilian job-seeker more problematic. In her study on the effect of prior military service on hiring for entry-level work, Kleykamp (2009) finds that veterans with military experience in the combat arms do not experience a hiring advantage, regardless of race or ethnicity. Military service generally has been credited with providing a “bridging environment” for less-advantaged groups by providing access to and experience with certain dispositions that allow the service member to more easily integrate into civilian work environments (Fredland & Little, 1985; Browning, Lopreato, & Poston, 1973; Lopreato & Poston, 1977). Thus, Hispanics, who

are concentrated in the combat arms, may find that their military service provides less social and cultural capital than for those veterans who served in technical or administrative specialties, making the bridge from military to civilian work more difficult to cross.

The changing demographics of American society, coupled with the ongoing wars in Iraq and Afghanistan, raise concerns about the social representativeness of today’s military. These concerns are further exacerbated by the pressures of building and maintaining a wartime force through voluntarism. During the initial transition from a conscripted to an all-volunteer force, the military would not have met its manpower goals without the service of African Americans. Likewise, as the recruitment and retention numbers of African Americans have declined within the past decade, the increased accession numbers of Hispanics are beginning to fill the manpower void left by the declining numbers of African Americans (Segal & Segal, 2004). Thus, as one minority group reduces its presence to a proportion more in line with its civilian demographics, another minority group begins increasing its presence so that it is more in line with its broader demographics. Both groups have been essential to the American military; however, there is another group whose service has also been critical, yet often overlooked and even prohibited in the American military. Women, including those who are racial and ethnic minorities, have been a key component of the American military, both during times of wartime mobilization, and particularly with the implementation of the all-volunteer force.

Women in the Military—Past and Present

In addition to the changing racial and ethnic demographics of the military, the armed forces have also experienced a restructuring of their gender composition. Although women are not a minority in the general population and have participated in every major American conflict, going as far as to disguise themselves as men during the Revolutionary War, women’s service has been limited by legal exclusion, gender quotas, and occupational restrictions. Women experienced a broadening of opportunities that began during World War II; however, the integration of women into the military has been through incremental policies that still do not allow for their full participation. In particular, socially constructed views of gender appropriateness, as well as negative stereotypes, continue to relegate women into separate, yet unequal groups within the military

(De Angelis et al., forthcoming). Similar to the experience of African Americans, the increased integration of women has occurred at times of military necessity, while their service has been more restricted, and less recruited, during peacetime (Manning, 2008).

After the bombing of Pearl Harbor, the War Department actively incorporated women into separate military corps through the Women's Army Auxiliary Corps bill (Moore 1996). Mobilized women served as noncombatants within each service through emergency groups such as the Navy-based WAVES (Women Accepted for Voluntary Emergency Service) and the Army-based WAAC (Women Auxiliary Army Corps). However, their presence was often challenged by military leaders and by the American public who felt that the military was no place for women (Moore, 1996). Indeed the WASPs (Women Airforce Service Pilots) who flew aircraft to combat theaters, were defined as civilians, although they wore uniforms and were subject to military discipline.

Despite their service during World War II, women did not achieve permanent military status until the 1948 passing of the Women's Armed Services Integration Act. In addition to formalizing their military standing, this act also established quotas regarding women's participation and limited their occupational opportunities (Binkin & Bach, 1977). Beginning in 1948, women could only constitute up to two percent of the active-duty peacetime force and were prohibited from serving on most Navy ships and on all combat aircraft. Women officers, who were limited to 0-5 (lieutenant colonel or commander) as their highest possible rank, could constitute no more than 10 percent of all female service members and were forbidden to command men (Manning, 2008). In 1967, Public Law 90-130 modified the Women's Armed Services Act by lifting the two percent ceiling on women's participation, removing the prohibitions and caps on officer promotions, and opening more positions to women (Manning, 2008). These changes, however, did not have an immediate impact on the gender demographics of the force, which remained around the two percent mark.

Central to women's evolving position within the military was the implementation of the All-Volunteer Force in 1973, which led to the abolition of the Women's Army Corps, increased recruiting goals for women, and brought increased attention to individual skills. Prior to this transition, as of 1972, women were only 1.9 percent of the military

population, so their proportional presence did not change with the removal of the two percent cap in 1967 (Segal & Segal, 2004). Since 1973, however, women's military presence has grown, and even peaked at around 15 percent in 1990. Yet even with this growth, the percentage of women in the military fluctuates between 10 and 15 percent of the total force, making them a minority in the military. As of Fiscal Year 2008, women made up about 14.3 percent of the active-duty force (Manning, 2008). Based on their proportional presence, women also continue as a token population in the American military, despite changing policies that have increased their military opportunities (Kanter, 1977).

The proportion of women in the military is not only shaped by recruiting and retention policies, but is also shaped by the gradual opening of positions to them. In 1988, the Department of Defense established a Risk Rule, which set a single standard for determining in which positions women may serve across the service branches. Specifically, in addition to the offensive ground combat positions that remain closed to women, this rule clarified "that noncombat units can be also closed to women on grounds of risk of exposure to direct combat, hostile fire, or capture, provided that the type, degree, and duration of risk is equal to or greater than that experienced by associated combat units (of similar land, sea, or air type) in the same theaters of operation" (DOD, 1988, p. 19). Ultimately, this rule led to the opening of 30,000 additional slots, while also maintaining the closure of the most combat-oriented positions. Following the success of women in the 1990-1991 Persian Gulf War, the Department of Defense opened to them positions on combatant ships and in combat aircraft, and later rescinded its Risk Rule (Manning, 2008). Women are now restricted only from serving in the enlisted submarine positions and in offensive combat positions at the brigade level or lower, despite the nonlinear nature of today's battlefield and the necessity of their participation in community patrols and civil affairs. Even with past and present wartime successes, women still remain a significant minority within the military and are prohibited from serving in the positions that most embody military service and sacrifice.

Although there is a wide variation in occupational opportunity by service branch, currently over 92 percent of military occupational specialties have been opened to women, with more changes looming (Manning, 2008). The Air Force has the greatest

number of open occupations for women, at 99 percent, while the Marine Corps, which relies upon the Navy for a large proportion of its support services and is the most ground combat-oriented, has the lowest, at 62 percent.

The most recent large change came with the opening of combatant ships and aircraft, but there have been smaller changes in occupational openings, particularly as military occupational specialties and Navy ratings have been combined, removed, or merged (Manning, 2008). The recent opening of submarine positions to commissioned Navy officers is a significant policy change for military women, and demonstrates the flexibility of past arguments against women that concentrated on the cost of retrofitting submarines for both sexes (Iskra, 2007). Although the berthing issue remains unresolved for the more compact enlisted quarters, the Navy is assigning its first group of women submarine officers to the larger ballistic submarines that can be more easily converted into coed officer quarters (Associated Press, 2010).

This change, however, does not have a large statistical impact on the number of open occupations. Enlisted submarine positions, such as missile, fire-control, and sonar technician, remain closed. Thus, in addition to maintaining a steady presence in jobs such as nursing and administrative support, an increasing number of women are serving in the combat specialties, such as combat aviation and surface warfare, which are now open to them.

The different proportion of occupations open to women among the service branches also influences the gender composition of each service branch. The Air Force, which has the greatest number of positions open to women, has the greatest proportion of women in the ranks, at approximately 19.6 percent (Manning, 2008). In contrast, the Marine Corps, which as the most combat-oriented of the services has the lowest number of positions open to women, also has the lowest percentage of women in the ranks, at approximately 6.3 percent (Manning, 2008). This difference in women's representation across the service branches may result from both occupational opportunities and service culture, with the Air Force having a more technical focus, while the Marine Corps is more expeditionary, and grounded in the belief that "Every Marine [is] a Rifleman."

The proportional representation of women in the military certainly is shaped by manpower policies and occupational opportunity; however, other social forces, such as the broader labor market, also

shape who serves. Regarding women as an under-represented population, the numbers change when focusing on the personnel who embody the intersection of multiple minority statuses, such as race, ethnicity, and gender.

Unlike women in the military generally, African American women are more likely to serve than their male peers (Segal, Thanner, & Segal, 2007). As of Fiscal Year 2007, African American women comprised 31 percent of enlisted women and 16 percent of female officers, compared to African American men who constituted 17 percent of enlisted men and 7.2 percent of male officers.

The differences in representation by gender also carry over to service members of Hispanic ethnicity, who may be of any race. Although the differences between Hispanic men and women are not as great as those between African American men and women, currently Hispanic women are equal, and almost surpassing, Hispanic men in representation. For Fiscal Year 2007, Hispanic women constituted 12 percent of the enlisted force, versus 11 percent of enlisted men who self-identified as such. For commissioned officers, approximately five percent of male and female accessions identified as Hispanic. Interestingly, whereas the representation of Hispanic men and women is about equal in the Army and Air Force, there is a substantial difference in representation between the genders in the Navy and the Marine Corps, with more Hispanic women serving in both branches. The Marine Corps also has the highest proportion of Hispanic officers, at around six percent, while the Air Force has the lowest at two percent (DOD, 2008, p. 26). It is unclear why Hispanics, particularly Hispanic women, are drawn to the Navy and the Marine Corps over the Army and Air Force, although this difference may be because of targeted recruiting campaigns (Segal, Thanner, & Segal, 2007). Overall, the increased representation of Hispanic men and women may be related to the increased stability and opportunities found within the military versus civilian society.

Minorities, Cohesion, and Military Effectiveness

The demographics of the American armed forces, whether from a racial, ethnic, or gender perspective, suggest an increased diversity reflective of the broader demographic changes occurring in American society. As discussed, there are consequences to this diversity that may impact public opinion, the perceptions of both military leaders and the rank and file, and manpower policies determining who serves

and in what capacity. At the macro-level, the military must balance ongoing concerns of social representation, legitimacy, and citizenship with overall effectiveness. Concerns about diversity and effectiveness, however, do not just reside at the large-scale level, but also include organizational and small-group processes that cite diversity's influence on cohesion as a critical component of military effectiveness. As a result, we focus not only on theoretical and demographic concerns, but on the practical relationships among diversity, cohesion, and military effectiveness.

From a sociological perspective, there are several different types of cohesion, and the distinctions among them determine whether diversity helps or hinders the interactive processes essential for mission success. At its basic level, *cohesion* traditionally is defined as a type of social glue that keeps individuals tied to the group; it is conceptualized mainly in terms of peer relationships (Segal & Bourg, 2002). Past studies demonstrate a relationship between cohesion and effectiveness; however, the direction of causality remains unclear, making claims about cohesion leading to effectiveness debatable since effectiveness may also lead to cohesion (Segal & Bourg, 2002).

Methodological and theoretical advances have led to increased specification of different types of cohesions, with the greatest difference existing between "social cohesion" and "task cohesion." Social cohesion, as an expression of affective bonding, describes positive interpersonal attractions where individuals develop group friendships. This affective bonding extends beyond formal military duties to informal interactions; the individuals, in short, are friends and like to spend time together (Kier, 1999; Segal & Bourg, 2002). Socially cohesive groups tend to be socially homogeneous as well. In contrast, task cohesion, which is instrumental rather than affective bonding, is the shared dedication to a goal and the ability of the group to come together for its completion. Rather than on social homogeneity, task cohesion relies on group recognition that each individual brings a different, yet valued, skill set.

Despite this distinction between social and task cohesion, there are assumptions that military units will perform better if they are composed with similar types of people since people prefer to associate with others like them, leading to greater cohesion, and by extension, increased effectiveness (Segal & Kestnbaum, 2002). This willingness to link social cohesion and military effectiveness stems from World War II research that demonstrated the

importance of group solidarity in combat, among other motivators.

For example, Shils and Janowitz (1948), in their research on the German Wehrmacht in World War II, found that the soldier's ability to fight in the face of certain defeat was based on the strength of the primary group and its ability to avoid social disintegration. Based on their research, Shils and Janowitz argue that it was the strength of primary group ties, built on a foundation of social cohesion, and not ideological or national values, which motivated and sustained the German soldiers. However, Shils and Janowitz based their data on German prisoner of war interrogations, making the validity and reliability of their data questionable (Segal & Kestnbaum, 2002).

Perhaps the most well-known World War II social research, both in methodological advances and empirical findings, is the experimental and survey work completed by the Information and Education Division of the War Department, including the two-volume work, *The American Soldier*, led by Samuel Stouffer (Segal & Segal, 1993; Stouffer et al., 1949a; Stouffer, et al., 1949b). These studies introduced a range of research topics and policy issues including cohesion, morale, primary groups, and leadership using groundbreaking survey questionnaires and attitude measurements (Segal & Segal, 1993). Data on combat motivations among ground troops were collected through questionnaires after the experience, so it may be more a reflection of what the individuals would like to believe motivation was rather than their actual motivations (Stouffer et al., 1949b).

Stouffer and his research team approached combat as a social situation, with a focus on organizational/formal and informal levels of influence experienced while in combat. Rather than formal influence, the informal group emerges as a primary combat motivation for enlisted men, with "solidarity with group" being the second-most-cited (14 percent) combat motivation for soldiers in the European theater. For soldiers in the Pacific theater, when asked what was "helpful when the going was tough," 70 percent cited prayer, while 61 percent stated their desire to not let the other men down. Affective group ties, or social cohesion, were important for keeping individual men in the fight, for combat was a situation of "mutual dependence" (Stouffer et al., 1949b, p. 98). The informal group sustained the soldier as an individual in combat by padding him against stress, while also setting group standards that, if effective, increased combat

motivation (Stouffer et al., 1949b, p. 130). After this research, group solidarity, built upon common social characteristics, became cited as the most important motivator for ground troops.

However, the most-cited combat motivation was not this finding, but rather “ending the task.” During World War II, the U.S. military had a system of replacing individuals, rather than entire units, because of casualties. Barring casualty, an American soldier was in the war until the end (Stouffer et al., 1949b). Thus, enlisted soldiers were motivated by practical concerns; by fighting, they could end the war, and return home.

Despite flaws and overgeneralizations in the World War II–era research, the military has reframed these findings as demonstrating the centrality of cohesion (with no differentiation between social and task cohesion) to combat effectiveness and have used this research as evidence that increased diversity could negatively affect military performance (Segal & Kestnbaum, 2002; Stouffer et al., 1949b). The assumption that socially homogenous groups will perform better in combat than diverse ones has guided military policy on racial and gender integration, leading to the professional closure of the military to certain groups because of preconceived attitudes about their abilities and proper role. Interestingly, while Stouffer’s research showed a strong preference by white soldiers not to have racially integrated units, the reasons given by soldiers to justify separation did not focus on combat effectiveness. Slightly more than one-third of the African American soldiers surveyed stated a preference for white and black soldiers being in the same outfit, an equal percentage preferred separation, and the rest were undecided. By contrast, 84 percent of white soldiers preferred separation, and only 12 percent favored integration. Twenty-four percent of white soldiers who preferred separate units wrote comments to explain their positions. The plurality (14 percent) focused on organizational expediency (e.g., intermingling might lead to friction; Southern customs should be honored; whites dislike associating with blacks). None mentioned combat performance (Stouffer et al., 1949a, p. 577).

Nonetheless, up until the Korean War, formal military policy segregated African Americans and whites because of concerns (among many others) that racial integration would harm cohesion and thus, military effectiveness. Bogart’s Project CLEAR studies demonstrated the importance of intergroup contact and task cohesion over social cohesion. The white soldiers surveyed in Project

CLEAR were more evenly split on the issue of racial integration than were their World War II counterparts, and did not think that African American soldiers should be relegated to non-combat jobs. Fifty-one percent of white combat infantrymen surveyed responded that white and black soldiers should do the same kinds of jobs in the same units, while 40 percent felt they should do the same jobs in separate units. In terms of assignments, 43 percent felt black soldiers should serve in all-black regiments or battalions, and 46 percent felt they should be assigned as individuals, without regard to color (Bogart, 1969). Thus, the proportion of white soldiers who preferred segregated units decreased by about half between World War II and the Korean War. As discussed above, the Army was reluctant to publicize these findings at the time.

In the case of gender integration, cohesion has been a primary reason for limiting women’s occupational opportunities since, as it has been argued, their presence may disrupt the camaraderie of the male troops, negatively affecting their cohesion and willingness to fight (Bourg & Segal, 2001). Cohesion was reconceived as “male bonding” by the Army in the early years of the volunteer force. Research on the effect of gender integration on cohesion, however, suggests that gender has little effect on cohesion, and that it is leadership, rather than social homogeneity, that is critical in uniting individuals into a collective whole (Harrell & Miller, 1997).

From the perspective of the selective and questionable recall of World War II–era studies, social cohesion emerges as the cornerstone of effective combat units, and should be protected against other social forces, such as the influence of demographic diversity on the volunteer force. Yet, in addition to some of the design flaws inherent in these studies, social cohesion also has the potential of forming group norms of behavior that run counter to the military’s mission. For example, Savage and Gabriel (1976) assert that primary group relations ceased to exist in Vietnam because of poor rotation policies. However, Faris (1977) argues that primary groups did operate as key nodes of support in combat. He finds proof of the primary groups’ existence and operations in the same social processes cited by Savage and Gabriel as indicative of primary group disintegration—“fragging” (attempting to kill a superior officer), mutinies, and drug use (Faris, 1977, p. 461). He argues that fragging incidents were an expression of “disarticulation” and not primary-group disintegration (Faris, 1977, p. 457). Faris also argues that drug use and mutinies, while

problems, were primary-group activities. In the case of Vietnam, the cohesive primary groups did not function in support of the military mission, organization, or larger society. They may have provided emotional support to the combat soldier, but they did not increase his motivation to fight while in combat. Rather, the social cohesion experienced in the primary group led to increased conflict between the group and the larger military organization. Social cohesion, then, is not always a guarantee that the troops will perform well in combat, and may even lead to poorer performance, if it is allowed to develop into a counterculture.

The focus on social cohesion not only overstates the importance of homogeneity and affective bonding, but also overlooks the importance of task cohesion, and the role of each individual member in completing the group's goals. The increased diversity of the American military, whether by gender, ethnicity, and/or race, brings additional skill sets and cultural competencies to the force. Although the majority of American service members are male and racially white, the increase in racial and ethnic minorities, as well as women, means that the military has a greater ability to understand, to reflect, and to share commonalities with other nations, including adversarial ones. The current conflicts in Iraq and Afghanistan, for example, demonstrate an increased need for Arabic speakers and for women, who because of cultural restrictions on male–female interactions, are the only ones who may frisk local women (Myers, 2009). Rather than detracting from the military's mission, these service members, united by task cohesion and professionalism, enhance military effectiveness by providing a unique capability.

Minorities, Status, and Power

Perhaps the most fundamental organizing feature of humans is that we tend to divide into groups (Tajfel, 1982). This tendency to organize into groups of “us” and “them” is one factor that makes military establishments necessary. Within groups, and in societies more generally, the most fundamental dimensions along which persons organize themselves are power and status. Power and status are both tools to change what people do. This can include being included in groups, being excluded from groups, and being assigned tasks in groups (Lucas & Segal, forthcoming). *Power* is the ability to get what one wants even when others resist. A senior military officer has power over a private if she can sanction that private even if he prefers that it not happen. *Status* is a position in a group based on

esteem or respect. The primary outcome of status is influence, which is a change in the attitudes or behaviors of others without threat of punishment or promise of reward. That same military officer leads with influence if her subordinates, because they hold her in high regard, carry out actions consistent with her interests without expectation of personal reward or concern about potential punishment. Leadership is most effective when the leader holds both status and power.

It is important to recognize that the definition of “minorities” is more a matter of social construction than a numerical issue. Groups that hold power and status are generally not regarded as minorities, regardless of their size. Groups lacking these characteristics are more likely to be seen as minorities. Officers make up only 15 percent of the American military, and are drawn from the one-quarter of the population holding four-year college degrees or more, but hold power and status in the military and are not regarded as “a minority.” Women are half of the American military age-eligible population, yet they have been placed in a minority status in the military, although they are about the same proportion of the force as are officers.

The power and status relationships in society affect smaller collectives within society, and vice-versa. Status brings with it substantial benefits. Status in society is frequently based on ascription—characteristics we are born with—rather than being based on individual achievement. High-status persons are asked their opinions more, are evaluated more highly, and have more influence in groups. Also, leading with status has the effect of producing changes in behavior without engendering the resentment produced by the use of power. However, some, particularly women and minority group members, do not have the status to draw from. For these groups, gaining status through increased military service can be an asset.

The U.S. military services have far outpaced private-sector organizations in increasing the representations of minority group members in leadership positions (Moskos & Butler, 1996). More recently, increasing numbers of women have been moving into senior military leadership positions (Iskra, 2008). Such positions have given power to members of disadvantaged social groups, a significant feat. These advances, however, do less to mitigate the more insidious issue of status. We continue to live in a culture in which the contributions of women and minority group members tend to be devalued or ignored.

Because women and minority group members are in groups accorded low status in our society, their powerful positions, once attained, tend to be met with resistance. Their positions are not viewed as legitimate. When power is recognized as legitimate, those with power do not need to carry out any particular actions to show that they are powerful (Brass & Burkhardt, 1993). When power is not viewed as legitimate, however, those with power feel threatened (Rodriguez-Bailon, Moya, & Yzerbyt, 2000). In organizations, a result has been that women and minority group members are forced to use their power more, to show that they have it. Such use, however, creates resentment, lowering their status further (Bruins & De Gilder, 1999).

Both the need for low-status persons to use power in order to show that they have it and the self-fulfilling nature of status processes create loops in which members of minority groups will be likely to have difficulty attaining status even when assigned to powerful positions. An implication for military services is that increasing the representation of members of disadvantaged groups in positions of power is not enough. Even if women and minority group members are proportionally represented in leadership positions, their leadership is especially likely to be met with resistance, potentially requiring them to use their power more and engendering resentment.

We have seen in this chapter two sides to the power and status coin as it pertains to racial, ethnic, and gender minorities in the military. On one hand, white males in powerful positions were able at various times to exclude minorities and women from the force, to deprive them of full military status, to segregate them in their own units, to set ceilings on their representation and the ranks that they could attain, and to exclude them from certain jobs. On the other hand, the nature of authority in the military is such that, once the high-status white males decided to expand the base from which our forces were raised, the military was able—at least in the case of African Americans—to move ahead of most other American social institutions in achieving racial integration. This same dynamic can continue to be used to make increasingly effective use of the human capital that minority group members bring to the armed forces.

Future Directions and Debates

Today's military is a diverse force, particularly when analyzed through the lens of ascribed social diversity characteristics such as race, ethnicity, and gender. Although we focused on African Americans,

Hispanics, and women in this chapter, other racial and ethnic minorities are increasing their demographic presence, both in the broader society and in the military. Asian Americans, for example, traditionally have had the lowest accession rates of any ethnic group into the military; however, their recruitment numbers are increasing in urban areas with a high Asian concentration. In Los Angeles County, Asian Americans accounted for 22 percent of all Army recruits, about twice their proportion in the county's population. Although under-studied and under-analyzed, the increase in numbers of Asian-American service members may stem from the military's generous educational benefits, which align with the Asian cultures' emphasis on education (Shavelson, 2010). The military reaffirms its place as a positive bridging environment for disadvantaged groups, particularly those, such as Asian Americans, who work in occupations with high transferability in the civilian labor market.

No less important is the strategic fact that while the Cold War may be over in Europe, this is not the case on the Pacific Rim. Both North Korea and China remain potential flashpoints—the latter less so, as it becomes integrated with the global market economy. As the American military becomes increasingly aware of the cultural dimensions of modern warfare, not only in terms of understanding the cultural diversity of our own force, but also understanding the indigenous cultures in regions to which our troops are likely to be deployed, Asian Americans can be viewed as bringing particularly valuable cultural capital into the force.

Minorities in the military are not only defined by race, ethnicity, or gender, but also by other social diversity characteristics such as national origin and religion. Muslim Americans have been a targeted recruiting group for the military, mainly because of the need for native Arabic speakers: a form of cultural capital. As Islam, which is one of the fastest growing religions in the United States, grows through immigration and conversion, its influence will impact the religious culture of the American military, which currently is Christian-centric.

America was born as a nation of immigrants, and our armed forces were manned largely by immigrants, at least through the Civil War. George Washington's Continental Army was chiefly made up of subjects of a foreign power, Great Britain. Immigrants have again become an important source of military labor, as recognized by the change in policy expediting their citizenship. Although the role of legal immigrants has been defined, there may be a

new debate about the role of illegal immigrants in the American military. Currently, illegal immigrants may not serve until they update their status to legal permanent resident; however, this requirement may change as the American public oversees broader changes in immigration law, including possible amnesty provisions. Most of our citizens achieve that status by accident of birth, and the great majority elect not to serve in the military and contribute to the common defense. If undocumented immigrants were willing to wear the uniform and be placed in harm's way by our national command authority in support of America's national security policy, many might see this as a justification for at least granting them legal residential status in America.

The changing composition of the American military, beginning with the mobilized forces of the past and continuing to today's all-volunteer force, represents the changing demographics of American society. However, whereas conscription allowed military planners to select personnel directly, today's military must compete with other attractive occupational and educational paths for its recruits. The responsiveness of certain social groups, such as racial and ethnic minorities, to military service demonstrates the resiliency of pull factors such as competitive pay, generous benefits, and the ability to demonstrate unequivocally one's citizenship (Segal & Segal, 2004).

The military, in turn, generally expands its recruitment base during wartime to include previously excluded groups, and opens more opportunities to those whose service was previously proscribed by formal policy. Thus, the military integrated African American men into combat units during the Korean War, not because of a prevailing civil rights mentality, but because of wartime manpower needs that trumped social convention. Women were actively recruited during World War II as critical partners in the war, and their numbers and roles were significantly expanded during the initial years of the all-volunteer force when manpower needs were high and the recruitment numbers of more socially advantaged groups were lacking.

Currently, as the United States continues its involvement in two concurrent wars in Iraq and Afghanistan, the role of minorities in the military is changing once again, as the military seeks to build and maintain a premier fighting force built upon a recruitment-and-retention volunteer model. The percentage of African American personnel has declined; however, the percentage of Hispanics joining the military is increasing, thus offsetting the

decreased enlistment propensity of African Americans. Women remain a significant minority within all the service branches, despite the opening of most occupational specialties to them. Their presence and performance continue to garner significant attention from political and military leaders, particularly as the insurgency battleground does not allow for clear distinctions between offensive combat positions, from which women are prohibited, and combat support. The formal role of women in the military may continue to expand, as demonstrated by the recent decision to assign women officers to submarines. And finally, there is the potential that the recruitment base will be expanded to include openly gay men and lesbians, who already have experienced a decline in mandatory discharge, as manpower needs and battlefield realities once again trump the formal policy of "Don't Ask, Don't Tell" (De Angelis, Sandhoff, Bonner, & Segal, forthcoming). The expansion of the recruitment base is likely to continue as we fight long wars without conscription, in a time impacted by globalism, which increases the diversity of the population and the need for cultural capital within the force (Sandhoff & Segal, forthcoming). The increased presence of minorities also means that the American military more accurately reflects the society it defends, leading to greater legitimacy for the military overall, and the increased human capital needed to fight twenty-first-century wars.

Notes

1 The Army does not report separately the racial categorization of Native Hawaiian/Pacific Islander or the selection of two or more racial categories (DOD, 2009).

2 These conditions include: objects of the prejudice must have at least an equal status and must not be in competition with those holding the prejudice, the contact must be intimate enough so that the prejudiced groups get to know the objects of their prejudice sufficiently, there must be high-level support for the integration of the object into the prejudiced groups, the objects of prejudice must not act in ways that conform with stereotypes, and the objects of prejudice must have sufficient numbers in the prejudiced groups so as to not be discounted as exceptions to their group (Allport, 1954).

3 African Americans were not really used to fill the void during World War II. They comprised about 11 percent of the population, and only about 7 percent of those who served—and when their rate of volunteering surpassed that of whites, the military stopped accepting African American volunteers.

References

- Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.
- Asch, B., Buck, C., Klerman, J. A., Kleykamp, M., & Loughran, D. S. (2009). *Military enlistment of Hispanic youth: Obstacles and opportunities*. Santa Monica, CA: RAND.

- Associated Press. (2010, Feb. 23). Ban on women on submarines ends. *New York Times*, p. A12.
- Astor, G. (1998). *The right to fight: A history of African Americans in the military*. Cambridge, MA: Da Capo Press.
- Badillo, G., & Curry, G. D. (1976). The social incidence of Vietnam casualties: Social class or race? *Armed Forces & Society*, 2, 387–406.
- Barton, D. H., & Kinzer, N. S. (1977). *Preliminary research on American soldiers of Spanish-ethnic origin and heritage*. Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.
- Binkin, M., & Bach, S. (1977). *Women and the military*. Washington, D.C.: Brookings Institution.
- Binkin, M., & Eitelberg, M. J. (1982). *Blacks and the military*. Washington, D.C.: Brookings Institution.
- Bogart, L. (1969). *Social research and the desegregation of the U.S. Army*. Chicago, IL: Markham.
- Bourg, C., & Segal, M. W. (2001). Gender, sexuality, and the military. In D. Vannoy (Ed.), *Gender mosaics: Social perspectives* (pp. 332–342). Los Angeles, CA: Roxbury Publishing.
- Brass, D. J., & Burkhardt, M. E. (1993). Potential power and power use: An investigation of structure and behavior. *Academy of Management Journal*, 36, 441–470.
- Browning, H. L., Lopreato, S. C., & Poston, D. L. (1973). Income and veteran status-variations among Mexican Americans, Blacks, and Anglos. *American Sociological Review*, 38, 74–85.
- Bruins, J., Ellemers, N., & De Gilder, D. (1999). Power use and differential competence as determinants of subordinates evaluative and behavioral responses in simulated organizations. *European Journal of Social Psychology*, 29, 843–870.
- Burk, J. (1995). Citizenship status and military service: The quest for inclusion by minorities and conscientious objectors. *Armed Forces & Society*, 21, 503–529.
- Collins, P. H. (2000). *Black feminist thought*. New York: Routledge.
- Crenshaw, K. W. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, 43, 1241–1299.
- Crissey, S. R. (2009). *Educational attainment in the United States: 2007*. Suitland, MD: U.S. Census Bureau. Retrieved from <http://www.census.gov/prod/2009pubs/p20-560.pdf>.
- Dansby, M. R., & Landis, D. (2001). Intercultural training in the United States military. In M. R. Dansby, J. B. Stewart, & S. C. Webb (Eds.), *Managing diversity in the military* (pp. 9–28). New Brunswick, NJ: Transaction Publishers.
- De Angelis, K., Sandhoff, M., Bonner, K., & Segal, D. R. (Forthcoming). Sexuality in the military. In A. K. Baumle (Ed.), *International handbook on the demography of sexuality*. New York: Springer Press.
- De Angelis, K., & Segal, D. (2009). Building and maintaining a post-9/11 all-volunteer military force. In M. J. Morgan (Ed.), *The impact of 9/11 on politics and war* (pp. 43–60). New York: Palgrave Macmillan.
- Dempsey, J. K., & Shapiro, R.Y. (2009). The Army's Hispanic future. *Armed Forces & Society*, 35, 526–561.
- Department of Defense. (1988). *Task force on women in the military*. Arlington, VA: Pentagon.
- Department of Defense. (2008). *Population Representation in the Armed Services, FY 2006*. Arlington, VA: Pentagon.
- Department of Defense. (2009). *Population Representation in the Armed Services, FY 2007*. Retrieved on May 15, 2010 from <http://prhome.defense.gov/MPP/ACCESSION%20POLICY/PopRep2007/index.html>.
- Faris, J. H. (1977). An alternative perspective to Savage and Gabriel. *Armed Forces and Society*, 3, 457–462.
- Fredland, J. E., & Little, R. (1985). Socioeconomic status of World War II veterans by race: An empirical test of the bridging hypothesis. *Social Science Quarterly*, 66, 533–551.
- Gifford, B. (2005). Combat casualties and race: What can we learn from the 2003–2004 Iraq conflict? *Armed Forces & Society*, 31, 201–225.
- Gropman, A. (2006). The racial integration of the U.S. Armed Forces. In A. D. Mangelsdorff. (Ed.), *Psychology in the service of national security* (pp. 199–210). Washington, D.C.: American Psychological Association.
- Harrell, M. C., & Miller, L. L. (1997). *New opportunities for military women: Effects upon readiness, cohesion, and morale*. Santa Monica, CA: RAND Corp.
- Hattiangadi, A. U., Lee, G., & Quester, A. (2004). *Recruiting Hispanics: The Marine Corps experience, final report*. Alexandria, VA: Center for Naval Analyses.
- Hattiangadi, A. U., Quester, A. O., Lee, G., Lien, D. S., & MacLeod, I. D. (2005). *Non-citizens in today's military: Final report*. Alexandria, VA: Center for Naval Analyses.
- Hope, R. O. (1979). *Racial strife in the U.S. military: Toward the elimination of discrimination*. New York: Praeger.
- Horner, Jr., D. H., & Anderson, M. T. (1994). Integration of homosexuals into the armed forces: Racial and gender integration as a point of departure. In W. J. Scott & S. C. Stanley (Eds.), *Gays and lesbians in the military: Issues, concerns, and contrasts* (pp. 247–260). New York: Aldine de Gruyter.
- Hosek, S. D., Tiemeyer, P., Kilburn, R., Strong, D. A., Ducksworth, S., & Ray, R. (2001). *Minority and gender differences in officer career progression*. Santa Monica, CA: RAND.
- Huntington, S. P. (1957). *The soldier and the state: The theory and politics of civil–military relations*. Cambridge, MA: Harvard University Press.
- Iskra, D. M. (2007). Attitudes toward expanding the expanding roles for Navy women at sea. *Armed Forces & Society*, 33, 203–223.
- Iskra, D. M. (2008). *Breaking through the glass ceiling*. Saarbrücken, Germany: VDM Verlag.
- Janowitz, M. (1960). *The professional soldier: A social and political portrait*. New York: The Free Press.
- Janowitz, M. (1973). The social demography of the all-volunteer armed force. *Annals of the American Academy of Political and Social Science*, 406, 86–93.
- Janowitz, M., & Moskos, C. M., Jr. (1974). Racial composition in the all-volunteer force. *Armed Forces & Society*, 1, 109–123.
- Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. *American Journal of Sociology* 82, 965–990.
- Kier, E. (1999). Discrimination and military cohesion: An organizational perspective. In M. F. Katzenstein and J. Reppy (Eds.), *Beyond zero tolerance: Discrimination in military culture* (pp. 25–52). Lanham, MD: Rowman and Littlefield Publishers.
- Kleykamp, M. (2009). A great place to start? The effect of prior military service on hiring. *Armed Forces & Society*, 35, 266–285.
- Lee, M. M., & Wasem, R. E. (2003). *Expedited citizenship through military service: Policy and issues*. Washington, D.C.: Congressional Research Service.
- Lopreato, S. C., & Poston, D. L. (1977). Differences in earnings and earnings ability between black veterans and non-veterans in the United States. *Social Science Quarterly*, 57, 750–766.

- Lucas, J. W., & Segal, D. R. (in press) Status, power, and diversity in the military. In D. McDonald & K. Parks (Eds.), *Diversity management in the military*. London: Routledge.
- Manning, L. (2008). *Women in the military: Where they stand* (6th ed.). Washington, D.C.: Women's Research and Education Institute.
- Marmion, H. A. (1971). *The case against an all-volunteer army*. Chicago, IL: Quadrangle Books.
- Mershon, S., & Schlossman, S. (1998). *Foxholes and color lines: Desegregating the U.S. Armed Forces*. Baltimore, MD: Johns Hopkins University Press.
- Moore, B. L. (1996). *To serve my country, to serve my race*. New York: New York University Press.
- Moore, B. L., & Webb, S. C. (2000). Perception of equal opportunity among women and minority Army personnel. *Sociological Inquiry*, 70, 215–239.
- Moskos, C. C. 1994. Recruitment and society after the Cold War. In M. J. Eitelberg & S. L. Mehay (Eds.), *Marching toward the 21st century* (pp. 139–148). Westport, CT: Greenwood.
- Moskos, C. C., & Butler, J. S. (1996). *All that we can be*. New York: Basic Books.
- Moskos, C. C., & Wood, F. R. (Eds.). (1988). *The military: More than just a job?* Washington, D.C.: Pergamon-Brassey's.
- Myers, S. L. (2009). Living and fighting alongside men, and fitting in. *New York Times*, August 16, p. A1.
- Nalty, B. C. (2003). *Long passage to Korea: Black sailors and the integration of the U.S. Navy*. Washington, D.C.: Naval Historical Center.
- Rodriguez-Bailon, R., Moya, M., & Yzerbyt, V. (2000). Why do superiors attend to negative stereotypic information about their subordinates? Effects of power legitimacy on social perception. *European Journal of Social Psychology*, 30, 651–671.
- Rosenfeld, P., & Culbertson, A. L. (1992). Hispanics in the military. In S. B. Knouse, P. Rosenfeld, & A. L. Culbertson (Eds.), *Hispanics in the workplace* (pp. 211–230). Newbury Park, CA: SAGE.
- Saenz, R. (2004). Latinos and the changing face of America. Population Reference Bureau. Retrieved from <http://www.prb.org/Articles/2004/LatinosandtheChangingFaceofAmerica.aspx>.
- Sandhoff, M., & Segal, D. R. (Forthcoming). Globalization and the military. In G. Ritzer (Ed.), *Blackwell encyclopedia of globalization*. Boston, MA: Blackwell.
- Savage, P. L., & Gabriel, R. A. (1976). Cohesion and disintegration in the American Army. *Armed Forces & Society*, 2, 340–376.
- Segal, M. W. (1986). The military and the family as greedy institutions. *Armed Forces & Society*, 13, 9–38.
- Segal, D. (1989). *Recruiting for Uncle Sam: Citizenship and military manpower policy*. Lawrence: University Press of Kansas.
- Segal, D. R., & Kestnbaum, M. (2002). Professional closure in the military labor market: A critique of pure cohesion. In D. M. Snider & G. L. Watkins (Eds.), *The future of the Army profession* (pp. 441–458). New York: McGraw-Hill.
- Segal, D. R., & Segal, M. W. (1993). Military sociology. In *International military and defense encyclopedia* (pp. 2449–2455). Washington, D.C.: Pergamon-Brassey's.
- Segal, D. R., & Segal, M. W. (2004). America's military population. *Population bulletin* 59(4) 1–40.
- Segal, D. R., & Verdugo, N. (1994). Demographic trends and personnel policies as determinants of the racial composition of the volunteer army. *Armed Forces & Society*, 20, 619–632.
- Segal, M. W., & Bourq, C. (2002). Professional leadership and diversity in the Army. In D. M. Snider & G. L. Watkins (Eds.), *The future of the Army profession* (pp. 505–520). New York: McGraw-Hill.
- Segal, M. W., Thanner, M. H., & Segal, D. R. (2007). Hispanic and African-American men and women in the U.S. military: Trends in representation. *Race, Gender and Class*, 14(3/4), 48–62.
- Shavelson, L. (2010, June 21). *More Asian Americans signing up for the Army*. Washington, D.C.: NPR.
- Shils, E., & Janowitz, M. (1948). Cohesion and disintegration in the Wehrmacht in World War II. *Public Opinion Quarterly*, Summer, 280–315.
- Snyder, R. C. (2003). The citizen-soldier tradition and gender integration of the U.S. military. *Armed Forces & Society*, 29, 185–204.
- Stouffer, S. A., Suchman, E. A., DeViney, L. C., Star, S. A., & Williams, Jr., R. M. (1949a). *The American soldier. Vol. I: Adjustment during army life*. Princeton, NJ: Princeton University Press.
- Stouffer, S. A., Lumsdaine, A. A., Lumsdaine, M. H., et al. (1949b). *The American soldier. Vol. II: Combat and its aftermath*. Princeton, NJ: Princeton University Press.
- Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology*, 33, 1–39.
- University of Texas Libraries. (2010). *U.S. Latino and Latina World War II oral history project*. Retrieved June 15, 2010, from <http://www.lib.utexas.edu/ww2latinos/>.
- U.S. Census Bureau. (2010). *Hispanic population of the United States*. Retrieved June 23, 2010, from http://www.census.gov/population/www/socdemo/hispanic/hispanic_pop_presentation.html.
- U.S. Citizenship and Immigration Services, Office of Communications. (2008). Fact sheet: Naturalization through military service.

Gay Service Personnel in the U.S. Military

History, Progress, and a Way Forward

Armando X. Estrada

Abstract

Lesbian, gay, bisexual, and transgender (LGBT) individuals have served honorably throughout the history of the U.S. military. However, gay individuals have not been allowed to serve openly because U.S. military policies and laws have prohibited them from being open and honest about their sexual orientation. On December 22, 2010, President Barack Obama signed a law removing all restrictions on gays in the military and set out a process by which to enable openly gay individuals to enter and remain in the U.S. military. This chapter is intended to contribute to ongoing discussions related to the challenges and opportunities associated with the participation and inclusion of openly gay service personnel within the U.S. military. It provides a brief historical review of military policies and laws concerning the treatment of gay service personnel in the U.S. military. It reviews empirical research related to sexual orientation and military service and outlines a theory of individual, occupational-organizational, and societal factors influencing the participation and inclusion of openly gay service personnel. Lastly, it discusses theoretical and methodological implications for future research in this area.

Keywords: Gays, sexual orientation, military

Lesbian, gay, bisexual, and transgender (LGBT) individuals have served honorably in the U.S. military. Gay service personnel¹ have served alongside their heterosexual counterparts in all branches of the military, within all occupational specialties, including those of the combat arms—infantry, armor, and artillery. Indeed, gay service personnel have served in just about every major conflict and war dating back to the American Revolutionary War (Berube, 1990; Shilts, 1993). However, gay service personnel have always had to remain silent and even lie about their sexual orientation in order to serve their country. This is because their country has not allowed gay service personnel to be open and honest about their sexual orientation.

Whenever issues of sexual orientation have become public, gay service personnel have been discriminated against, systematically persecuted, and promptly separated from the military (Chauncey, 1989; Haggerty, 2003; Murphy, 1988; Shilts, 1993). Technical

Sergeant Leonard Matlovich was a 12-year decorated Air Force combat veteran, recipient of a Bronze Star and Purple Heart, who was discharged after he told his superior officer that he was a homosexual (“The Sexes”, 1975). Lieutenant Colonel Margarethe Cammermeyer was a 25-year decorated veteran of the Army Nurse Corps, recipient of a Bronze Star, who was discharged when she disclosed that she was a lesbian during a routine investigation for her security clearance (Cammermeyer, 2005). Lieutenant Colonel Steve Loomis was a 19-year decorated Army combat veteran, recipient of two Bronze Stars, a Purple Heart, and the Air Medal, who was discharged when the Army learned he was gay (Leung, 2003).

Although the military’s struggle with gay service personnel can be traced back to 1778 (Shilts, 1993), it was only in the past three decades that questions involving whether *openly* gay service personnel should serve in the U.S. military were intensely debated in public, political, and military circles.

President Bill Clinton brought national attention to this issue when he announced his intention to remove the ban on homosexuals' serving in the Armed Forces in January of 1993. After much debate, a compromise was drafted and signed into law, codifying the notion that homosexuality was incompatible with military service (10 U.S.C. § 654). President Barack Obama renewed national attention to this issue when he pledged to work with Congress to "repeal the law that denies gay Americans the right to serve the country they love because of who they are" during his State of the Union Address on January 27, 2010. And, as recently as December 10, 2010, the 111th Congress passed the "Don't Ask, Don't Tell" Repeal Act of 2010, which effectively eliminated all restrictions prohibiting gays from serving openly in the U.S. military. This bill was signed into law by President Barack Obama on December 22, 2010.

This chapter is intended to contribute to ongoing discussions about the challenges and opportunities associated with the participation and inclusion of openly gay service personnel within the U.S. military. The chapter begins by providing a brief historical review of military policies and laws concerning the treatment of gay service personnel in the U.S. military. The next section provides an overview of empirical research related to sexual orientation and military service and outlines a theory of individual, occupational-organizational, and societal factors influencing the participation and inclusion of openly gay service personnel. The last section concludes with a discussion of theoretical and methodological implications for future research.

Historical Review of U.S. Military Policies and Laws Concerning Gay Service Personnel

U.S. military policies and laws concerning the treatment of gay service personnel have a long past but a short history (see Table 24.1). The earliest documented incident involving gay service personnel was recorded on March 11, 1778, when Lieutenant Gotthold Frederic Enslin became the first individual to be dismissed for sodomy and perjury from the U.S. military (Katz, 1976; Shilts, 1993). Ensign Anthony Maxwell, Enslin's roommate, discovered the lieutenant with Private John Monhart, and reported the incident to his commanding officer. Subsequently, during court martial proceedings on March 10, 1778, Lieutenant Enslin was found guilty of sodomy and perjury and was promptly drummed out of the military (Shilts, 1993). In the

years following this incident, few records exist on matters concerning gay service personnel. Indeed, it was not until after World War I that regulations excluding gay service personnel began to appear within U.S. military law, under the Articles of War.

The Articles of War and Manual for Courts Martial

The Articles of War were established by the Second Continental Congress to provide legal guidelines by which to govern the organization and conduct of military forces, on June 30, 1775 (Burnett, 1941), and were enacted into law by the U.S. Congress in 1806 (Aycock & Wurfel, 1955). Although the Articles of War provided general guidelines on a broad range of military matters (e.g., organization and governing laws of military forces), they did not address prohibitions concerning specific sexual behaviors (e.g., sodomy) or sexual orientation (i.e., sexual identity) until 1916. The Articles of War of 1916 included a provision for sodomy that was incorporated into U.S. military law for the very first time (Shilts, 1993). Specifically, Article 93, which addressed "miscellaneous crimes and offenses," restricted considerations of sodomy to cases that involved assault with intent to commit sodomy (U.S. War Department, 1918, p. 271). The shift toward naming sodomy as a felony crime by itself would come five years later, with the publication of the Articles of War of 1920 and the Manual for Courts Martial of 1921.

The Articles of War approved on June 4, 1920, listed sodomy as a specific felony crime but no longer linked it with the intent to commit felony assault. Specifically, Article 93 established that "a person subject to military law who commits manslaughter, mayhem, arson, burglary, housebreaking, robbery, larceny, embezzlement, perjury, forgery, *sodomy* [emphasis added], assault with intent to commit any felony, assault with intent to do bodily harm with a dangerous weapon, instrument, or other thing, or assault with intent to do bodily harm, shall be punished as a court-martial may direct" (U.S. War Department, 1920, p. 24). Article 93 did not differentiate between sodomy involving assault or sodomy that was consensual; it did not differentiate between consensual sodomy involving same- or opposite-sex individuals. Rather, it established that penetration alone was sufficient grounds to warrant prosecution. The Manual for Courts Martial (1921) expanded this definition by including "sexual connection per anum, or by the mouth, with a certain man or woman" (U.S. War

Table 24.1 Historical events associated with gays in the military

Year	Event
1778	<ul style="list-style-type: none"> • Lieutenant Gotthold Frederick Enslin became the first soldier to be drummed out of the Continental Army for sodomy.
1916	<ul style="list-style-type: none"> • Articles of War includes a provision penalizing sodomy in Article 93.
1919	<ul style="list-style-type: none"> • Chief Machinist Mate Ervin Arnold initiates systematic campaign to purge homosexuals from U.S. Navy.
1920	<ul style="list-style-type: none"> • Articles of War names sodomy as a felony crime in Article 93.
1921	<ul style="list-style-type: none"> • Manual for Courts-Martial expands definition of sodomy to include “sexual connection per anum or by the mouth, with a certain man or woman” and notes that consent influences whether one or both individuals involved in the crime would be charged.
1942	<ul style="list-style-type: none"> • War Department issues mobilization regulations outlining accession and separation standards for handling homosexual personnel.
1943	<ul style="list-style-type: none"> • Secretary of War Henry L. Stimson issues directives on resolution of personnel involved with “sodomy” cases. • Secretary of the Navy Frank Knox issues memorandum: Procedures for the Disposition of Homosexuals Among Personnel in the U.S. Naval Service.
1945	<ul style="list-style-type: none"> • War Department Circular 85 directs that gay service personnel are eligible for “honorable discharges” if they have not committed homosexual offenses.
1949	<ul style="list-style-type: none"> • U.S. Navy Committee for the Review of Procedures for the Disposition of Naval Personnel Involved in Homosexual Offenses introduces new procedures for managing homosexual personnel. • Defense Department issues new guidance to establish a uniform policy for managing gay service personnel.
1950	<ul style="list-style-type: none"> • Uniform Code of Military Justice replaces Articles of War and establishes procedures discharging individuals for homosexual behavior under Article 125—sodomy.
1959–1982	<ul style="list-style-type: none"> • DOD Directives 1332.14 and 1332.30 bar homosexuals from military service.
1993	<ul style="list-style-type: none"> • President Clinton announces a compromise “Don’t Ask, Don’t Tell” policy that allows gay service personnel to serve as long as they do not reveal their sexual orientation.
1994	<ul style="list-style-type: none"> • US Code Title 10 § 654 codifies DA/DT/DP Policy into law.
2010	<ul style="list-style-type: none"> • President Obama signs repeal of DA/DT/DP into law.

Department, 1921, p. 443) and noted that consent only affected whether one or both individuals would be charged for this crime.

According to Shilts (1993) and Herek and Belkin (2005), expansion of the rationale for excluding gay service personnel on the basis of their sexual orientation, rather than sexual behavior alone, would come as a result of contemporary psychiatric views on homosexuality during this period. For example, shortly after a police raid on a San Francisco gay club found a number of soldiers, Dr. Albert Adams wrote, in September of 1918, “while recruiting the elements which make up our invincible army, we cannot ignore . . . [that] the homosexualist is not only dangerous, but an ineffective fighter . . . [and this] must be recognized by the military authorities”

(as cited in Shilts, 1993, p. 15). It was also around this time that the military saw a number of incidents in which gay service personnel were persecuted and court-martialed for sodomy in Newport, Rhode Island (Committee on Naval Affairs, 1921; Murphy, 1988).

Military Guidelines and Directives

The Articles of War of 1920 and the companion Manual for Courts Martial of 1921 provided the broad legal authority the military justice system needed to exclude gay service personnel from the U.S. military. However, numerous guidelines and directives were developed to further clarify how gay service personnel would be treated in the ensuing years. For example, Army Regulation (AR) 40-105

(dated May 23, 1923) outlined accession standards for physical examinations that identified homosexuality as a form of sexual deviance (e.g., sexual psychopathy) that rendered gay individuals unfit for military service (as cited in Borch, 2010, p. 193, footnote 22). Similarly, Army Regulation (AR) 615-360 (dated March 1, 1926) outlined enlistment separation standards that allowed military commanders to administratively separate gay service personnel for homosexuality because “homosexuality was an indicator of psychopathology” and rendered gay individuals unfit for military service (as cited in Borch, 2010, p. 193, footnote 23). Many of these regulatory guidelines and directives were institutionalized into the military accession and separation systems in the intervening years—i.e., from 1920 to 1940.

In May of 1940, psychiatrists Harry Stack Sullivan and Winfred Overholser sought to reform the military accession system by designing and implementing a psychiatric screening system that would strive to reduce the number of service personnel who might otherwise become psychiatric casualties of war. Though Sullivan’s initial plan did not address homosexuality, the final version vetted thru the military bureaucracy did include screening directives addressing homosexual proclivities and disqualifying deviations (Berube, 1990). As the nation prepared to induct large numbers of personnel in response to the bombings of Pearl Harbor in December of 1941, the U.S. military had a sufficiently developed regulatory legal-medical system that would allow military doctors, commanders, and administrators to exclude gay individuals during the early stages of the accession process (if they were identified as homosexuals) or separate them after entry (if they were identified and discharged after entering into military service) because homosexuality rendered gay individuals unfit for military service. By March of 1942, War Department mobilization regulations included guidance on how to identify gay men (e.g., feminine bodily characteristics, effeminacy in dress and manner); and outlined procedures to deal with gay men who voluntarily disclosed their sexual orientation during the course of the accession process—gay men would be sent back to their local draft board for a social investigation (U.S. War Department, 1942). A year later, Secretary of War Henry L. Stimson issued a new Army directive that stipulated that personnel guilty of sodomy should be tried by court martial, except in cases not involving force or violence; and Secretary of the Navy Frank Knox outlined procedures for the

exclusion of gay service personnel in the Navy (Berube, 1990). Thus, from 1923 to 1943, gay service personnel faced the prospect of being excluded from service at accession or had to risk being separated administratively or punitively after being suspected of or charged with sodomy. Gay service personnel, along with other service personnel deemed unfit for service, were discharged for “inaptness or undesirable habits or traits of character” (e.g., AR 615-360 Section VIII; Davis, 1991). However, gay service personnel were most often discharged without honor, whereas other service personnel were discharged honorably (Davis, 1991; Williams & Weinberg, 1971).

In 1945, several changes were made to military policies with the publication of War Department Circular No. 85. This directive allowed gay service personnel who had not committed any homosexual offense while in service to be eligible to receive an honorable discharge (Williams & Weinberg, 1971). But these changes did not last long. In 1949, Navy procedures for managing homosexual personnel would help shape the development of a uniform policy for dealing with gay service personnel in all the branches of military service. Department of Defense guidance, which was modeled after the Navy’s policy, required each service to adopt a policy barring gay individuals from military service; required the prompt separation of known homosexuals from the military; recommended indoctrination lectures on homosexuality, based on existing venereal disease lectures; established three classes of homosexual cases, based on whether the case involved consent, force, or tendency toward homosexual acts without a homosexual offense; recommended careful investigation of suspected homosexuals; and established lines of communication among the services for the purposes of exchanging information about homosexuals (Berube, 1990). These directives were followed by additional changes brought about when the Uniform Code of Military Justice (UCMJ) was enacted into law in 1950 (see Table 24.1).

The Uniform Code of Military Justice

The UCMJ replaced the Articles of War as the governing laws for the U.S. military in May of 1951. Like its predecessor, the UCMJ included a provision establishing sodomy as a court-martial offense. Specifically, Article 125 specified that any individual who engaged in unnatural carnal copulation with another person, regardless of sex, would be guilty of sodomy. Furthermore, it noted that any form of

penetration (however slight) was sufficient to complete the offense (cf. Joint Service Committee on Military Justice, 2008). Thus, Article 125 of the UCMJ provided the legal basis by which to exclude gay service personnel from military service from 1950 to 1959.

U.S. Department of Defense Directives 1332.14 and 1332.30

In 1959, new directives were issued to further clarify how the U.S. military would manage gay service personnel within its ranks. Directive 1332.14 for enlisted personnel and Directive 1332.30 for officers specified that homosexual acts and sodomy were “sexual perversions” rendering gay service personnel unfit for military service and would be grounds for discharge from the military (Department of Defense, 2010a; National Defense Research Institute, 1993, 2010). These directives were first modified in 1965—enabling gay service personnel to appeal for an honorable discharge to an administrative discharge board and allowing them to be represented by counsel (National Defense Research Institute, 1993, p. 7); and again in 1975—modifying the definition to include “homosexual acts or other aberrant behaviors” as grounds for exclusion from military service (Department of Defense, 2010a, p. 20; National Defense Research Institute, 1993, p. 7); and yet again in 1981 through 1986—making separation of gay service personnel mandatory and minimizing possibilities for retention (Government Accounting Office, 1992). Thus, from 1959 to 1992, Department of Defense Directive 1332.14 for enlisted personnel and Directive 1332.30 for officers established guidelines and procedures for how the U.S. military would manage gay service personnel within its ranks. Stated simply, the U.S. military would discharge gay individuals because they were deemed “unfit for military service.” This policy remained in effect until January 1993.

The “Don’t Ask, Don’t Tell” Policy and 10 U.S.C § 654

In 1993, a new policy was introduced that directed that applicants for service would no longer be asked to review their sexual orientation, and that they would be informed of conduct that was proscribed for members of the Armed Forces. Sexual orientation was to be considered a personal and private matter, and homosexual orientation would not be a bar to service entry or continued service unless manifested by homosexual conduct (e.g., a homosexual

act, a statement that the member demonstrates a propensity or intent to engage in homosexual acts, or a homosexual marriage or attempted marriage; Aspin, 1993, pp. 155–156). The policy was enacted into law with the passage of the National Defense Act of 1994, which codified the policy in Section 654 of Title 10 of the United States Code—10 U.S.C § 654. Specifically, 10 U.S.C § 654 paragraph a(15) and paragraph b(1–3) state that:

The presence . . . of persons who demonstrate a propensity or intent to engage in homosexual acts . . . create[s] an unacceptable risk to the high standards of morale, good order and discipline, and unit cohesion . . . [therefore any] member of the armed forces shall be separated . . . if (1) the member has engaged in, attempted to engage in, or solicited another to engage in a homosexual act or acts . . . unless (a) such conduct is a departure from the member’s usual and customary behavior; (b) such conduct, under all the circumstances, is unlikely to recur; (c) such conduct was not accomplished by use of force, coercion, or intimidation; (d) under the particular circumstances of the case, the member’s continued presence in the armed forces is consistent with the interests of the armed forces in proper discipline, good order, and morale; and (e) the member does not have a propensity or intent to engage in homosexual acts . . . (2) the member has stated that he or she is a homosexual or bisexual . . . unless he or she is not a person who engages in, attempts to engage in, has a propensity to engage in, or intends to engage in homosexual acts . . . and (3) the member has married or attempted to marry a person known to be of the same biological sex.

Thus, the UCMJ together with Department of Defense Directives 1332.14 and 1332.30 and 10 U.S.C § 654 set forth regulatory procedures that would govern how gays service personnel would be treated within the U.S. military from 1993 to 2010.

On January 27, 2010, President Barack Obama pledged to work with Congress to “repeal the law that denies gay Americans the right to serve the country they love because of who they are” during his State of the Union Address (Obama, 2010). Over the course of the year, a number of hearings were conducted to evaluate whether the policy should be removed. In testifying before the U.S. Armed Services Committee on February 2, 2010, U.S. Secretary of Defense Robert M. Gates noted that “the question before us is not whether the military prepares to make this change but how we best

prepare for it,” and indicated that he had appointed a high-level working group within the department to review the issues associated with the proper implementation of a repeal of the Don’t Ask, Don’t Tell policy (Gates, 2010, p. 116). Chairman of the Joint Chiefs of Staff Admiral Michael Mullen noted his “support of the approach that Secretary Gates outlined” and stated his belief that “allowing gays and lesbians to serve openly would be the right thing to do” because to do otherwise would be to retain a policy that “forces young men and women to lie about who they are in order to defend their fellow citizens” (Mullen, 2010, p. 120). Some months later, on November 30, 2010, the official report of the Military Working Group (MWG) was released. The MWG report concluded that “while a repeal of Don’t Ask, Don’t Tell will likely, in the short term, bring about some limited and isolated disruption to unit cohesion and retention, we do not believe this disruption will be widespread or long-lasting, and can be adequately addressed” (Department of Defense, 2010a, p. 3). On December 13, 2010, the 111th Congress passed the “Don’t Ask, Don’t Tell” Repeal Act of 2010, which eliminated all restrictions prohibiting gays from serving *openly* in the U.S. military (see S4023/HR2965: Don’t Ask, Don’t Tell Repeal Act of 2010). This bill was signed into law by President Obama on December 22, 2010. The law included a provision ensuring that the repeal would not take place until 60 days after the President, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff submitted written certification that the Department of Defense had prepared the necessary policies and regulations to implement the repeal in a manner that would be consistent with the standards of military readiness, military effectiveness, unit cohesion, and recruiting and retention of the Armed Forces. Thus, in 2011 the U.S. military will begin the implementation of a policy that is inclusive of gay service personnel.

Contemporary Research on Gays in the Military

Research on gay service personnel within the U.S. military is quite limited and narrowly focused on issues involving (a) the acceptance of gay individuals within the U.S. military environment; (b) the compatibility of gay individuals with the organizational culture and values of the U.S. military; and (c) the perceived impact that the integration of gay service personnel may have on unit cohesion, readiness, and effectiveness of the U.S. military (Department of Defense, 2010a; Otjen, Davitte, Miller, &

Redd 1993). The sections below review relevant research and studies within each of these areas.

Acceptance of Gay Service Personnel

Concerns regarding the acceptance of gay service personnel within the military services have been addressed in a wide variety of public and military opinion polls. While public opinion is not as germane to this issue as military opinion, it is nonetheless important to consider, as the military is governed by civilian authority, and the military recruits individuals from civilian society. Data from a wide range of public opinion polls indicate that large percentages of Americans favor allowing gay individuals to serve in the U.S. Armed Forces (Department of Defense, 2010a; National Defense Research Institute, 1993, 2010; Torres-Reyna & Shapiro, 2002; Yang, 1997). Illustrative examples of this finding can be observed in public opinion polls conducted by the Gallup Organization (1977–2001) showing that fifty to seventy percent of Americans believe that “homosexuals should be hired” for the armed forces (Torres-Reyna & Shapiro, 2002; Yang, 1997); and in public opinion polls conducted by the Pew Center for the People and the Press (1994–2010) showing that fifty to sixty percent of Americans favor allowing gay and lesbians to serve “openly” in the U.S. military (Pew Center for the People and the Press, 2010). While it is clear that a majority of Americans appear to support gays in the military, support for gay individuals is higher when asked whether gays should be allowed to serve versus whether gays should be allowed to serve “openly” (Department of Defense, 2010a).

Research on military personnel’s opinions on gays in the military is quite limited and not as methodologically sophisticated as studies assessing public opinions (Department of Defense, 2010a; Sinclair, 2009). The methodological sophistication of military polls has less to do with study design characteristics than with the fact that the ban on gays in the military prohibited the military or other interested parties from conducting research on this topic. Thus there is a dearth of data on military personnel’s opinions on gays in the military. The few studies conducted to date suggest that military personnel’s attitudes toward gays in the military tend to be less favorable than the attitudes of civilians reported in public opinion polls. Across a variety of surveys conducted in the 1990s, large percentages of military respondents expressed disapproval or opposition toward removing the ban on homosexuals in the Armed Forces (see Table 24.2). Illustrative

Table 24.2 Surveys of military personnel on gays in the military

Source	Sample	Survey Question	Result
Healy (1993)	2,346 Enlisted Men/ Women	How do you feel about lifting the ban on gays in the armed forces?	74% Oppose 76% Men/ 55% Women
Miller (1994)	1,943 Male Army Soldiers 1,606 Female Army Soldiers	Gays and lesbians should be allowed to enter and remain in the military.	75% Men Oppose 43% Women Oppose
U.S. Air Force Poll (Miller, 1994)	800 Enlisted Air Force Personnel	How do you feel about the current policy of separating known homosexuals or discharging people who state they are homosexuals?	67% Support Policy
Cleveland & Ohl (1994)	605 Naval Officers	Homosexuals should not be restricted from serving anywhere in the Navy.	75% Favor Restriction
Friery (1997)	298 Naval Officers	Homosexuals should not be restricted from serving anywhere in the Navy.	66% Favor Restriction
Estrada & Weiss (1999)	72 Marine Reservists	I feel that the ban on homosexuals in the armed forces should be lifted.	75% Favor Ban
Triangle Institute for Security Studies 1998– 1999 (Miller & Williams, 2001)	2,901 Officers	Do you think gay men and lesbians should be allowed to serve in the military?	73% Favor Restrictions
Annenberg Public Policy Center (2004)	655 Service Personnel/ Family Member on Active Duty from February–October 2004	Should gays and lesbians be allowed to serve openly in the military or shouldn't they be allowed to serve openly?	50% of Active Duty Oppose Open Service 57% of Reserve/Guard Oppose Open Service
Rodgers (2006)	545 U.S. Service Members	Do you agree or disagree with allowing gays and lesbians to serve openly in the military?	37% Oppose Open Service
McGarry (2010)	3,000 Active-Duty Personnel	Do you favor or oppose allowing gays to serve openly in military?	51% Oppose Open Service

examples of this finding can be observed in studies reported by Miller (1994) where 75 percent of male soldiers and 43 percent of female soldiers disagreed or strongly disagreed with the statement that “gays and lesbians should be allowed to enter and remain in the military”; and by Cleveland and Ohl (1994) and Friery (1997) where sixty to seventy percent of naval officers disagreed or strongly disagreed that “homosexuals should not be restricted from serving anywhere in the Navy”; and by Estrada and Weiss

(1999) where 72 percent of Marine Reservists disagreed or strongly disagreed with the statement that “I feel that the ban on homosexuals in the Armed Forces should be lifted.”

In contrast, studies conducted in the 2000s reveal that forty to sixty percent of military respondents disapprove or oppose allowing gays in the military as compared with sixty to seventy percent who expressed such views in the 1990s (see Table 24.2). Illustrative examples of this finding can be observed

in studies conducted by the Annenberg Public Policy Center (2004) where 50 percent of active-duty and 57 percent of Reserve and National Guard respondents thought gays and lesbians should not be allowed to serve openly; Zogby International (Rodgers, 2006) where 37 percent of military respondents disagreed or strongly disagreed that gays and lesbians be allowed to serve openly in the military; and the *Military Times* (McGarry, 2010) where 51 percent of military respondents opposed or strongly opposed allowing gays to serve openly in the military. While it is important to acknowledge that none of these studies include data from large probability-based samples that are representative of the U.S. military population (Department of Defense, 2010a; Sinclair, 2009), the converging evidence does suggest that military opinion appears to be more tolerant toward gays in the military today than it was in the 1990s.

Research on the correlates of military personnel's attitudes toward gays in the military has shown that negative attitudes appear to be associated with certain demographic (e.g., gender, race/ethnicity, religious and political ideology, interpersonal contact) and military (e.g., rank, years of service, military occupation) characteristics. Specifically, research shows that male military personnel tend to disapprove of or oppose gays in the military to a greater extent than female military personnel (Healy, 1993; Miller, 1994; Moradi & Miller, 2010; Rodgers, 2006); that military personnel of white or Latino background tend to disapprove of or oppose gays in the military to a greater extent than African Americans (Healy, 1993; Rodgers, 2006); that military personnel with more conservative political and religious views tend disapprove of or oppose gays in the military to a greater extent than those holding less conservative political and religious views (Estrada & Weiss, 1999; Moradi & Miller, 2010); that military personnel who have had interpersonal contact with gay service personnel tend to disapprove of or oppose gays in the military to a lesser extent than military personnel without such interpersonal experiences (Estrada & Weiss, 1999; Moradi & Miller, 2010); that military personnel with more time in service as well as those with higher rank tend to disapprove of or oppose gays in the military to a greater extent than individuals with less time in service and of lower rank (Moradi & Miller, 2010; Rodgers, 2006); and that military personnel in the combat arms tend to disapprove of or oppose gays in the military to a greater extent than military personnel in either combat support or

combat service support (Department of Defense, 2010a; Healy, 1993).

Compatibility of Gay Service Personnel

Concerns regarding the compatibility of gay individuals and military service have centered on issues involving personal privacy in berthing and billeting of service personnel, self-disclosure of sexual orientation among gay personnel, and perceived conflict with military and family values of the U.S. military institution (Department of Defense, 2010a; Otjen et al., 1993).

PERSONAL PRIVACY IN BERTHING AND BILLETING OF SERVICE PERSONNEL

Service personnel often give up personal privacy in order to fulfill their military obligations. When deployed overseas or in austere conditions in the field, military personnel “work, eat, relax, bathe, and sleep together in close proximity [to one another, over the course of several weeks or even months] . . . the presence of openly homosexual individuals in that environment [it is argued] constitutes a major and unacceptable invasion of privacy or what little privacy remains” (Otjen et al., 1993, p. 163). While individual privacy concerns of military personnel certainly have their place within related policy discussions, these concerns are by military necessity often subjugated in order to accomplish the military mission. Given this fact, a number of social scientists have questioned the logic of this rationale, noting that it is inconsistent with the realities of military life (Belkin & Ember-Herbert, 2002; Herek, 1993; Herek & Belkin, 2005). Belkin and Ember-Herbert (2002) as well as Herek (1993) and Herek and Belkin (2005) have noted that the expectation that the military will provide some measure of individual privacy for all service personnel ignores the fact that military personnel understand that when they enter the armed forces they give up many of their individual rights, not least of which includes personal privacy. Moreover, the privacy rationale ignores the fact that nudity for most people, in most contexts, is psychologically “blinding” (Shawver, 1995). That is, we learn to disregard the presence of others in public situations where individuals may be in a state of undress in order to avoid embarrassing ourselves or others. This is what Goffman (1963) referred to as “civil inattention” and Shawver (1987, 1995) calls the “etiquette of disregard.” When conforming to the “etiquette of disregard,” military personnel engage in mutual gaze-aversion or other similar

behavior to avoid any sexual connotation or sexual objectification that would make the situation difficult or uncomfortable (Shawver, 1995). The privacy rationale also ignores the fact that homosexuals and heterosexuals routinely interact in a number of public settings that compromise individual privacy (e.g., public restrooms, locker rooms) with minimal consequences because homosexual and heterosexuals alike learn to adapt their behaviors in order to conform to the demands of the situation (Herek & Belkin, 2005; Shawver, 1995). Perhaps this is why the recent MWG study found that if the law was repealed, 29.4 percent of military respondents said they would do nothing different when it came to showering, 11 percent would discuss behavioral expectations with gays service personnel, 25.8 percent would shower at a different time, and only 17.7 percent of military respondents would talk to a leader to see if they had other options (Department of Defense, 2010a).

With regard to privacy concerns related to berthing and billeting, military policymakers have argued that “the presence of known homosexuals in a unit will create tension which may require them to be berthed/billeted and segregated from the remainder of the unit in order to maintain good order and discipline” (Otjen et al., 1993, p. 165). This rationale incorrectly assumes that known gay service personnel are not currently assigned to the same berthing and billeting facilities as heterosexual service personnel; and, that gay service personnel would intentionally violate the privacy of heterosexual personnel whenever they are required to share berthing and billeting assignments. However, empirical evidence suggests this is simply not the case. Across a number of independent studies, twenty to seventy percent of military respondents report that they have served in a unit with a person whom they believe (or know) to be gay (Department of Defense, 2010a; McGarry, 2010; Moradi & Miller, 2010; National Defense Research Institute, 2010; Rodgers, 2006), and few, if any, problems have emerged with regard to privacy violations involving gay service personnel. In fact, the comprehensive review conducted by the MWG found that when military respondents were asked about actions they would take if they were assigned to share a room, berth, or field tent with gay service member, 26.7 percent would do nothing, 24.3 percent would have a discussion about expectations, 2.4 percent would seek advice from others, and only 28.1 percent would talk to their leader and seek an alternative option (Department of Defense, 2010a).

Thus, the presumed tensions underlying this rationale are not likely to rise to levels requiring formal actions by the military. This point is underscored by the fact that if we consider that twenty to seventy percent of military personnel believe they serve with gay service personnel, and if we consider the increased operational tempo associated with deployments related to Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), it is very likely that gay and heterosexual service members are already sharing berthing and billeting assignments, both in garrison and in the field. More importantly, no major problems have been reported with regard to privacy in berthing and billeting assignment among gay service personnel and their heterosexual counterparts.

DISCLOSURE OF SEXUAL ORIENTATION OF GAY SERVICE PERSONNEL

U.S. military law and policies require that sexual orientation and sexual behavior remain a personal and private matter. Whenever an individual’s sexual orientation or behaviors become public, the law requires the military services to separate individuals because homosexuality is presumed to create an unacceptable risk to the high standards of morale, good order and discipline, and unit cohesion of the U.S. military (Aspin, 1993; Otjen et al., 1993). However, despite this prohibition, it is clear that the sexual orientation and sexual behavior of gay service personnel has at various times become public with little (if any) risk to good order and discipline or to unit morale and cohesion. In fact, the MWG found the opposite: “when Service members had the actual experience of serving with someone they believe to be gay, in general unit performance was not affected negatively” (Department of Defense, 2010a, p. 4). To understand why disclosure of sexual orientation does not necessarily yield an unacceptable risk to order, discipline, morale, and cohesion, it is important to consider several facts. First, empirical evidence suggests that very few gay service personnel disclose their sexual orientation to other service members—only three percent of gay service personnel reported being open with others in their unit (National Defense Research Institute, 2010). Second, most gay service personnel are highly selective about disclosing information regarding their sexual orientation to other military personnel—among gay service personnel, 46 percent avoid talking about sexual orientation; 22 percent pretend to be heterosexual; and 29 percent are sometimes open about their sexual orientation (National

Defense Research Institute, 2010). Third, gay service personnel are likely to consider many factors before deciding to disclose their sexual orientation to other military personnel. These factors may include, but are not limited to, perceived organizational, supervisory, and peer support (Chrobot-Mason, Button, & DiClementi, 2001; Driscoll, Kelley, & Fassinger, 1996; Griffith & Hebl, 2002; Ragins, Singh, & Cornwell, 2007); command climate for diversity (Claire, Beatty, & Maclean, 2005) and adherence to core organizational values promoting professionalism, respect, and equality (Department of Defense, 2010b). And when the repeal of the law is implemented, it is estimated that only 15 percent of gay service personnel would mainly be open about their orientation with other service personnel in their units (Department of Defense, 2010a; National Defense Research Institute, 2010). Thus, disclosure of sexual orientation by gay service personnel is not likely to cause problems once the new policy is in effect. In fact, it is likely that disclosure of sexual orientation among gay service personnel will benefit both gay and heterosexual service personnel. Past research suggests that disclosure of sexual orientation among gays in the workplace has been associated with improved interpersonal relations (Beals & Peplau, 2006; Collins & Miller, 1994); increased job satisfaction (Griffith & Hebl, 2002); better psychological health (Meyer, 2003; Morris, Waldo, & Rothblum, 2001); and less conflict between work and family life (Day & Schoenrade, 1997). Thus, for gay service personnel, disclosure of sexual orientation is likely to have a positive impact on job, health, and psychological outcomes. Disclosure of sexual orientation among gay service personnel is also likely to increase opportunities for interpersonal contact experiences among gay and heterosexual service personnel. Past research shows that interpersonal contact with members of an out-group is likely to bring about positive changes in attitudes and behaviors of in-group members toward out-group members (Pettigrew & Troop, 2006; Smith, Axelton, & Saucier, 2009). Thus, for heterosexual personnel, disclosure of sexual orientation by gay service personnel may increase interpersonal contact experiences of heterosexual service personnel with gay service personnel. These positive interpersonal contact experiences may lead to increased tolerance and acceptance of gays in the military over time (Estrada & Weiss, 1999; Herek, 1996; Herek & Capitanio, 1996; Herek & Glunt, 1993; Moradi & Miller, 2010).

PERCEIVED CONFLICT WITH MILITARY AND FAMILY VALUES OF THE U.S.

MILITARY INSTITUTION

Military institutions differ from civilian institutions in many respects, not least of which involves the culture and its accompanying rules, customs, values, and traditions (Otjen et al., 1993). Military culture is characterized by the organized use of legitimate violence (Janowitz, 1971); bureaucratic control (Elron, Shamir, & Ben Ari, 1999); task-oriented missions (Dunivin, 1994); a professional ethos that places high regard on discipline, obedience, courage, trust, and self-sacrifice and emphasizes the primacy of the group over the individual (Collins, 1998; Hillen, 1999; Townshend, 1993); and a masculine-warrior image that identifies and extols military service in terms of masculine norms (Dunivin, 1994). Military policymakers have argued that allowing gay service personnel to serve openly in the military would be counter to the culture of the military institution and undermine the institutional loyalty of its members (Otjen et al., 1993). This rationale ignores several important facts. First, gay individuals who volunteer for military service are likely to do so with the understanding that the military, like the rest of society, has yet to come to terms with how to successfully manage the integration of gay individuals in the workplace. Second, openly gay service personnel, like their heterosexual counterparts, learn to adapt their behaviors in order to perform their duties within the confines imposed by military culture. Third, whenever heterosexual service personnel have served with openly gay service personnel, "general unit performance was not affected negatively" (Department of Defense, 2010a, p. 4). Finally, it is worth noting that openly gay service personnel actively manage the disclosure of their sexual identity within the military environment, minimizing the potential for negative effects for themselves or their unit (National Defense Research Institute, 2010).

With regard to family values, military policymakers have argued that military families would object to the participation of openly gay service personnel because they would be perceived as a threat to their loved ones (Otjen et al., 1993). However, evidence from recent surveys of military spouses suggests these perceptions may not be accurate (Department of Defense, 2010a; Westat, 2010). Indeed, large percentages of spouses responding to MWG survey on issues concerning gay service personnel indicated that removal of the ban on gays in the military would have no impact on their family

readiness (77.2%), nor affect their participation in military social events (72.0%), deployment support activities (76.4%) or family support programs (75.1%; Westat, 2010). Moreover, 43.0 percent of spouses did not think any special activities or communications would be necessary to prepare or assist spouses in understanding the new policy if the ban on gays in the military was removed. Thus, it is unlikely that contemporary military families would be threatened by openly gay service personnel. In fact, 44 percent of service members and 63 percent of spouses indicated that if they lived on-base with a gay or lesbian service member and their partner as neighbors, they would get to know the gay or lesbian service member like any other neighbor (Department of Defense, 2010a; Westat, 2010).

Perceived Impact of Gay Service Personnel

Concerns regarding the perceived impact of integrating gay service personnel have centered on issues involving unit cohesion, military readiness, and unit effectiveness (Department of Defense, 2010a; Otjen et al., 1993).

PERCEIVED IMPACT OF GAY SERVICE PERSONNEL ON UNIT COHESION

U.S. military policies note that performance and effectiveness in combat is influenced by a wide variety of factors (Department of Defense, 1992; National Defense Research Institute, 2010). However, high combat effectiveness is premised on “a synergistic mix that can be best expressed as the product of unit cohesion and readiness” (Otjen et al., 1993, p. 162). Unit cohesion is presumed to result from “controlled, interactive forces that lead to solidarity within military units [which] direct soldiers toward common goals . . . [and foster] commitment to [individuals] and to the unit as a whole” (Headquarters, Department of the Army, 1986, p. 204). Accordingly, unit cohesion is theorized to involve social relations among members of a group—*social cohesion*; shared commitment among group members to accomplish the group’s tasks—*task cohesion*; and the psychological attachment of individual members to the group—*group identity or pride* (e.g., Beal, Cohen, Burke, & Mc Lendon, 2003 et al., Chicchio & Essiembre, 2009; Mullen & Cooper, 1994). Of these three factors, task cohesion rather than social cohesion or group identity/pride appears to be the most important aspect of cohesion that underlies the relationship between cohesion and performance (Beal et al., 2005; Chicchio & Essiembre, 2009; Mullen &

Cooper, 1994). Indeed, meta-analytical findings indicate that the weighted average effect of task cohesion on performance tends to be larger than the effect of either social cohesion or group pride on performance (see Table 24.3). This observation holds regardless of whether the studies employ experimental or correlational designs (Mullen & Cooper, 1994); or whether the studies compare effectiveness with efficiency of performance (Beal et al., 2003). These results notwithstanding, it is important to note that the weighted-average effect of task cohesion on performance generally falls within the small-to-medium range (see Table 24.3; Cohen, 1992) and accounts for no more than about 16 percent of variance in performance. Perhaps this is why 70 percent to 76 percent of military personnel surveyed by the MWG reported that removal of the ban on gays in the military would have a positive, a mixed, or no effect on aspects of task cohesion, and 67 percent to 78 percent of military personnel surveyed by the MWG reported that removal of the ban on gays in the military would have a positive, a mixed or no effect on aspects of social cohesion (Department of Defense, 2010a, p. 64).

To understand why so many military respondents reported that removal of the ban would have a limited effect on task and social cohesion, it is important to remember that there are many other factors that influence performance and effectiveness in combat for military personnel (Department of Defense, 1992; National Defense Research Institute, 2010). In fact, research suggests that there are structural and situational factors that may play a larger role on the cohesion–performance relationship than either sexual orientation or sexual behavior of gay service personnel. Structural factors include group size; spatial proximity; sense of tradition; rewards, punishments, and equity within the group; functional interdependence as well as frequency and duration of contact among group members. Situational factors include leadership style, command climate, shared history and recent experiences, threat or challenging conditions, stability of group members, and task characteristics (Beal et al., 2005; Chicchio & Essiembre, 2009; Mullen & Cooper, 1994; National Defense Research Institute, 1993, 2010). Thus, these findings suggests that while cohesion may play a role in performance and effectiveness in combat among military personnel, the impact of cohesion on performance is likely to be small and far more likely to be influenced by structural and situational factors than by the sexual orientation or sexual behavior of gay service personnel.

Table 24.3 Summary of meta-analytical findings involving cohesion and performance

Source	Overall Cohesion	Task	Social	Group Identity
Evans & Dion (1991)	.419	.	.	.
Gully, Devine, & Whitney (1995)	.199	.	.	.
Individual Performance	.228	.	.	.
Group Performance	.317	.	.	.
Mullen & Copper (1994)
Experimental Studies	.223	.428	.271	.403
Correlational Studies	.252	.249	-.132	.084
Oliver et al. (1999)				
Individual Performance ^a	.196	.	.	.
Group Performance ^a	.400	.	.	.
Individual Performance ^b	.310	.	.	.
Group Performance ^b	.331	.	.	.
Beal et al. (2003)	.	.278	.199	.261
Behavioral Performance	.301	.302	.315	.
Outcome Performance	.168	.273	.139	.
Effectiveness	.175	.232	.148	.
Efficiency	.310	.343	.284	.
Chiochio & Essiembre (2009)
Behavioral Performance	.	.359	.485	.
Outcome Performance	.	.346	.201	.

Note: All correlation coefficients are corrected for attenuation and sample size; ^a indicates correlations are weighted by number of participants; ^b indicates correlations are weighted by number of groups; (.) indicates correlations are not reported.

PERCEIVED IMPACT OF GAY SERVICE PERSONNEL ON MILITARY READINESS

Military policymakers contend that high combat effectiveness results from “a synergistic mix” that is a byproduct of unit cohesion and military readiness. The presence of known homosexuals, it is argued, would have a significantly adverse effect on the cohesion and readiness of the force because it would impair the military’s ability to recruit and retain qualified personnel and potentially affect the medical well-being of the force (Otjen et al., 1993). With regard to recruitment and retention concerns, military policymakers suggest that open homosexuality in the military would reduce youths’ propensity to enlist in the military because “the military image would be tarnished” if openly gay individuals are

allowed to serve in the military (Otjen et al., 1993, p. 163). Moreover, it is believed that a significant number of service members would not re-enlist, because many service personnel oppose allowing openly gay individuals to serve in the military. While the logic of this rationale appears straightforward, there are many faulty assumptions that underlie this line of reasoning. First, it is important to recognize that the process of recruiting and retaining qualified personnel involves a complex set of factors that include academic, economic, social, and political variables (Faris, 1984; Griffith, 2005; Hosek, Antel, & Peterson, 1989; Kleycamp, 2006; Moore, 2002; National Defense Research Institute, 1993, 2010; National Research Council, 2003; Stewart & Firestone, 1992; Warner & Asch, 1995).

However, research indicates that educational and economic factors figure most prominently in people's decisions to enter and remain in the U.S. military (Asch, Heaton, Hosek, Martorell, Simon, & Warner, 2010; Asch, Hosek, Mattock, & Panis, 2008; Asch, Hosek, & Warner, 2001; Asch & Warner, 1994; Bicksler & Nolan, 2009; Goldberg, 2001; Hansen, & Wenger, 2002; Hogan, Espinoza, Mackin, & Greenston, , 2005; Kilburn & Asch, 2003; Kilburn & Klerman, 1999; Moore, Hogan, Kirchner, Mackin, & Greenston, , 2006; Warner, 2006; Warner & Asch, 1995; Warner, Simon, & Payne, 2001). Thus, it is highly unlikely that the presence of openly gay individuals within the U.S. military would have a significant influence on recruitment and retention of the force (National Defense Research Institute, 1993, 2010).

Secondly, it is important to note that people cannot make accurate predictions about future behaviors, and individual attitudes do not always predict actual behaviors (DeFleur & Westie, 1958; Fazio & Zanna, 1978; Katz, 1960; LaPiere, 1934; Oullette & Wood, 1998; Sutton, 1998; Wicker, 1969; Wilson & Bar-Anan, 2008). This may be especially relevant for complex decisions like choosing to enter or remain in the U.S. military (National Defense Research Institute, 2010). Thus, while people may express a lower likelihood to enter or remain in the military if openly gay individuals are allowed to serve, the actual proportion of individuals who may actually opt out of military service may be quite small. Perhaps this is why 60 percent of military respondents to the MWG survey indicated that their career plans would not change if restrictions on gays in the military were repealed; 11 percent would consider leaving sooner than planned; and only 13 percent indicated that they would definitely leave sooner than planned (Department of Defense, 2010a).

With regard to the medical well-being of the force, military policymakers argue that:

active homosexuals in the military could be expected to bring an increased incidence of sexually transmitted diseases and other diseases spread by close personal contact. . . . [Furthermore, because the] homosexual lifestyle [is perceived to be] at higher risk for contracting AIDS . . . this could create a perception of an "enemy within" which has the potential to harm not only other service members, but family members as well (Otjen et al., 1993, p. 163).

While our understanding of HIV/AIDS was still evolving in the early 1990s, recent advances in

testing, treatment, and prevention of HIV have significantly improved and have enabled the military to exercise significant control over this disease. All new recruits are tested, and a positive HIV test result disqualifies one from military service (Department of Defense, 2010a). Service personnel are also tested for HIV at least every two years, prior to and following deployments, on the advice of a doctor, or upon request (Department of Defense, 2010a; National Defense Research Institute, 2010). Military policies and procedures have been so effective at preventing HIV/AIDS in the military environment that the Surgeons General of the Army, Navy, and Air Force noted that medical procedures to prevent the spread of HIV and to secure the blood supply of the military were sufficient to protect the health of the force (Department of Defense, 2010a). Thus, the medical well-being of the force is not likely to be compromised by allowing openly gay individuals to serve in the U.S. military (Department of Defense, 2010a; National Defense Research Institute, 2010).

PERCEIVED IMPACT OF GAY SERVICE PERSONNEL ON UNIT EFFECTIVENESS

A unit's effectiveness reflects its ability to accomplish assigned tasks or missions and is determined by structural and situational factors that may be internal or external to the unit (Department of Defense, 2010a, 2010b). Military policymakers contend that the presence of open homosexuals would undermine unit effectiveness because their presence would adversely affect the cohesion and readiness of military units; elements that are quintessential to high combat effectiveness (Otjen et al., 1993). Accordingly, the presence of openly gay service personnel could affect cohesion by straining social relations among unit members, thereby impairing a unit's ability to accomplish tasks or missions; and the presence of openly gay service personnel could also affect a unit's ability to retain military personnel, leading to critical shortfalls in personnel, thereby impairing a unit's ability to accomplish tasks or missions. Though the logic of this rationale may be supported by conventional military wisdom, empirical evidence points to other factors besides sexual orientation that are far more important in fostering unit cohesion and retention of military personnel (Department of Defense 2010a, 2010b; National Defense Research Institute, 2010). Among situational factors, leadership style, command climate, shared history and recent experiences, threat and challenging conditions, stability of group members,

and task characteristics would play a far greater role in the development and sustainment of unit cohesion than concerns related to the sexual orientation of military personnel (Beal et al., 2005; Chicchio & Essiembre, 2009; Department of Defense, 2010a, 2010b; Mullen & Cooper, 1994; National Defense Research Institute, 1993, 2010). Moreover, economic and education factors alone are likely to play a more important role in military personnel's decisions to enter and remain in the military than concerns related to the sexual orientation of military personnel (Asch et al., 2001, 2008, 2010; Asch & Warner, 1994, Bicksler & Nolan, 2009; Goldberg, 2001; Hansen, & Wenger, 2002; Hogan et al., 2005; Kilburn & Asch, 2003; Kilburn & Klerman, 1999; Moore et al., 2006; Warner, 2006). In fact, large percentages of military personnel responding to the MWG survey indicated that the presence of openly gay service personnel would not uniformly impact unit effectiveness. Specifically, 80 percent of military respondents without any combat experience indicated that repeal of the law would have a "positive, mixed, or no effect" on "your immediate unit's effectiveness at completing its mission on a daily basis or when a crisis or negative event happens that affects your immediate unit"; 56 percent of military respondents with combat deployment experience indicated that repeal of the law would have a "positive, mixed, or no effect" on "your immediate unit's effectiveness in a field environment or at sea"; 70 percent of military respondents with combat deployment experience indicated that repeal of the law would have a "positive, mixed, or no effect" on "your immediate unit's effectiveness when a crisis of negative event happens that affects your immediate unit"; 70 percent of military respondents with combat deployment experience indicated that repeal of the law would have a "positive, mixed, or no effect" on "your immediate unit's effectiveness in an intense combat situation" (Department of Defense 2010a, pp. 65–66). Taken together, the preponderance of this evidence suggests that the inclusion of openly gay service personnel is not likely to have a significant impairment on the effectiveness of military units. Perhaps this is why the MWG concluded that "prior to mitigation efforts . . . the impact of repeal . . . [would be] MODERATE risk in garrison and as LOW–MODERATE in a deployed environment" (Department of Defense, 2010a, p. 104). Moreover, the MWG concluded that the primary mitigating factors that would reduce the risks associated with repeal would be "leadership, clear standards, and well-designed education and training

programs" (Department of Defense, 2010a, p. 106; Department of Defense, 2010b).

A Framework for Integrating Openly Gay Service Personnel in the U.S. Military

We have learned a great deal about the challenges and opportunities associated with the inclusion of openly gay service personnel in the U.S. military within the past three decades (Department of Defense, 2010a, 2010b; National Defense Research Institute, 1993, 2010; Westat, 2010). However, it is worth noting that much of the research to date has been guided by pragmatic concerns related to the acceptance, compatibility, and perceived impact that openly gay individuals may have on the U.S. military (Department of Defense, 2010a; National Defense Research Institute, 1993, 2010; Otjen et al., 1993). Given recent changes in the law and impending challenges with the implementation of the repeal of "Don't Ask, Don't Tell," there is a critical need for the development of conceptual frameworks that can guide efforts to implement the repeal of the law and ensure that the U.S. military can successfully manage the integration of openly gay service personnel into its rank and file. Accordingly, this section outlines a theoretical framework of factors influencing the participation and inclusion of openly gay service personnel. Figure 24.1 displays the proposed model and identifies key variables thought to influence the participation and inclusion of gay service personnel within the U.S. military.

As can be seen in Figure 24.1, three classes of variables are identified as playing a primary role in the participation and inclusion of openly gay service personnel within the U.S. military. *Individual* variables include demographic background, military characteristics, religious and political ideology, and interpersonal contact experiences. *Occupational* and *organizational* variables include service and occupational branch, policies and procedures, training and education, leadership support or resistance, and command climate. *Societal variables* include gender-related beliefs and political and economic climate. The sections below elaborate on the various aspects of the proposed model.

INDIVIDUAL VARIABLES

Empirical studies of military personnel's attitudes toward gays in the military have shown these attitudes to be correlated with certain demographic (Estrada & Weiss, 1999; Healy, 1993; Miller, 1994; Moradi & Miller, 2010; Rodgers, 2006) and military (Department of Defense, 2010a; Healy, 1993;

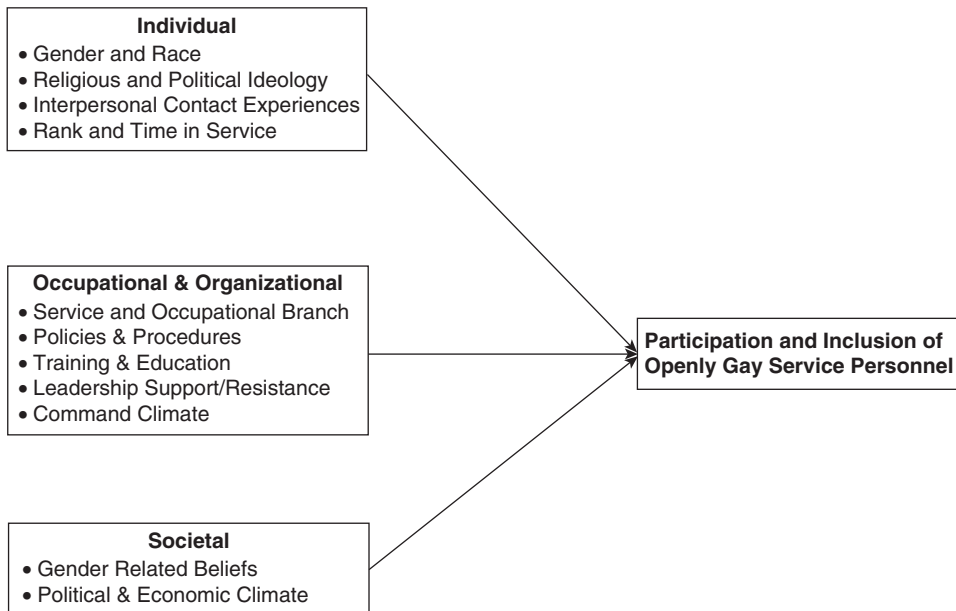


Fig. 24.1 Heuristic model of individual, organizational, and societal factors influencing participation of sexual minorities in the military.

Moradi & Miller, 2010; Rodgers, 2006) characteristics. Specifically, research shows that less tolerance of gays in the military tends to be expressed by male individuals of white or Latino backgrounds (Healy, 1993; Miller, 1994; Moradi & Miller, 2010; Rodgers, 2006), as well as among individuals espousing conservative political and religious views (Estrada & Weiss, 1999; Moradi & Miller, 2010) and those with limited interpersonal contact with gay service personnel (Department of Defense, 2010a; Estrada & Weiss, 1999; Moradi & Miller, 2010). Other research also shows that less tolerance for gays in the military tends to be expressed by military personnel with more time in service as well as those of higher ranks (Moradi & Miller, 2010; Rodgers, 2006). In keeping with this research, the model suggests the following propositions:

Proposition 1: Gender, ethnicity, religious, and political views as well as interpersonal contact with gay service personnel will influence the participation and inclusion of openly gay service personnel.

Proposition 2: Rank and time in service will influence the participation and inclusion of openly gay service personnel.

OCCUPATIONAL AND ORGANIZATIONAL VARIABLES

Empirical research on military personnel's attitudes toward gays in the military suggests that service

members' attitudes appear to be associated with the individual's service branch (i.e., Army, Navy, Air Force, or Marines) as well as their occupational branch (i.e., combat, combat support, combat service support). Specifically, research shows that less tolerance of gays in the military tends to be expressed by service members from the Marine Corps and Army as compared with individuals from the Navy or Air Force (Annenberg Public Policy Center, 2004; Department of Defense, 2010a; Healy, 1993; McGarry, 2010; Westat, 2010; Rodgers, 2006). Other research also shows that less tolerance of gays in the military tends to be expressed among military personnel in the combat arms (Department of Defense, 2010a; Healy, 1993; Westat, 2010). In keeping with this research, the model suggests the following proposition:

Proposition 3: Service and Occupational Branch will influence the participation and inclusion of openly gay service personnel.

Research on gays in the military suggests that the development of clear policies and procedures as well as proper training and education plans are prerequisites for the successful integration of openly gay service personnel in the U.S. military (Department of Defense, 2010a, 2010b; Estrada & Laurence, 2009; National Defense Research Institute, 1993, 2010; Zellman, 1996). For example, research by the

MWG and RAND's National Defense Research Institute highlights the importance of developing a clear vision of what it means to integrate openly gay service personnel in the U.S military to ensure adherence to changes in policies and procedures with regard to gay service personnel (Department of Defense, 2010b; National Defense Research Institute, 1993, 2010). Moreover, MWG and RAND research suggests that the conduct of training and education on new policies and procedures will be important for managing the military's transition and to foster the equitable and fair treatment of all personnel (Department of Defense, 2010b; National Defense Research Institute, 1993, 2010). In keeping with this research, the model suggests the following proposition:

Proposition 4: Organizational policies and procedures as well as training and education will influence the participation and inclusion of openly gay service personnel.

As noted previously, gay service personnel are likely to consider many factors before deciding to disclose their sexual orientation to other military personnel. These factors include perceived organizational, supervisory, and peer support—that is, leadership support or resistance (Chrobot-Mason et al., 2001; Driscoll et al., 1996; Griffith & Hebl, 2002; Ragins et al., 2007); as well as the command's climate for diversity (Claire, Beatty, & Maclean, 2005). Other research conducted by the MWG and RAND's National Defense Research Institute suggests that leadership can play a key role in managing the integration of openly gay service personnel (Department of Defense, 2010a, 2010b; National Defense Research Institute, 2010). Involvement of military leaders is particularly important since they can influence a unit's climate, and they would have primary responsibility for implementing and enforcing military policies about gay service personnel in their respective services (Estrada & Weiss, 1999). Accordingly, the model suggests the following proposition:

Proposition 5: Leadership support or resistance and command climate will influence the participation and inclusion of openly gay service personnel.

CULTURAL AND SOCIETAL VARIABLES

Empirical research on gender-related beliefs (e.g., values concerning the appropriate roles men and women can take in society) has shown that individuals (Glick & Fiske, 1996, 1999; Spence &

Hahn, 1997; Twenge, 1997) and societies (Glick & Fiske, 2001; Glick et al., 2000; Hofstede, 2001; Schwartz, 1994) differ in their tolerance of violations of prescribed behaviors of men and women. Specifically, individuals who ascribe to more traditional gender-role beliefs are less likely to tolerate behaviors that violate these norms and are more likely to enforce sanctions against individuals who violate these norms (e.g., Pryor et al., 1995; Pryor & Whalen, 1997). The importance of these findings for the integration of openly gay service personnel is that the participation and inclusion of gay service personnel within the U.S. military may be influenced by heterosexual service personnel's gender-related beliefs. As such, these beliefs systems may lead some service members to view openly gay service personnel as potentially violating societal norms and expectations, requiring the enforcement of sanctions for violating gender-role norms and thereby influencing the nature of their participation and inclusion within the military environment. Accordingly, the model suggests the following proposition:

Proposition 6: Gender-related beliefs will influence the participation and inclusion of openly gay service personnel.

The political and economic climate of the United States affects the armed forces. The U.S. military is generally favored when the preponderance of elected officials tend to favor and pursue politically conservative policies. In fact, the historical progression of the military's policies with regard to gays in the military tends to follow periods where the executive or the legislative branch of government were heavily influenced by politically conservative views. Indeed, the development of Department of Defense Directives 1332.14 and 1332.30 occurred when the executive branch was occupied by a conservative administration, and passage of 10 U.S.C § 654 occurred when the legislative branch was heavily influenced by politically conservative views of its members. In contrast, repeal of 10 U.S.C § 654 occurred during a period when the executive and legislative branches of government were dominated by politically liberal views. Thus, the participation and inclusion of openly gay service personnel is likely to be affected by the political climate of the country. Accordingly, the model suggests the following proposition:

Proposition 7: Political climate will influence the participation and inclusion of openly gay service personnel.

With regard to the economic climate, the state of the civilian economy is likely to influence the military's ability to recruit and retain individuals into military service (Asch & Warner, 1994; Faris, 1984; Goldberg, 2001; Hosek et al., 1989; National Defense Research Institute, 2010; Warner & Asch, 1995). During economically prosperous times, there are greater opportunities for employment, and military recruitment can be challenging. Conversely, during economically impoverished times, there are fewer opportunities for employment, and military recruiters have greater opportunities to recruit qualified personnel. Thus, the participation and inclusion of openly gay service personnel is likely to be affected by the economic climate of the country. Higher numbers of individuals, including gays and lesbians, may be motivated and qualified for military service during periods of economic scarcity. Accordingly, the model suggests the following proposition:

Proposition 8: Economic climate will influence the participation and inclusion of openly gay service personnel.

This section outlined a theoretical framework of individual, occupational-organizational, and societal factors proposed to influence the participation and inclusion of openly gay service personnel. Eight empirical propositions were derived and posited to explain the interrelationships among the variables contained within the proposed theoretical framework. The proposed framework is meant to inform ongoing discussion and help guide future research related to the management, participation, and inclusion of gay service personnel within the U.S. military.

Theoretical and Methodological Implications for Future Research

As highlighted in the preceding sections of this chapter, a considerable body of knowledge now exists that addresses issues related to the acceptance, compatibility, and perceived impact of integration of openly gay service personnel within the U.S. military (Department of Defense, 2010a, 2010b; National Defense Research Institute, 1993, 2010). This section reviews theoretical and methodological concerns that remain to be addressed in future research in this area.

CONCEPTUAL AND THEORETICAL CONCERNS

We have learned about the many challenges and opportunities associated with the integration of openly gay service personnel within the military environment. However, it is important to note that

much of what we know is guided by pragmatic concerns that are not necessarily informed by either relevant psychological theory or empirical research. Thus, there is a need for theoretically informed studies that incorporate relevant psychological research on this topic. Such approaches are particularly important since they can provide concrete guidance on how to manage the integration of openly gay individuals into the military environment. Such approaches can also inform the military's efforts to anticipate, prevent, and curtail problems associated with the integration of openly gay service personnel within the military environment before they occur (e.g., Office of the Inspector General, 2000). The synthesis presented in the preceding section of this chapter represent an attempt to build a theoretical framework of individual, occupational-organizational, and societal factors that are proposed to influence the participation and inclusion of openly gay service personnel. This framework represents but one approach by which to incorporate relevant empirical research to uncover factors influencing the integration of gays in the military. Other examples can be observed in the work of Estrada and Laurence (2009) who evaluated a heuristic framework that examined how training related to the "Don't Ask, Don't Tell" policy influenced participant's reactions, learning, and cognitive outcomes and behavioral and organization outcomes; and that of Probst, Estrada and Brown (2008) who developed a framework of prevention strategies used to address harassment, violence, and hate crimes in the workplace. While these examples are far from comprehensive, they provide examples of how to integrate relevant theory and empirical research to inform future studies on issues related to the integration of gays in the military. In keeping with these approaches, future research should incorporate relevant psychological theory and empirical research to uncover factors that affect the participation and inclusion of openly gay individuals into the military environment.

METHODOLOGICAL AND STATISTICAL CONCERNS

As noted previously, empirical studies on service members' attitudes toward gays in the military are few, and not as methodologically sophisticated as studies assessing public attitudes on this issue (Department of Defense, 2010a; Sinclair, 2009). The few studies conducted to date suggest that military personnel's attitudes toward gays in the military tend to be less favorable than attitudes of civilians

(Department of Defense, 2010a); and military personnel's attitudes appear to be correlated with certain demographic (Estrada & Weiss, 1999; Healy, 1993; Miller, 1994; Moradi & Miller, 2010; Rodgers, 2006) and military characteristics (Department of Defense, 2010a; Healy, 1993; Moradi & Miller, 2010; Rodgers, 2006). This research has informed our understanding of the various factors that influence military personnel's attitudes toward gays in the military. However, it is important to acknowledge that none of these studies includes data from large probability-based samples that are representative of the U.S. military population (Department of Defense, 2010a; Sinclair, 2009). Therefore, future research needs to include data from samples drawn from the population of military personnel serving in the U.S. military. In addition, future studies should go beyond the use of single-item measures or the use of pragmatically driven survey questionnaires, and utilize multi-item measures with known psychometric properties (e.g., Estrada & Weiss, 1999). Future studies should also incorporate items assessing sexual orientation of military personnel in order to examine similarities and differences in perceptions, attitudes, and experience of heterosexual and gay service personnel with regard to the integration of gay service personnel within the military environment.

Conclusion

Lesbian, gay, bisexual, and transgender individuals have served and continue to serve honorably in the U.S. military. However, until recent changes in both military policy and U.S. laws, they were forced to serve in silence, hidden in the shadows of the military environment. This chapter is intended to contribute to ongoing discussions related to the challenges and opportunities associated with the participation and inclusion of openly gay service personnel within the U.S. military. It is hoped that the review of the historical and scientific record serves to inform the military's efforts to implement the new policy and inform future research on the successful integration of openly gay service personnel within the U.S. military environment.

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Note

1 The term "gay service personnel" is used throughout to refer to lesbians, gay, bisexual and transgender individuals.

References

- Annenberg Public Policy Center (2004). *National Annenberg election survey, 2004*. Philadelphia, PA: University of Pennsylvania. Retrieved from http://www.annenbergpublicpolicycenter.org/Downloads/Political_Communication/naes/2004_03_2military-data_10-16_pr.pdf.
- Asch, B. J., Heaton, P., Hosek, J., Martorell, F., Simon, C., & Warner, J. T. (2010). *Cash incentives and military enlistment, attrition and reenlistment* (MG-950-OSD). Santa Monica, CA: RAND Corporation. Retrieved from <http://www.rand.org/pubs/monographs/MG950/>.
- Asch, B. J., Hosek, J., Mattock, M., & Panis, C. (2008). *Assessing compensation reform: Research in support of the 10th quadrennial review of military compensation* (MG-764-OSD). Santa Monica, CA: RAND Corporation. Retrieved from <http://www.rand.org/pubs/monographs/MG764/>.
- Asch, B. J., Hosek, J. R., & Warner, J. T. (2001). *An analysis of pay for enlisted personnel* (DB-344-OSD). Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/documented_briefings/DB344/.
- Asch, B. J., & Warner, J. T. (1994). *A theory of military compensation and personnel policy* (MR-439-OSD). Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/monograph_reports/MR439/.
- Aspin, L. (1993). Policy on homosexual conduct in the Armed Forces. Reprinted in R. M. Baird & M. K. Baird (1995), *Homosexuality: Debating the issues* (pp. 155-157). Amherst, NY: Prometheus Books.
- Aycock, W. B., & Wurfel, S. W. (1955). *Military law under the Uniform Code of Military Justice*. Chapel Hill, NC: University of North Carolina Press.
- Beals, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology, 88*, 989-1004.
- Beals, K. P., & Peplau, L. A. (2006). Disclosure patterns within social networks of gay men and lesbians. *Journal of Homosexuality, 51*, 101-120.
- Belkin, A., & Embser-Herbert, M. S. (2002). A modest proposal: Privacy as a flawed rationale for the exclusion of gays and lesbians from the U.S. military. *International Security, 27*, 178-197.
- Berube, A. (1990). *Coming out under fire: The history of gay men and women in World War II*. New York: Free Press.
- Bicksler, B. A., & Nolan, L. G. (2009). Recruiting an all-volunteer force: The need for sustained investment in recruiting resources—an update. Arlington, VA: Strategic Analysis Inc.
- Burnett, E. C. (1941). *The Continental Congress*. New York: Norton.
- Borch, F. L. (2010). The history of "Don't ask, don't tell" in the Army: How we got to it and why it is what it is. *Military Law Review, 203*, 189-206.
- Cammermeyer, G. (2005). *Serving in silence*. Brookington, IN: Authorhouse.
- Chauncey, G., Jr. (1989). Christian brotherhood or sexual perversion? Homosexual identities and the construction of sexual boundaries in World War I era. In M. B. Duberman, M. Vicinius, & G. Chauncey (Eds.), *Hidden from history: Reclaiming the gay and lesbian past* (pp. 294-317). New York: New American Library.

- Chiocchio, F., & Essiembre, H. (2009). Cohesion and performance: A meta-analytic review of disparities between project teams, production teams and service teams. *Small Group Research*, 40, 382–420.
- Chrobot-Mason, D., Button, S. B., & DiClementi, J. D. (2001). Sexual identity management strategies: An exploration of antecedents and consequences. *Sex Roles*, 45, 321–336.
- Claire, J. A., Beatty, J. E., & Maclean, T. L. (2005). Out of sight but not out of mind: Managing invisible social identities in the workplace. *Academy of Management Review*, 30, 78–95.
- Cleveland, F. E., & Ohl, M. A. (1994). "Don't ask, don't tell" policy analysis and interpretation. Unpublished master's thesis. Naval Postgraduate School, Monterey, CA.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159.
- Collins, J. J. (1998). The complex context of American military culture: A practitioner's view. *Washington Quarterly*, 21, 213–228.
- Collins, N. L., & Miller, L. C. (1994). Self disclosure and liking: A meta-analytic review. *Psychological Bulletin*, 116, 457–475.
- Committee on Naval Affairs. (1921). *Alleged immoral conditions at Newport (RI) Naval training station*. Washington, D.C.: Government Printing Office.
- Davis, J. S. (1991). Military policy toward homosexuals: Scientific, historical and legal perspectives. *Military Law Review*, 131, 55–108.
- Day, N. E., & Schoenrade, P. (1997). Staying in the closet vs. coming out: Relationships between communication about sexual orientation and work attitudes. *Personnel Psychology*, 50, 147–163.
- DeFleur, M. L., & Westie, F. R. (1958). Verbal attitudes and overt acts: An experiment on the salience of attitudes. *American Sociological Review*, 23, 667–673.
- Department of Defense. (1992, June 3). *Directive 7730.65: Department of Defense readiness reporting system (DRRS)*. Washington, D.C.: DOD.
- Department of Defense. (2010, March 29). *Directive 1332.14: Enlisted administrative separations*. Washington, D.C.: DOD.
- Department of Defense. (2010, March 29). *Directive 1332.30: Separation of regular and reserve commissioned officers*. Washington, D.C.: DOD.
- Department of Defense. (2010a). *Report of the comprehensive review of the issues associated with the repeal of "Don't ask, Don't tell"*. Washington, D.C.: DOD.
- Department of Defense. (2010b). *Report of the comprehensive review of the issues associated with the repeal of "Don't ask, Don't tell": Support plan for implementation*. Washington, D.C.: DOD.
- Driscoll, J. M., Kelley, F. A., & Fassinger, R. E. (1996). Lesbian identity and disclosure in the workplace: Relation to occupational stress and satisfaction. *Journal of Vocational Behavior*, 48, 229–242.
- Dunivin, K. O. (1994). Military culture: Change and continuity. *Armed Forces & Society*, 20, 531–547.
- Elron, E., Shamir, B., & Ben-Ari, E. (1999). Why don't they fight each other? Cultural diversity and operational unity in multinational forces. *Armed Forces & Society*, 26(1), 73–98.
- Estrada, A. X., & Laurence, J. H. (2009). The impact of training on the Don't Ask, Don't Tell, Don't Pursue policy. *Military Psychology*, 21, 62–80.
- Estrada, A. X., & Weiss, D. J. (1999). Attitudes of military personnel toward homosexuals. *Journal of Homosexuality*, 37, 83–97.
- Evans, C. R., & Dion, K. L. (1991). Group cohesion and performance: A meta-analysis. *Small Group Research*, 22, 175–186.
- Faris, J. H. (1984). Economic and non economic factors of personnel recruitment and retention in the all-volunteer force. *Armed Forces & Society*, 10, 251–275.
- Fazio, R. H., & Zanna, M. P. (1978). On the predictive validity of attitudes: The role of direct experience and confidence. *Journal of Personality*, 46, 228–243.
- Friery, M. R. (1997). Trends in Navy officer attitudes toward the "Don't Ask, Don't Tell" policy. Unpublished master's thesis. Naval Postgraduate School, Monterey, CA.
- Gates, R. M. (2010). Testimony before the Senate Armed Services Committee. *Congressional Digest*, 89(4), 116, 119.
- General Accounting Office. (1992). *Defense force management: DOD's policy on homosexuality*. (GAO/NSIAD-92-98). Washington, DC: GAO.
- Glick, P., & Fiske, S. T. (1996). The ambivalent sexism inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, 70, 491–512.
- Glick, P., & Fiske, S. T. (1999). Sexism and other "isms": The interdependence, status, and the ambivalent content of stereotypes. In W. B. Swan Jr., J. H. Langlois, & L. A. Gilbert (Eds.), *Sexism and stereotypes in modern society: The gender science of Janet Taylor Spence* (pp. 193–221). Washington, D.C.: American Psychological Association.
- Glick, P., & Fiske, S. T. (2001). An ambivalent alliance: Hostile and benevolent sexism as complementary justifications for gender inequality. *American Psychologist*, 56, 109–118.
- Glick, P., Fiske, S. T., Mladinic, A., Saiz, J. L., Abrams, D., Masser, B., et al. (2000). Beyond prejudice as simple antipathy: Hostile and benevolent sexism across cultures. *Journal of Personality and Social Psychology*, 79, 763–775.
- Goffman, E. (1963). *Behavior in public places: Notes on the social organization of gatherings*. New York: Free Press.
- Goldberg, M. S. (2001). *A survey of enlisted retention: Models and findings* (CRM D0004085. A2/Final). Alexandria, VA: Center for Naval Analyses.
- Griffith, J. (2005). Will citizens be soldiers? Examining retention of reserve component soldiers. *Armed Forces & Society*, 31, 353–383.
- Griffith, K. H., & Hebl, M. R. (2002). The disclosure dilemma for gay men and lesbians: "Coming out" at work. *Journal of Applied Psychology*, 87, 1191–1199.
- Gully, S. M., Whitney, D. J., & Devine, D. J. (1995). A meta-analysis of cohesion and performance: Effects of level of analysis and task interdependence. *Small Group Research*, 26, 497–520.
- Haggerty, T. (2003). History repeating itself: A historical overview of gay and lesbians in the military before "Don't Ask, Don't Tell." In A. Belkin & G. Bateman (Eds.), *Don't ask, don't tell: Debating the gay ban in the military* (pp. 9–42). Boulder, CO: Lynn Rienner Publishers.
- Hansen, M. L., & Wenger, J. W. (2002). *Why do pay elasticities differ?* (CRM D0005644. A2/Final). Alexandria, VA: Center for Naval Analyses.
- Headquarters, Department of the Army. (1986). *Dictionary of United States Army terms: AR 310–25*. Washington, D.C.: Headquarters, Department of the Army.
- Healy, M. (1993). The Times polls: 74% of military enlistees oppose lifting gay ban. *Los Angeles Times*, February 28, p. A1.
- Herek, G. M. (1993). Sexual orientation and military service: A social science perspective. *American Psychologist*, 48, 538–549.

- Herek, G. M. (1996). Why tell if you're not asked? Self-disclosure, intergroup contact and heterosexuals' attitudes toward lesbians and gay men. In G. M. Herek, J. B. Jobe, & R. M. Carney (Eds.), *Out in force: Sexual orientation and the military* (pp. 197–225). Chicago, IL: University of Chicago Press.
- Herek, G. M., & Belkin, A. (2005). Sexual orientation and military service: Prospects for organizational and individual change in the United States. In T. W. Britt, A. B. Adler, & C. A. Castro (Eds.), *Military life: The psychology of serving in peace and combat*. Vol. 4., *Military Culture* (pp. 119–142). Westport, CT: Praeger Security International.
- Herek, G. M., & Capitanio, J. P. (1996). Some of my best friends: Intergroup contact, concealable stigma, and heterosexuals' attitudes toward gay men and lesbians. *Personality and Social Psychology Bulletin*, 22, 412–424.
- Herek, G., & Glunt, E. K. (1993). Interpersonal contact and heterosexuals' attitudes toward gay men: Results from a national survey. *Journal of Sex Research*, 30, 239–244.
- Hillen, J. (1999). Must U.S. military culture reform? *Orbis*, 43, 43–57.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Beverly Hills, CA: Sage.
- Hogan, P., Espinosa, J., Mackin, P., & Greenston, P. (2005). *A model of Army reenlistment behavior: Estimates of the effects of the Army's selective reenlistment bonus on retention by occupation*. Arlington, VA: U.S. Army Research Institute for the Behavioral Sciences.
- Hosek, J. R., Antel, J., & Peterson, C. E. (1989). Who stays, who leaves? Attrition among first-term enlistees. *Armed Forces & Society*, 15, 389–409.
- HR2965 Don't Ask, Don't Tell Repeal Act (2010). Retrieved from <http://www.gpo.gov/fdsys/pkg/BILLS-111hr2965enr/pdf/BILLS-111hr2965enr.pdf>.
- Janowitz, M. (1971). *The professional soldier: A social and political portrait*. New York: Free Press.
- Joint Service Committee on Military Justice. (2008). *Manual for courts-martial United States*. Washington, D.C.: Department of Defense.
- Katz, D. (1960). The functional study of attitudes. *Public Opinion Quarterly*, 24, 163–204.
- Katz, J. N. (1976). *Gay American history: Lesbian and gay men in the USA*. New York: Thomas Y. Crowell Company.
- Kilburn, R. M., & Asch, B. J. (2003). *Recruiting youth in the college market: Current practices and future policy options* (MR-1093-OSD). Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/monograph_reports/MR1093/.
- Kilburn, R. M., & Klerman, J. A. (1999). *Enlistment decisions in the 1990s: Evidence from individual-level data* (MR-944-OSD/A). Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/monograph_reports/MR944/.
- Kleycamp, M. A. (2006). College jobs or the military? Enlistment during a time of war. *Social Science Quarterly*, 87, 272–290.
- Korb, L. J., & Duggan, S. E. (2007). An all-volunteer Army? Recruitment and its problems. *Political Science & Politics*, 40, 467–471.
- LaPiere, R. T. (1934). Attitudes vs. actions. *Social Forces*, 13, 230–237.
- Leung, R. (2003, Nov. 14). They didn't ask; he didn't tell: Is the Pentagon's policy toward gays in the military working? *60 Minutes*. Available at <http://www.cbsnews.com/stories/2003/11/14/60minutes/main583738.shtml>.
- McGarry, B. (2010, Feb. 5). "Don't Ask" survey published. *Military Times*. Retrieved from http://www.militarytimes.com/news/2010/02/military_dontask_survey_020510w/?loc=interstitialskip.
- Meyer, I. H. (2003). Prejudice, social stress and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, 129, 674–697.
- Miller, L. (1994). Fighting for a just cause: Soldiers' view on gays in the military. In W. Scott & S. Stanley (Eds.), *Gays and lesbians in the military: Issues, concerns, and contrasts* (pp. 69–85). New York: Aldine De Gruyter.
- Miller, L., & Williams, J. A. (2001). Civil rights vs. combat effectiveness? Military policies on gender and sexuality. In P. D. Feaver & R. H. Kohn (Eds.), *Soldiers and civilians: The civil-military gap and American national security* (pp. 361–402). Cambridge, MA: MIT Press.
- Moore, B. L. (2002). The propensity of junior enlisted to remain in today's military. *Armed Forces & Society*, 28, 257–278.
- Moore, C., Hogan, P., Kirchner, K., Mackin, P., & Greenston, P. (2006) *Econometric estimates of Army retention: Zones A, B, C, D and retirement-eligible estimates with data through FY 2004*. Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Moradi, B., & Miller, L. (2010). Attitudes of Iraq and Afghanistan war veterans toward gay and lesbian service members. *Armed Forces & Society*, 36, 397–419.
- Morris, J. F., Waldo, C. R., & Rothblum, E. D. (2001). A model of predictors and outcomes of outness among lesbian and bisexual women. *American Journal of Orthopsychiatry*, 71, 61–71.
- Mullen, M. (2010). Testimony before the Senate Armed Services Committee. *Congressional Digest*, 89(4), 120, 122.
- Mullen, B., & Cooper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, 115, 210–227.
- Murphy, L. R. (1988). *Perverts by official order: The campaign against homosexuals in the United States Navy*. New York: Haworth Press.
- National Defense Authorization Act, 10 USC § 654 (1994). Retrieved from <http://law.justia.com/us/codes/title10/10usc654.html>.
- National Defense Research Institute. (1993). *Sexual orientation and U.S. military personnel policy*. Santa Monica, CA: RAND.
- National Defense Research Institute. (2010). *Sexual orientation and U.S. military personnel policy: An update of RAND's 1993 study*. Santa Monica, CA: RAND.
- National Research Council. (2003). *Attitudes, aptitudes and aspiration of American youth: Implications for military recruitment*. Washington, D.C.: Committee on Youth Population and Military Recruitment.
- Obama, B. (2010, Jan.). Remarks by the President in State of the Union address. Washington, D.C.: White House. Retrieved from <http://www.whitehouse.gov/the-press-office/remarks-president-state-union-address>.
- Office of the Inspector General. (2000). *Evaluation report: Military environment with respect to the homosexual conduct policy* (Report Number D-2000-101). Washington, D.C.: Department of Defense.
- Oliver, L. W., Harman, J., Hoover, E., Hayes, S. M., & Pandhi, N. A. (1999). A quantitative integration of the military cohesion literature. *Military Psychology*, 11, 57–83.
- Otjen, J. P., Davitte, W. B., Miller, G. L., Redd, J. S., & Loy J. M. (1993). Summary report of the military working group on

- recommended Department of Defense homosexual policy. Washington, D.C.: Department of Defense. Reprinted in R. M. Baird & M. K. Baird (1995), *Homosexuality: Debating the issues* (pp. 158–270). Amherst, NY: Prometheus Books.
- Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, *124*, 54–74.
- Pettigrew, T. F., & Troop, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, *90*, 751–783.
- Pew Center for the People and the Press. (2010, Nov.). *Most continue to favor gays serving openly in military*. Retrieved from <http://pewresearch.org/pubs/1812/dont-ask-dont-tell-repeal-public-supports-gays-serve-openly-in-military>.
- Probst, T. M., Estrada, A. X., & Brown, J. (2008). Harassment, violence and hate crimes in the workplace. In K. M. Thomas (Ed.), *Diversity resistance: Manifestation and solutions* (pp. 93–125). New York: Lawrence Erlbaum and Associates.
- Pryor, J. B., Giedd, J. L., & Williams, K. B. (1995). A social psychological model for predicting harassment. *Journal of Social Issues*, *51*, 69–84.
- Pryor, J. B., & Whalen, N. (1997). A typology of sexual harassment: Characteristics of harassers and the social circumstances under which harassment occurs. In W. O'Donohue (Ed.), *Sexual harassment: Theory, research and treatment* (pp. 129–152). Boston, MA: Allyn and Bacon.
- Ragins, B. R., Singh, R., & Cornwell, J. M. (2007). Making the invisible visible: Fear and disclosure of sexual orientation at work. *Journal of Applied Psychology*, *92*, 1103–1118.
- Rodgers, S. (2006). Opinions of military personnel on sexual minorities in the military. Zogby International. Retrieved from <http://www.palmcenter.org/files/active/0/ZogbyReport.pdf>.
- Ross, S. M. (2011). Fighting two protracted wars: Recruiting and retention with the all-volunteer force. In S. Carlton-Ford & M. G. Enders (Eds.), *The Routledge handbook of war and society* (pp. 9–19). New York: Routledge.
- S4023: Don't Ask, Don't Tell Repeal Act (2010). Retrieved from <http://thomas.loc.gov/cgi-bin/query/z?c111:S.4023>.
- Shawver, L. (1987). On the question of having women guards in male prisons. *Corrective and Social Psychiatry*, *33*, 154–159.
- Shawver, L. (1995). *And the flag was still there: Straight people, gay people and sexuality in the U.S. military*. New York: Harrington Park Press.
- Shilts, R. (1993). *Conduct unbecoming: Gays and lesbians in the U.S. military*. New York: St. Martin's Press.
- Schwartz, S. H. (1992). Universals in the structure and content of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, *25*, 1–65.
- Schwartz, S. H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim, H. C. Triandis, C. Kagitcibasi, S-C Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, method and applications* (pp. 85–119). Thousand Oaks, CA: Sage.
- Schwartz, S. H. (1996). Value priorities and behavior: Applying a theory of integrated value systems. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The psychology of values: The Ontario symposium* (Vol. 8, pp. 1–24). Hillsdale, NJ: Lawrence Erlbaum.
- Siebold, G. L., & Kelly, D. R. (1988). *Development of the combat platoon cohesion questionnaire*. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Sinclair, G. D. (2009). Homosexuality and the military. A review of the literature. *Journal of Homosexuality*, *56*, 701–718.
- Smith, S. J., Axelton, A. M., & Saucier, D. A. (2009). The effects of contact on sexual prejudice: A meta-analysis. *Sex Roles*, *61*, 178–191.
- Spence, J. T., & Hahn, E. D. (1997). The attitudes toward women scale and attitude change in college students. *Psychology of Women Quarterly*, *21*, 17–34.
- Stewart, J. B., & Firestone, J. M. (1992). Looking for a few good men. *American Journal of Economics and Sociology*, *51*, 435–458.
- Sutton, S. (1998). Predicting and explaining intention and behavior: How well are we doing? *Journal of Applied Social Psychology*, *25*, 1371–1338.
- The sexes: The sergeant vs. the Air Force. (1975). *Time* magazine, Sept. 8. no byline. Retrieved from <http://www.time.com/time/magazine/article/0,9171,917785,00.html>.
- Torres-Reyna, O., & Shapiro, R. Y. (2002). The polls-trends: Women and sexual orientation in the military. *Public Opinion Quarterly*, *66*, 618–632.
- Townsend, C. (1993). Militarism and modern society. *Wilson Quarterly*, *17*, 71–82.
- Twenge, J. M. (1997). Attitudes toward women, 1970–1995: A meta-analysis. *Psychology of Women Quarterly*, *21*, 35–51.
- U.S. War Department. (1918). *A manual for courts-martial, courts of inquiry and of other procedures under military law*. Washington, D.C.: Government Printing Office.
- U.S. War Department. (1920). *The Articles of War*. Washington, D.C.: Government Printing Office.
- U.S. War Department. (1921). *A manual for courts-martial*. Washington, D.C.: Government Printing Office.
- U.S. War Department (1942). *Mobilization regulations (MR 1–9): Standards of physical examination during mobilization*. Washington, D.C.: U.S. War Department.
- Warner, J. T. (2006). *Thinking about military retirement* (CRM D0013583. A1/Final). Alexandria, VA: The Center for Naval Analyses.
- Warner, J. T., & Asch, B. J. (1995). The economics of military manpower. In K. Hartley, & T. Sandler (Eds.), *Handbook of defense economics* (pp. 347–398). Amsterdam: Elsevier.
- Warner, J. T., & Asch, B. J. (2001). The record and prospects of the all-volunteer military in the United States. *Journal of Economic Perspectives*, *15*, 169–192.
- Warner, J. T., Simon, C., & Payne, D. (2001). *Enlistment supply in the 1990s: A study of the Navy college fund and other enlistment incentive programs* (DMDC Report No. 2000–015, 2001). Washington, D.C. Defense Manpower Data Center.
- Westat. (2010, Nov.). *Support to the DOD comprehensive review working group analyzing the impact of repealing "don't ask, don't tell" Volume 1: Findings from the surveys*. Rockville, MD: Westat.
- Wicker, A. W. (1969). Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects. *Journal of Social Issues*, *25*, 41–78.
- Williams C. J., & Weinberg, M. S. (1971). *Homosexuals and the military: A study of less than honorable discharge*. New York: Harper & Row Publishers.
- Wilson, T. D., & Bar-Anan, Y. (2008). The Unseen Mind. *Science*, *321*, 1046–1047.
- Yang, A. S. (1997). Trends: Attitudes toward homosexuality. *Public Opinion Quarterly*, *61*, 477–507.
- Zellman, G. L. (1996). Implementing policy changes in large organizations: The case of gays and lesbians in the military. In G. M. Herek, J. B. Jobe, & R. M. Carney (Eds.), *Out in force: Sexual orientation in the military* (pp. 266–289). Chicago, IL: University of Chicago Press.

Military Families in an Era of Persistent Conflict

Bradford Booth and Suzanne Lederer¹

Abstract

Since the start of America's post-September 11, 2001 military operations in Afghanistan and Iraq, military families have been the subject of increasing interest and attention from the media and the public, military leaders, policymakers, government agencies outside the military, nonprofits, researchers, and others. Recent deployments for these conflicts, and widespread recognition of the resulting sacrifices that military families have experienced, have led to unprecedented programmatic and policy responses compared to earlier conflicts. This chapter provides an overview of social science research on military families, with a focus on studies and analyses conducted within the last decade. We begin with a snapshot of the basic characteristics of the population, noting subgroups that deserve particular attention and the reasons why. We then revisit Segal's (1986) categorization of the basic demands of military life for families, updating the "greedy institutions" model with an additional dimension: the various phases of the contemporary deployment cycle. We conclude by presenting a set of priorities that we believe should guide military family research, policies, and programs during this "era of persistent conflict."

Keywords: Military families, deployment, deployment cycle, family support programs, family adaptation, resilience

Why a Chapter on Military Families?

America's civilian and uniformed military policymakers and leaders have increasingly recognized the influential role that military families play during the career progression of military members, the impact of family factors on the armed forces' ability to maintain readiness and retain personnel, and the level of sacrifice that military families make—during times of peace but particularly when the nation is at war. Nearly every public address made by senior military officials, for example, now makes reference to military families and the nation's obligation to support them; both Secretary of Defense Robert Gates and First Lady Michelle Obama have ranked support for military families among their top priorities (Sweet, 2010), and in late 2010 the president signed a proclamation making November "Military

Families Month" (American Forces Press Service, 2010). Much of this recognition has its genesis in the grassroots activity of military family members themselves, who in the 1980s and 1990s vigorously advocated for greater resources and programs to help address the challenges of deployment, family separation, and relocations that are part of military life (Stanley, Segal, & Laughton, 1990). Also during this period, social science research on military families—funded under initiatives such as the Army's *Army Family Research Program* and the Air Force's *Families in Blue*—helped institutionalize the collection of empirical data to help the military understand the experiences of its families and provide evidence that family factors impact individual and organizational outcomes of importance to the military.

Since that time, and concurrent with profound changes in the means and speed of communication, the chorus of voices publicly advocating for meeting military families' needs has grown dramatically. In addition to grassroots organizations made up of military family members (who have continued to advocate as strongly as their predecessors), other voices have included established nonprofits, lobby groups, members of Congress, organizations within the armed forces responsible for family support, veteran service organizations, and Fortune 500 companies. As America's wars in Afghanistan and Iraq² continue nearly a decade after the attacks of September 11, 2001, the challenges facing military families have been publicized by these collective voices, and by a "greedy" communications media operating on a 24-hour cycle across multiple media channels (Ender et al., 2007). Social science research on the needs and challenges faced by military families has also proliferated over the past several years as more universities, think-tanks, government institutions, and private foundations have turned their attention to the need to understand and ameliorate the short- and long-term social consequences of the current conflicts—such as how to ensure the well-being and reintegration of returning combat veterans and their families.

Collectively, these factors have served to reinforce the idea that, when the nation deploys its armed forces to engage in conflicts overseas, it is also asking military families to share in that sacrifice. A chapter on the characteristics, experiences, and support needs of military families is therefore relevant to the goals of this volume for numerous reasons: because "families also serve," because military family factors have consequences for the military as an organization, and because society has an interest in promoting the health of its veterans and their family members.

The "Era of Persistent Conflict"

The pace and frequency of military deployments for the wars in Afghanistan and Iraq have been unprecedented in the brief history of the modern all-volunteer force, and remain high at the time of this writing. In response, the Department of Defense (DOD) and the individual service branches have devoted significant resources to meeting the needs of military families during what has been termed an "era of persistent conflict" (Department of the Army, 2008). For example, since 2001, the number and scope of formal family support programs and related initiatives has grown greatly (Booth, Segal,

& Place, 2010). To provide a sense of scale, the Fiscal Year 2011 defense budget includes \$8.8 billion in funding for military family support (Office of Management and Budget, 2010). While some of these investments predate the current conflicts, examples include new child-care centers; other "brick and mortar" support facilities (both on and off installations); the hiring of government and contract employees to provide services such as mental health and family life counseling, administrative assistance for unit-level family support activities; web-portals and other "virtual" resources to disseminate information; call-centers operating 24 hours a day; and an array of new programs focused marriage enrichment, personal financial management, family resilience, activities for children and youth, and other topics. The number of partnerships between the DOD and other federal, state, and local government agencies and with civilian nonprofit groups has also increased to provide outreach and support for a diverse and geographically dispersed population of military service members and families.

By any measure, these investments in material and human resources (as well as other examples too numerous to mention) are substantial and have greatly elevated the nation's capacity to identify and address the needs of military families. We refer to this network of programs, facilities, providers and resources as the military family *support infrastructure*, a concept that would hardly have had meaning when the all-volunteer force was first established. By comparison, today's military family members can draw on a wide range of information resources and services from this infrastructure to help them cope with the challenges related to life in the military. At the same time, military life is very different today than it was just ten or fifteen years ago. Missions like Operation Enduring Freedom and Operation Iraqi Freedom (OEF and OIF, respectively) have profoundly increased the military's operational and personnel tempo, with dramatic consequences for service members and families as well as the resources required to support them (Hosek, Kavanagh, & Miller, 2006). These missions, and others like them, appear likely to continue for years, along with the strains and challenges they create for military personnel and families. In this chapter, we attempt to highlight some of the contemporary experiences of military families and the challenges they face, and document some of the findings of research conducted on and about military families, mostly during the post-9/11 period.

Since we cannot address these topics comprehensively in a single chapter, our goal here is to provide an introductory overview. Because military families are a diverse population, the chapter begins by briefly defining and describing some of the characteristics of the population and identifying certain subgroups of families that warrant special consideration by both researchers and policymakers. We then discuss the common demands of military life for families, with a focus on the “deployment cycle,” and we highlight selected research findings that touch on how families are adapting to these demands. We conclude the chapter by offering a set of priorities that we believe should be used when policymakers, military leaders, and researchers think about, design, implement and evaluate initiatives to support military families.

Who Are Military Families?

From the perspective of official eligibility for DOD benefits (e.g., healthcare, housing), a service member’s family is defined as the individuals who are his or her legal dependents. This typically includes the member’s spouse and children, but on occasion, it may also include a dependent parent, sibling, or other relation.³ This administrative definition, however, is not particularly broad or encompassing, and excludes many relationships that military members themselves would consider family relationships.

Examples include the parents of single service members, siblings, members of the extended family (grandparents, aunts, uncles), persons with whom the member may cohabit or share a committed relationship, and non-dependent children. These significant others may be just as deeply affected by the member’s service as those who are legal dependents (Booth et al., 2007). To effectively support military families, particularly during periods of high operational tempo, it is important for the military to recognize diversity in military family relationships and embrace a definition of “the family” that includes a broad range of supportive relationships (Demo, Allen, & Fine, 2000).

Approximately 2.2 million persons serve in uniform in the U.S. military, including the active component and the selective reserve. The population of military family members—reluctantly defined here as “legal dependents” because DOD lacks administrative data on other types of family members—is even larger; numbering more than 3 million (Office of the Secretary of Defense, 2010). In the active component (AC), 58 percent of service members have family members who are legal dependents, compared with 56 percent of those serving in the reserve component (RC). Selected statistics on the military family member population in both components are shown in Table 25.1.

Table 25.1 Select demographics of military families, by component*

	Active Component	Reserve Component
Percent of service members who are married	56% (includes 7% who are married to a military member)	49% (includes 3% who are married to a military member)
Percent of military spouses who are female	93%	88%
Percent of spouses who are of a racial or ethnic minority	37%	27%
Percent of spouses employed in the civilian labor force	45%	69%
Percent of spouses 25 years of age or under	30%	14%
Percent of service members with dependent children	44% (includes 5% who are single parents)	43% (includes 9% who are single parents)
Percent of those children who are under 6 years of age	42%	27%

* Sources: Office of the Secretary of Defense (2010); Defense Manpower Data Center (2007a; 2007b). All cell totals are based on DOD administrative records except race/ethnicity and employment, which are based on DOD spouse survey data and may be subject to significant error (Losing, 2010).

While the demographic profile provided in the table is limited, several important conclusions can be drawn from even these few data points. Military families are young, on average, and among those with children, their children tend to be young. Because the military is mostly male, roughly nine out of ten military spouses in both the AC and the RC are female. Like the armed forces themselves and the U.S. population in general, the population of military family members is diverse in terms of race and ethnic background. Many military members are in what is termed a “dual-military” marriage, where both partners are in the armed forces, and this trend is much more common among female than male service members, and more common in the AC than in the RC. Civilian spouses of active component personnel are employed at a lower rate than their counterparts married to reservists and their counterparts married to civilians (Hosek et al., 2002; Booth et al., 2007). These demographic characteristics have important implications for the experiences of military families, and the military’s ability to effectively support them. Additionally, there are several important subgroups within the overall population of military families whose unique circumstances exacerbate the routine challenges inherent in military life. These subgroups, described below, are likely to need more support than other members of the military community.

Families of Junior Enlisted Personnel

Junior enlisted personnel (i.e., those employed in pay grades E1–E4) compose slightly less than half (44%) of the active duty force. Most junior enlisted personnel enter the military after finishing high school or shortly thereafter, and the large majority (94%) lack a bachelor’s degree. In their late teens and early twenties, they are just entering adulthood, and their personal resources (e.g., relationship skills, consumer skills) and material resources (e.g., income, education, transportation) are limited. One-third of junior enlisted personnel, however, are married. Their spouses tend to be equally unworldly and even less knowledgeable about the military as an organization and lifestyle, since spouses do not accompany service members to basic training.

Once at their first assignment and beyond, many junior enlisted spouses remain physically and socially distant from the military community. In many cases, they do not live among other military families, are relatively unaware of available military services and supports, and may even lack a means of getting to and from the installation. In some

cases, their service member spouse may discourage them from interacting with other unit spouses who might otherwise provide them with informal social support. (Harrell, 2001b; Booth et al., 2007). Many of these junior enlisted spouses are also mothers.

Families of Guard and Reserve Personnel

As noted, more than half of personnel in the RC have spouses and/or children. As citizen-soldiers, sailors, airmen, and Marines, most members of the RC also pursue civilian careers. Their military job typically does not require that they relocate their permanent residence, which allows their families to maintain their roots in the civilian community, including near extended family in many cases. At the same time, the geographic dispersion of RC families from one another and from the unit in which the member serves makes it more challenging for these families to learn about and connect with the larger military community (Castaneda et al., 2008). Furthermore, the distance between their homes and active-component military installations prevents many from discovering and using available services and supports. As the RC has been transformed from a “strategic” to an “operational” reserve, however, Guard and Reserve members have been activated for repeated deployments to Iraq and Afghanistan, and their families have become “suddenly military” (National Military Family Association, 2005). Thus, the lifestyle of RC families, and many of the challenges they confront, are now comparable to those of their AC counterparts (Commission on the National Guard and Reserves, 2008; Booth et al., 2007; Castaneda et al., 2008).

Families of Single Service Members

Single service members have families of origin (particularly parents), extended families, and significant others who may not be plugged into the support infrastructure, because they are not legal dependents. As noted earlier, while they may not live with or near the service member, or share his or her military lifestyle to the same extent as a military spouse, these family members are also affected by their loved one’s service. Civilian families with minimal prior military exposure may find their service member’s deployment particularly stressful. Whether military or civilian, local or remote, single-service-member families, like spouses, can benefit from ongoing information and contact from the unit throughout the deployment cycle (National Military Family Association, 2004).

As shown in Table 25.1, five percent and nine percent of active and reserve component members, respectively, are single parents. Within the AC, the Army has the highest percentage of single parents (6.6%) and the Marine Corps the lowest (2.7%). Single parents are most common among warrant officers (7.1%) and noncommissioned officers (16.4%). While in absolute numbers most of the military's single parents are male (68%), a higher proportion of female than male service members are single parents. Single parents with minor children must contend with the challenge of identifying a suitable custodian for their children when they deploy. Although the DOD mandates that these parents prepare a formal "family care plan" that outlines how children will be cared for if they deploy, the plans are not always realistic or viable (Defense Department Advisory Committee on Women in the Services [DACOWITS], 2005). Children of single parents who deploy, in turn, must adapt to life with a new primary caretaker if not also to a different locale or household.

Families of Dual-Military Service Members and Female Service Members

Many service members are in dual-military marriages, including more than half of married female Marines and Air Force personnel in the active component. While dual-military couples usually seek to live together as a family, co-located assignments are not always available, particularly as they advance in seniority. At various times in their careers, dual-military couples must live apart, or alternatively, one member may have to sacrifice a preferred job opportunity, or their military career altogether, in order for the couple to live together (Iskra, 2008; DACOWITS, 2008a). About half of dual-military couples have children, and these families are not immune from concurrent or back-to-back deployments. Like single parents in the military, dual-military families with children must also prepare a family care plan, and the chances of simultaneous deployment potentially expose both the parents and children in these families to potential upheaval.

Women are about 14 percent of the active-component military and 18 percent of the RC, and they are less likely than their male counterparts to be married. As such, men are a small minority of all military spouses and often find themselves without a peer group in the military community. Though many of these male spouses are in the military or have prior service, it is easy to overlook this segment of the military spouse population or to forget that

they deserve the same level of formal and informal supports as female spouses, particularly during periods of high operational tempo. The difficulty of balancing the roles of mother and service member is illustrated by the paucity of women with children among the higher echelons of the military (Iskra, 2008; DACOWITS 2006).

Families of Geographically Dispersed Personnel

As noted, members of the RC community are geographically dispersed and often lack access to installation-based services. Other military subpopulations share similar circumstances. For example, many service members are assigned to remote locations where they and their families largely live among civilian communities (e.g., recruiters, ROTC instructors). In other cases, families choose to disperse, such as when spouses return to their parents' home when their service member deploys. Regardless of the circumstances, the needs of geographically dispersed military families must be addressed (Heirakuji, 2009).

Families of Cross-Leveled Personnel

"Cross-leveling" refers to the practice of assigning service members to a deploying or deployed unit other than their own, either as an individual augmentee or as part of a small contingent. When service members are temporarily cross-leveled in this fashion, it is not always clear which unit—the losing or the gaining—is responsible for providing deployment-related family support. In the absence of clear guidance or active involvement by unit leaders, families of cross-leveled personnel are at risk of receiving minimal to no support at all during their service member's deployment (Commission on the National Guard and Reserves, 2007; Castaneda et al., 2008).

Common Challenges for Military Families

A useful framework for understanding the demanding nature of military life was provided by Segal (1986), who applied sociologist Lewis Coser's concept of the "greedy institution" to characterize the simultaneous and conflicting claims the military and the family make on the service member's time and psychological and personal resources. This framework remains relevant for the era of persistent conflict, as military service, particularly for those in the ground forces (i.e., the Army and Marine Corps), has only become "greedier" during the post-9/11 period. This trend is reflected in the widespread

acknowledgement that the military is overstretched and “out of balance” as a consequence of the high operational and personnel tempo of ongoing conflicts (Department of the Army, 2008).

Segal’s model described a set of common demands of military life that affect service members and their families, often simultaneously. These demands include frequent relocation, family separation, risk of injury and death, unusual work hours, living overseas, and behavioral expectations. The greedy institutions framework was developed within a peacetime context, however, and to fully capture the unique challenges of the current period, it must be put in the context of the contemporary “deployment cycle.” This term conveys without ambiguity that deployments are and will be a constant feature of life in the military, regardless of the branch in which a member serves. For military families, the deployment cycle is the defining characteristic of the era of persistent conflict. Like the Navy, which has long practiced a “ship to shore” rotation during both peace and wartime, the other services have increasingly adopted an expeditionary mindset in which service members, even those in the reserve component, can expect to be deployed on a periodic basis, the predictability of which depends on such factors as geopolitical realities, mission requirements, and the size of the force.

The various service branches characterize the deployment cycle in different ways and with different terminology, as appropriate to their mission and policies. At the risk of oversimplification, however, the general phases of this cycle are shown in Figure 25.1.

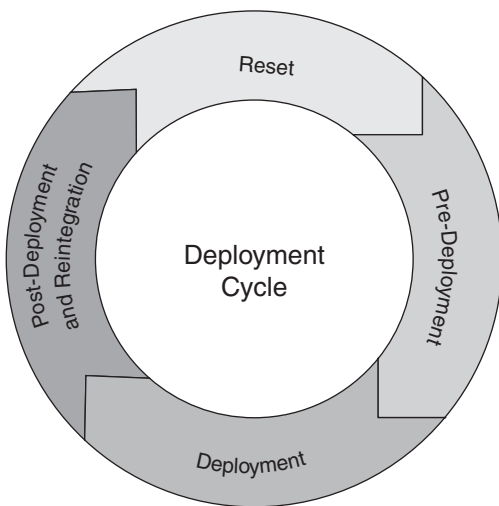


Fig. 25.1 Phases of the deployment cycle.

This cycle can trigger a range of responses from the family across the various phases—normal reactions that have been characterized as the “emotional cycle of deployment.” (Pincus et al., 2004; Morse, 2006). Below we discuss some of the common challenges of these phases, the emotional responses and practical issues they create, and implications of research findings for providing effective support. We recognize that many of these challenges span more than one phase, or even present themselves more or less continuously (such as concern for the service member’s safety). To organize our discussion, however, we employ the framework shown in Table 25.2.

Reset

We begin with this phase because, ideally, it is the longest in the cycle and the most akin to what might be called a “steady state.” In reality, the services have had mixed success providing units, personnel, and families with adequate “dwell time” in between deployments (Tan, 2009). Borrowing from the Army’s ARFORGEN model⁴, the *reset phase* refers to that period in which the service member may be undergoing various kinds of training or professional development, but is not actively engaged in pre-deployment preparations, serving on a deployment, or reintegrating immediately after a deployment. Key challenges often encountered by the family during this phase include longstanding ones common to both peace and wartime, and to both the modern all-volunteer force and the draft-era military. Among these are relocation (including to locations outside the continental United States), pressure to conform to behavioral norms common to military life, and a general lack of predictability. Again, we stress that these demands do not necessarily fade during other phases of the cycle.

Frequent Relocation

The military requires its personnel to move often, and on average, military families experience many more long-distance relocations in a given period than do civilian families (Hosek et al., 2002). The military term for these moves is “permanent change of station,” or PCS. Besides logistical challenges and out-of-pocket expenses, a PCS entails loss and stress associated with saying goodbye to friends and familiar surroundings, forming new relationships, and adjusting to new environments (Segal, 1986; Burrell et al., 2006). Children’s adjustment to a move may depend in part on their age. School-age children and adolescents, for example, may be more troubled

Table 25.2 Common challenges for military families across the deployment cycle

Reset	Pre-Deployment	During Deployment	Post-Deployment and Reintegration
<ul style="list-style-type: none"> • Frequent relocation • Behavioral expectations • Lack of predictability 	<ul style="list-style-type: none"> • Uncertainty about the deployment • Logistical preparations 	<ul style="list-style-type: none"> • Family separation • Loneliness, anxiety and stress • Fear of injury or death 	<ul style="list-style-type: none"> • Marital stress and divorce • Becoming a caregiver for a wounded member

than younger children, as a function of the loss of peers and friendships. By and large, children take their cue from the civilian parent, typically the mother—if she takes the move in stride, so do they (Watanabe & Jensen, 2000).

Geographic mobility has significant implications for military children’s education (DACOWITS, 2008a; Military Child Educational Coalition, 2010). Although the military operates schools overseas and domestically, the vast majority of military children are enrolled in the public school system (Department of Defense Educational Activity, 2009). The Secondary Education Transition Study (SETS), conducted during 1999 and 2000, documented how PCS moves disadvantage military students educationally (Barrette, 2001). Recently, due to Global Repositioning and Base Realignment and Closure (BRAC), unprecedented numbers of military children of all ages are attending public schools, some of which may be unprepared to accommodate them and to understand and respond appropriately to their issues and needs. These needs may include recognizing potential behavioral or academic issues that may surface as a consequence of the absence of a parent due to wartime deployment, and helping military students cope with this and other challenges of military life (Huebner et al., 2007; Cozza, Chun, & Polo, 2005; Flake et al., 2009).

Frequent relocation also affects military spouses’ employment, earnings, and career goals, since they effectively become “tied migrants”—that is, spouses’ moves are tied to service members’ assignments (Payne, Warner, & Little, 1992). Largely as a consequence of military wives’ inability to build a work history in one place or with one employer, their earnings are lower and their unemployment rates higher compared to their civilian counterparts (Hosek et al., 2002). Further, a common complaint from military spouses looking for work is that some prospective employers discriminate in hiring and pay practices, since employers understand that the spouse will not be in the area for long (Castaneda et al., 2008). For some spouses, geographic mobility means they must obtain new licensure and/or

certification with each move (DACOWITS, 2008a). Military spouses also often find themselves in “base towns” characterized by higher civilian unemployment and fewer high-paying opportunities than more economically vibrant locales (Booth, 2003). Collectively, these impediments to military spouse employment and earnings can create financial hardship for some families, and can jeopardize career-minded spouses’ professional development. Spouses of wounded warriors face even greater hurdles, due to relocations necessitated by the service member’s treatment and rehabilitation, and the significant time and energy the spouse must devote to supporting the service member’s recovery (DACOWITS, 2008b; Christensen et al., 2009).

Behavioral Norms

Both Durand (2000) and Harrell (2001a) highlight the potential for conflict between the reality of a modern labor force in which a majority of women work outside the home, and a military that has traditionally expected military spouses—especially the wives of officers—to fulfill a range of voluntary roles and responsibilities. Among the most labor-intensive of these voluntary roles is that of the military unit’s “family readiness group” (FRG) leader.⁵ The responsibilities of the FRG leader—an unpaid job that has traditionally been borne by the spouse of the unit commander—are many and varied. Typical tasks include disseminating information to unit family members, organizing and participating in unit events and meetings, providing mentorship to other unit spouses, advocating for the needs of unit families, and acting as a liaison between the unit command group/rear detachment and family members. In spite of a modern economy that creates significant pressure for two incomes for most married couples, military spouses report that there remains a clear expectation on the part of the military that officers’ wives will fulfill the FRG leader’s role (Harrell, 2001a; Durand, 2000).

Though the military now provides assistance to FRGs in the form of contract personnel to conduct administrative tasks (e.g., maintaining records and

contact information), the military still asks a great deal from its family member volunteers, particularly as lengthy and repeated deployments tax the resources of those willing to serve. Many family members, for example, report that serving in these roles can become a full-time job in itself and lead to “burnout” (National Military Family Association, 2005). Complicating matters is the fact that unit-based FRGs can vary greatly in the levels of spouse interest, leadership skills of available volunteers, and command support, leading to variations and unpredictability in the general effectiveness and inclusiveness that military family members encounter from one location to another when seeking support from the FRG (Booth & Lederer, 2006).

Lack of Predictability

For the most part, military families recognize the basic demands of military life—they accept that there will be moves, separations, and even risk. An aspect of the lifestyle that spouses seem to find particularly stressful, however, is its impact on their ability to make personal and family plans. On a daily basis, they may not know what time their military member will be home or when he or she might be available for a daytime appointment. Month to month, the departure and return dates for training, exercises, and deployments are often uncertain or in flux. When he or she will be able to take leave is often unclear. PCS orders also are subject to change. In this unpredictable environment, spouses are hard-pressed to make long-term plans and commitments (Rosen & Durand, 2000). For example, they may want to pursue further education but not know if they will be at their current location long enough to complete it or if the military member will be available evenings to watch children, or they may want to make a deposit on a family vacation but be uncertain whether the military member will be available.

Pre-deployment

This phase spans the time the unit receives formal notification of the pending deployment; that is, the “warning order,” until the actual departure from the home station. This phase may range from just several weeks to more than a year. Hallmarks of the pre-deployment phase include dealing with uncertainty about the deployment (an emotional challenge) and preparing for it (a logistical challenge).

Uncertainty About the Deployment

Related to, but distinct from the general unpredictability discussed above, many family members

experience stress and anxiety in the face of limited information about a pending deployment—for example, about the living environment in theater, the level of threat, or how often they will be able to communicate with their service member. There may be concerns, expressed or not, about marital fidelity and how the family will cope in the service member’s absence. Spouse and family anxiety about what is to come can be exacerbated as the service member begins to work longer hours as the unit prepares to deploy, creating for some spouses a feeling of emotional and physical distance from the service member, even though the service member has not deployed yet (Bell & Schumm, 2000).

Preparing for Deployment

During the pre-deployment stage, couples have many practical tasks to take care of, such as ensuring household appliances and the car are in good working order, arranging alternative child-care plans, getting wills and a power of attorney, and otherwise ensuring that the spouse who remains behind is equipped to manage the family’s financial and legal affairs. At the same time, families need to try to find quality time together (Bell & Schumm, 2000). Pincus and colleagues (2004) observe that it is not unusual for couples to have a significant argument just prior to deployment (something that more seasoned couples take in stride more easily than younger ones), and that can exacerbate children’s fears if not handled well by the custodial parent. Family members within the RC and newer military families in either component may experience extra stressors, such as “information overload,” lack of relationships with other spouses, or complications related to having to put their own jobs or careers on hold as the spouse prepares to become “suddenly single.” RC families also may face administrative challenges as they transition to the military’s health care system. (Castaneda et al., 2008; National Military Family Association, 2005).

During Deployment

Just as the deployment cycle is a defining characteristic of military life, the deployment phase can be considered the defining element of the cycle. Deployments differ—e.g., by theater of operations (e.g., Afghanistan, Bosnia, domestic regions affected by disaster), purpose (e.g., humanitarian missions, combat operations, “nation building” operations), length (from a few weeks to more than a year), extent of exposure to danger, and level of public support for the mission. These variables can affect

how families respond to deployment (Booth et al., 2007). Well prior to the onset of post-9/11 operations, Peebles-Kleiger and Kleiger (1994) observed that the families of units that deployed in support of operations Desert Shield and Desert Storm (the First Gulf War) experienced higher levels of stress than the families of units that had deployed on earlier, routine missions. Since that time, researchers have continued to demonstrate linkages between deployment characteristics and family outcomes (for example, see Chandra et al., 2009). Our discussion following focuses primarily on families whose service members deploy under austere conditions—that is, for six to twelve months on combat missions—and addresses three of the key challenges that families face during deployment: family separation; loneliness, anxiety, and stress; and fear of injury or death of the service member.

Family Separation

Though separation from one's family can be a common demand of military life during other phases of the deployment cycle (such as during training exercises or military schooling), separations due to deployment are the most challenging separations, due to their lengths and heightened risks. During OEF and OIF, Army deployments have tended to be the longest, with soldiers typically deploying to Iraq or Afghanistan for a 12-month tour, plus additional time separated from their family for training prior to departure and the significant possibility of involuntary extension of the tour. Deployment length, and the extent to which the duration exceeds families' expectations, have been found to negatively impact families' ability to cope, as well as their level of satisfaction with military life (Orthner & Rose, 2005; Castaneda et al., 2008; Booth et al., 2007; Chandra et al., 2009). In terms of deployment frequency, DOD survey data indicate that military members serving in 2009 had averaged 2.4 deployments since September 11, 2001, with 17 percent reporting four or more deployments (Defense Manpower Data Center, 2010).

Following the service member's departure, there may be a transitional period for families. During the first month, families may experience mixed emotions, such as relief, anger, numbness, sadness, or feelings of abandonment or being alone. Spouses may experience difficulty sleeping and feel anxious about their ability to cope with sole parenting and whatever additional challenges might lie ahead (Pincus et al., 2004). After this transitional period most families adjust to separation, adapting to their

circumstances and establishing routines and new sources of support, both formal and informal. For example, they may participate in the unit FRG or similar support group, or volunteer on-base or in the community (Rosen, Durand, & Martin, 2000). Many establish mutually supportive relationships with fellow military spouses. For those who work, co-workers are often a source of social support, although some spouses find their expanded responsibilities at home require them to reduce their work hours or cease to work altogether. Some spouses, particularly young mothers, return home to take advantage of the support of their extended families. (Hosek, Kavanagh, & Miller, 2006; Rosen, Durand, & Martin, 2000).

Modern telecommunications somewhat mitigate the hardship of family separation during deployments. Service members and families are able to communicate by cell phone, email and Skype, among other many means, and many do so daily (Ender, 2009; Hosek, Kavanagh, & Miller, 2006). This access to one another can ameliorate loneliness at both ends and provide civilian spouses support and input on matters that they might otherwise have to handle alone. It is a mixed blessing, however, because many civilian spouses come to expect frequent contact and worry intensely when contact is interrupted (Jaffe, 2010; National Military Family Association, 2004).

There is growing evidence of increased behavioral and mental health symptoms among children with a deployed parent relative to their peers without a deployed parent or to national norms (Cozza, Chun, & Polo, 2005; Flake et al., 2009; Huebner et al., 2007; Chandra et al., 2009; Jensen, Martin, & Watanabe, 1996). In focus groups and interviews, military spouses corroborate that, from their perspective, a parent's deployment adversely affects their children (DACOWITS, 2005). The child's response to a parent's deployment is strongly affected by how well the custodial parent deals with the service member's absence (Flake et al., 2009; Watanabe & Jensen, 2000).

Loneliness, Anxiety, and Stress

The deployment of one's significant other, parent, or child is an inherently stressful experience. Table 25.3 shows that loneliness, feelings of anxiety or depression, and/or difficulty sleeping strongly affected over one-third to more than half of spouses in 2008 who had experienced the deployment of their service member. Numerous studies reinforce the prevalence of these conditions (Castaneda et al., 2008;

Table 25.3 Problems most frequently reported by military spouses during deployment

Problem	Percent who report experiencing to a “large” or “very large” extent	
	Active Component spouses	Reserve Component spouses
Loneliness	47%	51%
Feelings of anxiety or depression	37%	46%
Difficulty sleeping	36%	46%
Household repairs, yard work or car maintenance	29%	48%
My job or education demands	26%	30%

Sources: Defense Manpower Data Center (2009).

Wiens & Boss, 2006; Flake et al., 2009). Burrell and colleagues (2006) found that the separation of a soldier from his or her family was more predictive of poor spousal well-being than any other aspect of military life. In child studies, military parents with deployed spouses have been shown to have higher levels of depression symptoms than parents whose service members were not deployed (Jensen, Martin, & Watanabe, 1996). Some military spouses have also reported that around-the-clock embedded media reporting from the war theater was a major source of stress in the early months of OIF (Ender et al., 2007), and war-related reporting may create stress in young military children as well (Cozza, Chun, & Polo, 2005).

As Table 25.3 also indicates, the hardship of deployment has practical as well as emotional underpinnings. Spouses temporarily assume sole responsibility for managing the household and, if applicable, for parenting. The family’s financial status may deteriorate during the deployment, with increased expenses accompanied by reduced net family income. For example, the family may have higher telephone bills due to increased contact with friends, family, and the deployed service member, and there may be increased child-care costs occasioned by the absence of the second parent. At the same time, a spouse’s earnings may decrease because they cannot work as many hours as usual or because the demands of single parenting require them to give up their job altogether. If the service member happened to have a second job, that source of income, too, is lost. Some families may see an increase in income from deployments, however, since the service members’ income increases due to hostile-fire pay or other adjustments. RC families

may experience an additional disruption to their net income, since upon activation to full-time status, Guard and Reserve members relinquish their civilian positions and begin to draw full-time military pay. The effect of this transition on family finances may be positive or negative, depending on the differential in pay between the reservist’s civilian and military job, the ability of the spouse who stays behind to begin or continue their own employment, and other factors (Castaneda et al., 2008).

Risk of Injury or Death

Military service entails greater risk of injury or death than most civilian occupations, particularly during times of war. Military families are acutely aware of the risks to their service member’s safety associated with deployment—a risk that is almost certainly a key driver of the high levels of anxiety and sleepless reported by spouses with deployment experience, shown in Table 24.3. Although this risk is part of service in any branch, in the past decade it has been greatest for those in the Marine Corps and the Army, which as ground forces have suffered the most casualties in the ongoing conflicts. Numerous studies and surveys have identified clear, prompt and accurate communication from the military to families as a major factor that helps mitigate the stressful effect of uncertainty about the safety of the service member his or her unit during deployment (Booth et al., 2007; National Military Family Association, 2004; Rosen, Durand, & Martin, 2000).

All of the challenges of this phase that have been discussed require family members to adapt in order to successfully weather deployments. A number of factors have been shown to be associated with family

adaptation during this phase, including available material resources (which tend to increase with rank and experience); access to informal support such as friends and family who can relate and empathize with what the military family is going through; and access to and awareness of formal sources of support, including installation services and regular communication from the unit leadership (Booth et al., 2007). Personal or psychological resources that are associated with adaptation include feeling connected with the military community, maturity, communication skills, and mental health. Spouses' and children's coping capacity and stress levels are also related to how supported they feel—by their immediate family, extended family, unit, military community, and civilian community (Spera, 2009).

Increasingly, the discussion of how to provide effective support for families during deployment has focused on the concept of *resilience*—the psychological ability to adapt under adverse or challenging conditions (MacDermid et al., 2008; Weins & Boss, 2006). At the time of this writing, numerous DOD-directed studies and programs are underway that seek to identify factors that strengthen resilience in military spouses, children, and service members themselves, and the most effective tools and techniques to promote and sustain it.⁶

Post-Deployment and Reintegration

In the final month of the deployment, the service member begins the process of transition from the theater of operations back to home station. This is a time of great anticipation for military families. While spirits tend to be high, spouses also may experience apprehension about how the couple and family will readjust, and expectations may or may not be realistic (Pincus et al., 2004). Post-deployment starts with the service member's arrival at home station. While homecoming is initially joyful, post-deployment can be a difficult and protracted adjustment for service members and their families, lasting from three to six months. Family dynamics have may have changed in the service members' absence; the spouse may have become more independent and accustomed to making household and parenting decisions. Likewise, young children may not recognize or respond to the returning parent (DACOWITS, 2005). Marital, parenting, and household roles must be renegotiated and emotional connections must be reestablished between husbands and wives and parents and children (Booth et al., 2007).

Service members may learn survival behaviors in the combat zone that can be maladaptive in the home, such as hypervigilance and emotional distance. Additionally, residual combat stress may present in combat veterans as irritability, guardedness, and the desire to be alone. While in most cases these behaviors and symptoms subside in time without the need for professional help, they are not conducive to interpersonal communication or rebuilding relationships and thus can exacerbate the challenge of post-deployment adjustment for the entire family (Adler et al., 2007).

Reserve component service members and their families may encounter additional challenges during post-deployment. The reintegration task of reservists is more daunting, since, as citizen-soldiers, they must reintegrate not only with their families but also with their civilian communities and civilian jobs. Continuing interaction with one's comrades and unit leadership, normally an important source of support for returning service members, may be substantially diminished or broken as the RC unit demobilizes. Reintegration initiatives for the Guard and Reserve, such as the various *yellow ribbon* programs, have been created since 9/11 to facilitate a successful return to civilian life, bring unit members and families back together periodically for assessment and educational briefings, and provide information and referral resources. With some exceptions (Booth et al., 2009) little research has been done to evaluate the contribution of these initiatives to actual reintegration outcomes. Reintegration support for RC personnel and families is clearly indicated, however, as these combat veterans are at greater risk than AC counterparts for adverse consequences during post-deployment such as alcoholism and other drug abuse and co-morbid mental health problems (Milliken, Auchterlonie, & Hoge, 2007).

We highlight here two life-changing circumstances that military families may confront in the post-deployment and reintegration stage: marital stress and divorce, and becoming a caregiver for a wounded warrior.

Marital Stress and Divorce

As is true of marriages between civilians, many military marriages (i.e., marriages involving a service member and a civilian spouse, or two military members) end in divorce. Of great concern to the military, the public, and policymakers is whether the frequency and length of deployments for wars in Afghanistan and Iraq has led to an increase in

divorce among military families. Soon after these operations began, anecdotal and media accounts linking divorce to ongoing deployments began to proliferate.⁷ Our experience is that service members and family members in most military communities are indeed able to share personal stories about friends and colleagues who have divorced, or are planning to, as a result of too much separation or other factors connected to the military way of life. The relationship between deployment and divorce rates is an empirical question, however, and there remains a dearth of well-designed, published research establishing a clear causal linkage between the two. Some of the available data on this topic are provided below.

Roughly one-sixth of spouses surveyed by DOD in 2008 reported experiencing marital problems to a “large” or “very large” extent during their service member’s most recent deployment (Defense Manpower Data Center, 2009).⁸ Among RC spouses whose service members had returned within the past 24 months, nearly one-fourth (23%) reported serious problems in their marriage had occurred *after* their spouse returned, suggesting that the reintegration phase is the point in the deployment cycle when marital strife is most likely to surface. Military divorce rates have, in fact, increased over the course of wars in Afghanistan and Iraq, but very gradually, and not at a consistent rate by year or by service branch (Table 25.4). The Defense Manpower Data Center (DMDC) tracks divorce by examining the marital status of each service member in its personnel files at the start of the fiscal year, and reviewing their marital status the following year if they are still in uniform.

It is helpful to put these rates into context by examining trends in the civilian sector, which are tracked by the Centers for Disease Control (2010).

Although the civilian rate has declined slightly over the same period covered in Table 25.4, what is most noteworthy about the rates for both populations is their similarity. Though family separation and the subsequent strains of reintegration are certainly contributing factors in the decisions of many military couples who choose divorce, military administrative data like those shown above cannot tell us which divorces would have taken place anyway, in the absence of deployments. They also cannot tell us what percentage of married couples divorce after the service member is discharged—a major critique of those who believe the military underestimates the effect of deployments on military marriages.⁹

Research on the general population suggests that many factors are associated with the likelihood of divorce, including younger age at first marriage, economic instability, and minority racial/ethnic background, which are often interrelated (Lundquist, 2007; White, 1991, Amato, 1996). As a result of military selection criteria and compensation policies, some of these demographic factors disproportionately characterize the military population, perhaps making it more vulnerable to divorce. Karney and Crown (2007), who have conducted the most comprehensive review of the links between divorce and deployment to date, note that it is important to consider these and other factors when examining if, and why, military marriages dissolve. They note, as do Lundquist (2007) and Hogan and Seifert (2010), that the level of compensation and benefits offered by the military (such as the basic housing allowance) increases as a function of a member’s family status and family size, creating an incentive for early marriage.

Indeed, enlisted personnel in junior pay grades are much more likely than their civilian peers of similar age to be married (Booth et al., 2007), and as a result, “when most military couples face challenges . . . they do so as younger people in younger marriages, relative to comparable civilian couples” (Karney & Crown, 2007, p. 23). Similar findings are reported by Lundquist (2007), who analyzed survey data from the late 1970s and early 1980s—when lengthy and frequent deployments were uncommon—and found that rates of divorce were higher among enlisted military personnel than in a civilian control group with similar age and background characteristics. Hogan and Seifert (2010) also find that military personnel marry earlier and divorce earlier than civilians.

In their study of military divorce rates over a 10-year period from 1996 from 2005, which used

Table 25.4 Military divorce rate, by service branch*

	2006	2007	2008	2009
Army	3.2%	3.2%	3.5%	3.6%
Air Force	3.3%	3.5%	3.5%	3.4%
Navy	3.4%	3.2%	3.0%	3.6%
Marine Corps	3.1%	3.3%	3.7%	3.6%
Military rate	3.3%	3.3%	3.4%	3.6%
Civilian rate	3.7%	3.6%	3.5%	3.4%

*Sources: Office of the Secretary of Defense (2010; 2009); Center for Disease Control (2010).

the entirety of DOD personnel records from that period, Karney and Crown (2007) did not find support for the “stress hypothesis” that deployments cause divorce. They noted that the largest change in divorce rates occurred in the period between 1999—when the rate peaked at nearly 4 percent for the 10-year period—and 2001, when it had fallen to roughly 2.5 percent. The study finds that divorce rates in 2005 were, in fact, very similar to those in 1996, when the pace of deployment was relatively low by comparison.

Partially as a function of the unique needs of younger families, the military provides many resources in the form of support programs and services (e.g., child care, marriage-enrichment counseling) that are not always accessible to families in the civilian sphere. How many military families have used these programs and services to successfully address marital and family stressors and avoid divorce is unknown, but the military stresses the role of these programs in helping keep divorce rates down (Miles, 2008).

While the armed forces must remain aware of the issue, and continue to provide access to support resources to help military families to adapt to the stresses of long and often repeated deployments, the available evidence does not support the idea that post-9/11 deployments have caused an “epidemic” of divorce like that suggested in media headlines. It is probably more accurate to say that deployments and family separations are among the profoundest challenges of military life and can lead to increased stress in military marriages, and that many individuals in such marriages are young, inexperienced, and may lack the psychological, social, and material support to adapt. Additional research using longitudinal designs and comparable civilian comparison groups is clearly needed to better quantify and understand the relationship of military divorce to deployments and other demands of military life.

Becoming a Caregiver for a Wounded Warrior

Due to advances in battlefield medicine, unprecedented numbers of severely wounded military personnel are surviving their combat injuries and returning to their families. As noted, this risk to the service member is a hallmark of military service and of the military lifestyle. Yet how can one be prepared to hear that their service member has been severely wounded, or to cope with aftermath of this news? Family members, too, become casualties of war (DACOWITS 2009 and 2008b; Christensen et al., 2009).

For every wounded warrior, there are wounded family members whose lives are forever changed. While the emotional turmoil is profound, including a deep sense of loss and an abiding uncertainty about their future, families experience other stresses as well. There is tremendous logistical upheaval, for example. Typically, one or more family caregivers, usually a wife or parent, rushes to the hospital bedside and stays with the service member throughout the duration of their inpatient hospitalization, outpatient care, and rehabilitation—on average, a 12-month period. While their service member’s condition is paramount to them, the caregiver’s other obligations also beckon. They must contend with minor children at home or on-site, jobs from which they are absent and which they risk losing, bills that need to be paid, transportation costs between home and treatment site, and other challenges. Furthermore, as caregivers, family members find themselves navigating new roles and environments (President’s Commission on Care for America’s Returning Wounded Warriors, 2007). In addition to acting as their wounded warrior’s comforter, encourager, and part-time nurse, “they become their . . . assistant, advocate, spokesperson and, in time, chauffeur and personal manager.” What is more, “caregivers must learn to maneuver within complex military and healthcare bureaucracies, interact with multiple military and healthcare personnel and providers, and become conversant in terminology related to both of these worlds” (DACOWITS, 2008b, p. 20).

Conclusion

A key challenge faced by DOD, the service branches, researchers, and professional service-providers alike is to stay abreast of the evolving needs of military families while simultaneously developing, implementing, and evaluating the effectiveness of programs that support their well-being during this “era of persistent conflict.” This chapter has provided a brief overview of some of the most noteworthy characteristics, challenges, and ongoing needs of military families. We conclude with a set of priorities that we believe should guide—and in many cases are already guiding—the efforts of military family researchers, military leaders, and policymakers, and the many active professionals who are focused on the effective support of military families in the twenty-first century. These priorities emerge directly from the research findings and sources discussed in this chapter, as well as the authors’ personal experience interacting with, and learning

from, service members, family members, program managers and staff, civilian and uniformed leaders throughout the military, and our fellow researchers. These priorities are:

- Ensuring early identification of family distress symptoms related to deployment and reunion
- Continuing to explore methods to reduce the stigma related to mental health care
- Developing creative approaches to including extended family members and significant others, as appropriate, in family support and readiness initiatives
- Increasing awareness of and strategies to address caregiver burden (including for military spouses and helping professionals)
- Defining, measuring, and strengthening family readiness in all components
- Evaluating reintegration programs in the Reserve component and identifying and disseminating best practices
- Understanding the impacts of ongoing organizational changes (BRAC, global repositioning) on military families—including how these changes will affect spouse employment opportunities, children's well-being, family readiness, and access to support
- Developing additional partnerships that leverage the goodwill and resources of the civilian community, the private sector and nonprofits to support military families
- Ensuring that support programs provide consistent, predictable baseline levels of service regardless of location or component
- Identifying organizational barriers and “stovepipes” in order to avoid unnecessary duplication of services and maximize families’ access to resources.

Notes

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2 Although the Obama administration announced the official end of combat operations in Iraq in summer 2010, tens of thousands of troops remain deployed there as of fall 2010.

3 These individuals—once labeled “military dependents” are now referred to by the military as “family members.”

4 ARFORGEN stands for the Army Force Generation model (Department of the Army, 2008).

5 “Family readiness group” is an Army term, but the Navy and Marine Corps have also begun to use it. Moreover, all service branches have long maintained volunteer family support groups, but with different names (e.g., the Key Volunteer program in the Marine Corps, the Ombudsman program in the Navy).

6 For example, the Defense Centers of Excellence for Deployment Health and Traumatic Brain Injury has established a Prevention and Resilience Directorate. Accessed 10/20/10 from: <http://www.dcoe.health.mil/WhoWeAre/Directorates/ResilienceandPreventionDirectorate.aspx>.

7 For example, see: Military divorce rates up as conflicts test families, Associated Press, Thursday, December 4, 2008. *The Washington Times*. DOD also now regularly publicizes divorce data in press briefings: <http://www.defense.gov/news/newsarticle.aspx?id=52194>

8 Results were 14% of AC spouses and 15% for RC spouse.

9 “Military divorce rates up as conflicts test families,” Associated Press.

References

- Adler, A., Castro, C., Bliese, P., McGurk, D., & Milliken, C. (2007, Aug.). The efficacy of battlemind training at 3–6 months post-deployment. In C. A. Castro (Chair), *The battlemind training system: Supporting soldiers throughout the deployment cycle*. Symposium conducted at the meeting of the American Psychological Association, San Francisco, CA.
- Amato, P. R. (1996). Explaining the intergenerational transmission of divorce. *Journal of Marriage and the Family*, 58, 628–640. doi: 10.2307/353723.
- American Forces Press Service (2010, Nov. 1). *President proclaims November as Military Family Month*. Retrieved November 1, 2010, from U. S. Department of Defense website: <http://www.defense.gov/news/newsarticle.aspx?id=61489>.
- Barrette, D. (2001, July 23). *Schools agree to make transitions easier for Army youth*. Retrieved October 25, 2010, from the *Military Child Education Coalition* website: <http://www.militarychild.org/about-us/schools-agree-to-make-transitions-easier-for-army-youth>.
- Bell, D. B., & Schumm, W. R. (2000). Providing family support during military deployments. In J. A. Martin, L. N. Rosen, & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers*. Westport, CT: Praeger.
- Booth, B. (2003). Contextual effects of military presence on women's earnings. *Armed Forces and Society*, 30, 25–52.
- Booth, B., & Lederer, S. (2006, Sept.). Supporting Army families in an era of continuous deployments. Paper presented at the biennial meeting of the Inter-University Seminar on Armed Forces and Society, Canada. Ontario, Canada.
- Booth, B., Lederer, S., Dick, S., et al. (2009, Aug.). *Reintegration experiences of returning National Guard war veterans and implications for reintegration programming: Results from two states*. Presented at the Military Psychology Division (Division 19) Poster Session at the meeting of the American Psychological Association, August 7, Toronto, Canada.
- Booth, B., Segal, M. W., & Place, N. (2010). *National leadership summit on military families: Final report*. Prepared for the Office of the Under Secretary of Defense for Military Community and Family Policy. Fairfax, VA: ICF International. Accessible from: http://www.militaryhomefront.dod.mil/portal/page/mhf/MHF/MHF_DETAIL_0?current_id=20.20.60.70.0.0.0.0.0.
- Booth, B., Segal, M. W., Bell, D. B., et al. (2007). *What we know about Army families: 2007 update*. Prepared for the U. S. Army Family and Morale, Welfare, and Recreation Command (F&MWR). Fairfax, VA: ICF International.
- Burrell, L., Durand, D., Adams, G., & Castro, C. (2006). The impact of military lifestyle demands on well-being, army and

- family outcomes. *Armed Forces and Society*, 33, 43–58. doi: 10.1177/0002764206288804
- Castaneda, L., Harrell, M., Varda, D., Hall, K., Beckett, M., & Stern, S. (2008). *Deployment experiences of guard and reserve families*. Santa Monica, CA: RAND.
- Centers for Disease Control. (2010, Aug.). *National vital statistics report*, 58. Retrieved Oct. 1, 2010, from: http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_25.htm.
- Chandra, A., Lara-Cinisomo, S., Jaycox, L., et al. (2009). Children on the home front: The experience of children from military families. *Pediatrics*, 125, 12–23. doi: 10.1542/peds.2009–1180
- Christensen, E., Hill, C., Netzer, P., Farr, D., Schaefer, E., & McMahon, J. (2009). *Economic impact on caregivers of the seriously wounded, ill, and injured*. Alexandria, VA: Center for Naval Analysis. Accessed Oct. 15, 2010, from <http://www.cna.org/research/2009/economic-impact-caregivers-seriously-wounded-ill>.
- Commission on the National Guard and Reserves. (2007). *Second report to Congress*. Arlington, VA: Author. Retrieved May, 2010, from <http://cng.gov/resource-center.CNGR-reports.asp>.
- Commission on the National Guard and Reserves. (2008). *Transforming the Guard and Reserves into a 21st century operation force: Final report to the Congress and the Secretary of Defense*. Arlington, VA; The Commission. Author
- Cozza, S., Chun, R., & Polo, J. (2005). Military families and children during Operation Iraqi Freedom. *Psychiatric Quarterly*, 76, 371–378.
- Defense Department Advisory Committee on Women in the Services (DACOWITS). (2005). *2005 report*. Washington, D. C.: DACOWITS. Author. Accessible from: http://dacowits.defense.gov/tablereports_subpage.html
- Defense Department Advisory Committee on Women in the Services (DACOWITS). (2006). *2006 report*. Washington, D. C.: DACOWITS. Author. Accessible from http://dacowits.defense.gov/tablereports_subpage.html
- Defense Department Advisory Committee on Women in the Services (DACOWITS). (2008a). *2008 report*. Washington, D. C.: DACOWITS Author. Accessible from http://dacowits.defense.gov/tablereports_subpage.html
- Defense Department Advisory Committee on Women in the Services (DACOWITS). (2008b). *Support for families of wounded warriors: Summary of DACOWITS focus groups*. Prepared for DACOWITS by ICF International. Fairfax, VA: ICF International.
- Defense Manpower Data Center (2007a). *2006 Survey of Reserve Component Spouses: Tabulations of responses*. (DMDC Report No. 2006–029). Arlington, VA: Survey and Program Evaluation Division.
- Defense Manpower Data Center (2007b). *2006 Survey of Active Duty Spouses: Tabulations of responses* (DMDC Report No. 2006–033). Arlington, VA: Survey and Program Evaluation Division.
- Defense Manpower Data Center (2009). *2008 Surveys of military spouses: Impact of deployments on spouses and children*. Retrieved Oct. 27, 2010, from <http://apps.mhf.dod.mil/pls/psgprod/p?n=10709724410328545>.
- Defense Manpower Data Center (2010). *December 2009 survey of active duty members: Tabulations of responses*. (DMDC Report No. 2009–073). Arlington, VA: Survey and Program Evaluation Division.
- Department of Defense Educational Activity (2009). *2009 annual report*. Washington, D.C: Department of Defense Educational Activity. Author. Retrieved April 1, 2010, from <http://www.dodea.edu/pubs/>
- Demo, D. H., Allen, K. R., & Fine, M. A. (2000). Introduction. In *Handbook of family diversity* (pp. 1–14). New York: Oxford University Press.
- Department of the Army. (2008). *Army posture statement*. <http://www.army.mil/aps/08/>. Accessed 9/03/2010
- Durand, D. (2000). The role of the senior military wife—then and now. In J. A. Martin, L. N. Rosen, & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers*. (pp. 73–86). Westport, CT: Praeger.
- Ender, M. (2009). *American soldiers in Iraq: McSoldiers or innovative professionals?* New York: Routledge.
- Ender, M., Campbell, K., Davis, T., & Michaelis, P. (2007). Greedy media: Army families, embedded reporting and the war in Iraq. *Sociological Focus*, 40, 48–71.
- Flake, E., Johnson, P., Middleton, L., & Davis, B. (2009). The psychosocial effects of deployment on military children. *Journal of Developmental & Behavioral Pediatrics*, 30, 271–278.
- Harrell, M. (2001a). Army officers' spouses: Have the white gloves been mothballed? *Armed Forces & Society* 28, 55–76.
- Harrell, M. (2001b). *Invisible women: Junior enlisted Army wives*. Santa Monica, CA: RAND.
- Heirakuji, L. (2009). *Support for the Geographically Dispersed*. Presentation to the Association of the U. S. Army Family Forum by Deputy Assistant Secretary of the Army for Personnel Oversight, Oct. 5.
- Hogan, P., & Seifert, R. (2010). Marriage and the military: Evidence that those who serve in the military marry earlier and divorce earlier. *Armed Forces & Society* 36, 420–438.
- Hoge, C., Auchterlonie, J., & Milliken, C. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *Journal of the American Medical Association*, 295, 1023–1032.
- Hoge, C., Castro, C., Messer, S., McGurk, D., Cotting, D., & Koffman, R. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine*, 351, 13–22.
- Hosek, J., Kavanagh, J., & Miller, L. (2006). *How deployments affect service members*. Santa Monica, CA: RAND.
- Hosek, J., Asch, B. Fair, C., Martin, C., & Mattock, M. (2002). *Married to the military: The employment and earnings of military wives compared with civilian wives*. Santa Monica; RAND.
- Huebner, A., Mancini, J., Wilcox, R., Grass, S., & Grass, G. (2007). Parental deployment and youth in military families: Exploring uncertainty and ambiguous loss. *Family Relations*, 56, 111–121.
- Iskra, D. (2008). Who are the women who have broken through the military's "brass" ceiling? *Forum on Public Policy*. Retrieved Oct. 5, 2010, from <http://www.forumpublicpolicy.com/summer08papers/archivesummer08/iskra.pdf>.
- Jaffe, G. (2010). When the messages home stop. *Washington Post*, Nov. 5, A1.
- Jensen, P., Martin, D., & Watanabe, H. (1996). Children's response to separation during Operation Desert Storm. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 433–441.
- Karney, B., & Crown, J. (2007). *Families under stress: An assessment of data, theory, and research on marriage and divorce in the military*. Santa Monica, CA: RAND.

- Losinger, W. (2010). Notes regarding the 2006 survey of active duty spouses. (Research Note), *Armed Forces and Society*, 36, 558–570.
- Lundquist, J. (2007). A comparison of civilian and enlisted divorce rates during the early all-volunteer era. *Journal of Political and Military Sociology*, 35, 199–217.
- MacDermid, S., Samper, R., Schwarz, R., Nishida, J., & Nyaronga, D. (2008). *Understanding and promoting resilience in military families*. Purdue, IN: Military Family Research Institute. Retrieved Aug. 7, 2010, from <http://www.mfri.purdue.edu/content.asp?tid=2&id=8>.
- Miles, D. (2008). Service programs strive to strengthen military marriages, curb divorce. American Forces Press Services (Dec. 4). Accessed Oct. 1, 2010, from <http://www.defense.gov/news/newsarticle.aspx?id=52194>.
- Milliken, C., Auchterlonie, J., & Hoge, C. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *Journal of the American Medical Association*, 298, 2141–2148.
- Military Child Education Coalition. (2008). The Military Child Education Coalition (MCEC). Retrieved April 16, 2010, from <http://www.militarychild.org/about-us/>.
- Morse, J. (2006). *A closer look for current conditions: A fresh glance at the emotional cycle*. Retrieved Oct. 25, 2010, from www.hooah4health.com/deployment/familymatters/emotionalcyclesupport.htm.
- National Military Family Association (2004) *Serving the home-front: an analysis of military family support from September 11, 2001 through March 31, 2004*. Alexandria, VA.
- National Military Family Association (2005) *Report on the cycles of deployment: An analysis of survey responses from April through September 2005*. Alexandria, VA.
- Office of Management and Budget. (2010). *Budget of the United States Government, Fiscal Year 2011*. Retrieved Oct. 15, 2010, from <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2011/assets/defense.pdf>.
- Office of the Secretary of Defense. (2009). *Demographics 2008: Profile of the military community*. Washington, D.C.: Office of the Under Secretary of Defense for Military Community and Family Policy.
- Office of the Secretary of Defense. (2010). *Demographics 2009: Profile of the military community*. Washington, D.C.: Office of the Under Secretary of Defense for Military Community and Family Policy.
- Orthner, D., & Rose, R. (2005). *SAFV survey report: Deployment and separation adjustment among Army civilian spouses*. Prepared for the U.S. Army Community and Family Support Center. Chapel Hill: University of North Carolina.
- Payne, D.M., Warner, J.T., & Little, R. D. (1992). Tied migration and returns to human capital: The case of military wives. *Social Science Quarterly*, 73, 324–339.
- Peebles-Kleiger, M., & Kleiger, J. (1994). Reintegration stress for Desert Storm families: Wartime deployment and family trauma. *Journal of Traumatic Stress*, 7, 173–194.
- Pincus, S., House, R., Christenson, J., & Adler, L. (2004). The emotional cycle of deployment: A military family perspective. My HOO-ah for health (online). Retrieved Oct. 25, 2010, from <http://www.hooah4health.com/deployment/familymatters/emotionalcycle.htm>.
- President's Commission on Care for America's Returning Wounded Warriors. (2007). *Serve, Support, Simplify: Report of the President's Commission on Care for America's Returning Wounded Warriors. Final Report*. Arlington, VA. Accessed July 23, 2010, from <http://veterans.house.gov/Media/Image/110/9-19-07/DoleShalalaCommissionReport.pdf>.
- Rosen, L., & Durand, D. (2000). Coping with the unique demands of military family life. In J. A. Martin, L. N. Rosen, & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. 55–72). Westport, CT: Praeger.
- Rosen, L., Durand, D., & Martin, J. (2000). Wartime stress and family adaptation. Chapter 8 in J. A. Martin, L. N. Rosen, & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp.123–138). Westport, CN: Praeger.
- Segal, M. (1986). The military and the family as greedy institutions. *Armed Forces and Society*, 13, 9–38.
- Spera, C. (2009). Spouses' ability to cope with deployment and adjust to Air Force family demands: Identification of risk and protective factors. *Armed Forces and Society*, 35, 286–306.
- Sweet, L. (2010). Michelle Obama raising profile on military family issues. *Politics Daily*, Jan. 26. Accessed Oct. 10, 2010, from <http://www.politicsdaily.com/2010/01/26/michelle-obama-raising-profile-on-military-family-issues/>.
- Stanley, J., Segal, M., & Laughton, C. (1990). Grass roots family action and military policy responses. *Marriage and Family Review*, 15, 207–223.
- Tan, M. (2009). Dwell time may increase to 30 months by 2011. *Army Times*, February 5. Retrieved Oct. 25, 2010, from http://www.armytimes.com/news/2009/02/army_dwellingtime_020209w/.
- Tanielian, T., & Jaycox, L. (Eds.). (2008). *Invisible wounds of war*. Santa Monica, CA: RAND.
- Watanabe, H., & Jensen, P. (2000). Young children's adaptation to a military lifestyle. In J. A. Martin, L. N. Rosen, & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. 209–224). Westport, CT: Praeger.
- Weins, T., & Boss, P. (2006). Maintaining family resiliency before, during, and after military separation. In C. A. Castro, A. B. Adler, & T. H. Britt (Eds.), *Military life: The psychology of serving in peace and combat*. Vol. 3, *The military family* (pp. 13–38.) Westport, CT: Praeger Security International.
- White, L. (1990). Determinants of divorce: A review of research in the eighties. *Journal of Marriage and the Family* 52, 904–912.

What They Deserve

Quality of Life in the U.S. Military

Diane M. Ryan and Lolita M. Burrell*

Abstract

Quality of life (QOL) is a loosely defined term that refers to the health and well-being of an individual, oftentimes in an organizational context. This chapter takes an ecological approach to QOL in the U. S. military to highlight its complex and dynamic nature as well as to stress how service members, their families, and institutions interact in ways that may affect QOL. We begin with an examination of physical and psychological factors that affect the health and well-being of the service member and follow with the social and economic impacts of military life on both the individual and the family. Next we explore the meaning and utility of community—both local and institutional—and discuss formal support interactions between the military member, the family, and their communities. Finally the chapter concludes with a summary of leadership and policy impacts for military QOL and recommendations for further research.

Keywords: Quality of life, well-being, military personnel, military families, stress, coping, social support, military community

Late in the winter of 2007, a front-page exposé in *The Washington Post* recounted the deplorable living conditions of hundreds of outpatient soldiers recovering from combat-related injuries and housed at the world-renowned Walter Reed Army Medical Center in Washington, D. C. (Priest & Hull, 2007). As a media frenzy ensued, additional details began to emerge about a system intended to help soldiers and their families, but instead was characterized by extreme bureaucracy and disorganization. In many ways, the dilapidated and overflowing living quarters so graphically depicted in the news footage became a metaphor for the overall experience of the American soldier.

Just over one year later, a concerned father visiting his son who had just returned from 15 months of duty in Afghanistan documented living conditions

at Fort Bragg similar to those found at Walter Reed. A video posted by the outraged parent on YouTube revealed mold and peeling lead paint on the walls and ankle-deep raw sewage backed up into shower stalls in the barracks (CBS News, 2008). Once again the general public was left with the perception that despite the oft-repeated saw, the military does *not* always take care of its own.

Each of these incidents sparked a series of reviews and investigations by both the Army and Congress. At Walter Reed several high-ranking military officials were fired or forced to resign, including the Secretary of the Army and the Army Surgeon General (Karl & Duck, 2007). The Fort Bragg investigation findings prompted a number of soldiers to be moved out of substandard facilities at various posts across the Army, as well as an increase

* The views expressed in this chapter are those of the authors and do not purport to reflect the official policy or position of the Department of the Army, the Department of Defense, or the U.S. Government.

in congressional funding to speed up housing reconstruction projects (WRAL Raleigh, 2009). Acknowledging that some problems are easier to fix than others, Army Secretary Pete Geren pledged, “Every soldier deserves a quality of life equal to his service” (WRAL Raleigh, 2008).

Implicit in this idea of great sacrifice resulting in an improved quality of life is the reality of the all-volunteer force. For nearly 40 years the U. S. military has been an occupation exclusively of choice; and this choice brings with it a lifestyle that permeates nearly every facet of an individual’s life (Adams, Jex, & Cunningham, 2006). Whereas special privileges ought to be granted for any person who risks their own life to ensure the nation’s freedom and security, issues such as living conditions, pay and benefits, and so forth were not high priorities for draft-era policymakers. If a soldier was dissatisfied with any aspect of the military environment he could return to civilian life at the completion of his term and another man would be immediately called up to take his place. However, since the end of the draft in 1973 this is no longer the case. Now, in order to attract and retain the most qualified and reliable volunteer service members, quality of life issues that contribute to military readiness and enhance soldier well-being must take center stage. This remains more imperative than ever to the Department of Defense as the Global War on Terror drags on toward its eleventh year, and is evident by the inclusion of “Taking Care of Our People” as a top priority for the current cycle of the 2010 Quadrennial Defense Review (Department of Defense, 2010). The 2006 report made no specific mention of personnel issues.

The concept “quality of life” is as ubiquitous as it is ambiguous. Initially coined in a 1964 speech by President Lyndon B. Johnson, the term has generated more than 100 different definitions and models in a relatively short period of time (Cummins, 1997). Three interrelated yet distinct scientific disciplines—medicine, economics and the social sciences—regularly address quality of life indicators in their research, yet have relatively divergent characterizations and centers of focus (Cummins, 2005). The medical model generally views quality of life as the extent to which physical and psychological disease and illness impact a patient’s ability to lead a fulfilling life and largely defers to subjective experience and measurement at the individual level. At the opposite end of the spectrum, economists take a more objective and collective approach and typically relate quality of life measures to the overall (human) development of a particular segment of

society or nation. Common dimensions include wealth indicators such as per capita GDP, literacy rates, social participation rates, political freedom, and environmental quality, as well as relatively limited self-report perceptions of satisfaction (Shackman, Liu, & Wang, 2005).

If the medical professionals and economists represent opposite ends of a continuum, then the social scientists—to include psychologists practicing in sub-disciplines such as community, developmental, positive, and social psychology—largely occupy the space between. Although there remains wide variability of definitions within the discipline, social scientists recognize the strength of both subjective and objective measures and strive to strike a balance in pursuit of a more holistic and comprehensive view (Cummins, 2000). For example, if an economist is primarily interested in an individual’s socio-economic status, a medical researcher would be most concerned with how that person assesses his own physical and psychological well-being, but a social scientist would be interested in both measures and might look for interactions and patterns between them. Hence, the social science perspective is not only multidisciplinary, but also interactive between the person and his or her environment.

This common-sense approach alleviates the tension between those who place greater value on self-report measures and those who favor directly observable evidence. That previous research has found relatively little agreement between the two components suggests that including both types of data results in a more global quality of life determination (Cummins, 2005). However, new evidence indicates that in some instances objective and subjective measures are more closely correlated than previously thought. Findings from the 2007 Millennium Cohort study of service members found a 92 percent agreement rate between objective and self-report data of both mental and physical measures in a large sample of participants that included all branches of the military (Smith et al., 2007). Further research is needed to corroborate the findings regarding objective and subjective measures within individuals, but it is also worthwhile to note that QOL determinations are further dynamic between and within persons; that is, the same circumstances may not affect different people in the same way, nor may the same individual always react in a consistent manner over time (Carr, Gibson, & Robinson, 2001). Hence, a holistic perspective is imperative to get the most comprehensive understanding of QOL possible (Brown, 1997).

In addition to QOL being an extremely broad and somewhat ill-defined topic, it is also important to recognize that while “the military” is perhaps a more clear-cut subject, it is also an extremely large institution comprising several distinct subcultures. Although all uniformed personnel are charged with the duty of supporting the Constitution and defending the nation, there are notable variations in how the various service branches of the Army, Navy, Air Force, Marines, and Coast Guard execute these duties, and in some cases subtle policy differences exist regarding QOL. Furthermore, there are significant distinctions between the active and reserve forces, particularly with regard to lifestyles and experiences. To capture all of these variations would be well beyond the scope of this chapter. Instead, the intent is to provide a broader view of military QOL that encompasses all components. The terms “service member” and “soldier” are used interchangeably to mean any member of the military except in describing studies or policies that concern a specific service branch or component. However, as the Army has borne the largest burden in the Global War on Terror, the chapter focuses slightly more on this branch of service than the others.

The ecological model framework established by Bronfenbrenner (1979) is a useful tool for psychologists in conceptualizing military quality of life (See Fig. 26.1). It uses a systemic approach to identify the historical, cultural, and structural factors within each nested level that contribute to problems, and emphasizes their interrelatedness. Hence, changes in one part of a system often have unanticipated

effects on other parts. The potential for change is inherent but requires a long-time perspective in terms of both historical roots and future consequences (Nelson & Prilleltensky, 2005). This holistic approach provides a more accurate assessment of a situation, rather than focusing exclusively on the individual as most traditional methods of analysis tend to do (Rappaport, 1977).

The past ten years at war have generated some unique challenges that have significantly shaped how we view quality of life in the military. First, the conflicts in Afghanistan and Iraq mark the longest period of family separations since World War II (Booth et al., 2007). Restructuring the active Army into a modular force that comprises smaller, more self-sustaining and flexible units has resulted in more frequent deployments, typically 12 months or longer, with less time at home in between. Paradoxically, this allows for greater family stabilization, the ability to buy a home and build equity, increased employment opportunities for spouses, and fewer concerns about moving children between multiple school systems, which may mitigate some of the difficulties typically associated with deployment.

The emerging technology age also allows families to remain connected like no other period in military history. Gone are the letters that took weeks to receive by mail and were often censored by the government. These are replaced by email, more frequent phone calls, and video teleconferencing (Ender, 2009). Still, there are significant costs associated with so much separation and deployment for both

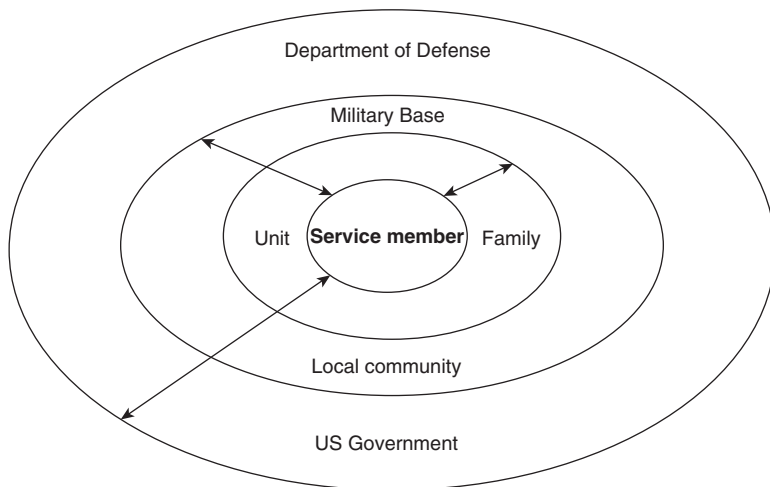


Fig. 26.1 Military quality of life as conceptualized by the ecological model framework.

the military member and the family, as well as for the organization.

Hence this chapter will take a more holistic and comprehensive approach to assessing military quality of life. It will begin with the individual service member and examine the physical and psychological factors that immediately affect his or her health and well being. Next, it will assess the social and economic impacts of military life from both the individual and family perspectives, to include military pay and benefits, spouse employment, marriage and family satisfaction, and coping mechanisms. Finally it will examine the community perspective from both local and the wider “military community” levels, and discuss formal support interactions between the military members and families and their communities. The chapter will conclude with a summary of leadership and policy impacts to QOL and suggestions for future research.

Personal Well Being/Health

Combat Injuries

Perhaps the most direct threat to personal well-being as a result of military service is the risk of injury or death in combat. Fortunately, advances in protective equipment and medical technology, combined with some of the most talented medical personnel in the world have significantly improved survivability from combat injuries. Therefore, wounded soldiers now have a greater chance of living with injuries that would have meant certain death in prior conflicts (Peake, 2005; Zouris, Wade, & Magno, 2008). However, as this war progresses, the enemy has become more viciously savvy and the severity of injuries has noticeably increased (Kelly et al., 2008).

The most common type of battle injury are those sustained to the upper and lower extremities, which account for approximately seventy percent of all injuries and has remained a consistent figure for all conflicts since World War II (Zouris et al., 2006). However, the largely invisible wounds of war have garnered the most concern and attention as they present such unique challenges. Indeed, mild traumatic brain injury (TBI) and post-traumatic stress disorder (PTSD) are nearly synonymous with war in the Middle East.

The majority of TBIs are a result of improvised explosive devices (IEDs) employed by the enemy in Iraq and Afghanistan. Considered the signature wound of the war, nearly sixty percent of blast-exposed soldiers have suffered a TBI (Okie, 2006). By 2010, approximately 115,000 troops had been

diagnosed with mild traumatic brain injuries, but top health officials acknowledge that this figure is probably a gross underestimate, due to the difficulties in detecting an injury that leaves no visible scars (Miller & Zwerdling, 2010). Many afflicted with TBI suffer a significant decrease in quality of life that may last for several months or remain a chronic condition. For a more in-depth look at TBI, see Chapter 4 in this volume.

Mental Health

Beyond the physical afflictions of combat is the psychological damage inflicted on countless returning veterans as a result of experiencing or witnessing events that involved death or serious injury. As William Tecumseh Sherman once observed, “War is Hell,” and for many soldiers that hell does not cease to exist once they return to the safety of home base. Many come to relive the horrors of war over and over in their minds. So it is for those afflicted with post-traumatic stress disorder, or PTSD.

The military has long been aware that the dangers of battle may have longstanding effects—mental as well as physical. Chapter 3 also in this volume provides a detailed account of the evolution of PTSD within the U. S. armed forces. The Gulf War was the first large-scale conflict involving American soldiers to occur after the identification and classification of PTSD by the American Psychological Association, and researchers took a renewed interest in examining how mental disorders experienced by military personnel might affect their quality of life. In a study conducted five years after the Gulf War comparing personnel who had deployed to those who had not, Voelker and colleagues (2002) found deployment to be a significant risk factor for mental health along with race, less active-duty experience, serving in the Army versus other branches, divorce, and prewar medical conditions. While the results revealed a lower physical health-related quality of life for deployed personnel when compared to the general population, deployed veterans actually fared slightly better than U. S. norms on mental measures, which may be explained by either greater mental hardiness of service members, or perhaps response bias resulting from the severe stigma of mental illness that is often perceived as weakness (Voelker et al., 2002). In a separate study, Gulf War veterans with a PTSD diagnosis reported significantly lower quality of life than those without PTSD (Barrett et al., 2002). However, a longitudinal study of Vietnam veterans by Schnurr, Hayes, Lunney, and McFall (2006) found that

as PTSD symptoms decreased, psycho-social and physical health-related quality of life concurrently increased, suggesting that increased awareness and treatment may effectively mitigate long-term suffering.

In the decade following Desert Storm, PTSD was not a major concern to the active-duty military, although the larger conglomeration of mental disorders certainly remained a readiness issue. From 1990 to 1999, there were nearly 200,000 hospitalizations for a diagnosable mental disorder, and more than half of these were admissions to an inpatient psychiatric ward for a median-length visit of six days. Mental disorders, including substance abuse and adjustment disorders, were the leading cause of hospitalization of male soldiers for this time period and the second leading cause for females behind pregnancy; and soldiers who were hospitalized for mental illness were separated from the service at significantly higher rates than those hospitalized for any other category of illness (Booth-Kewley & Larson, 2005; Hoge et al., 2002). For these individuals, quality of life is not only diminished by mental health factors, but also by loss of career, income, and benefits, among other things.

While combat stress has dominated the news and much of the research of the past decade, there are a number of other stressors that affect service members under the unique circumstances that define military life. Routine separation from family members and friends, long and unpredictable work hours, lack of sleep and privacy, and austere work environments top a relatively long list of factors that affect personnel even when not deployed to a combat zone (Kavanaugh, 2005). In a survey of 809 Air Force personnel assigned to routine duties at Warren Air Force Base in Wyoming, more than 25 percent of respondents reported suffering from significant job stress, which was positively correlated with reported depression symptoms (Pflanz & Ogle, 2006).

However, in the big picture, a certain amount of stress exposure may actually be beneficial to service members and military readiness. Moderate amounts of job stress have been linked to increased job satisfaction, organizational commitment, morale, and group cooperation (Kavanaugh, 2005). Furthermore, service members may be better equipped to deal with stress than their civilian counterparts—whether that be a result of training, or due to the type of person whom the military attracts. In a survey of Americans living abroad following the events of September 11th, military members had the lowest

reported acute stress 10 weeks after the attacks in comparison to non-military expatriates, suggesting that soldiers are better equipped to deal with crises and that military training and combat-readiness skills may be linked to increased resilience (Speckhard, 2003).

Health and Well-Being

Despite the failed bureaucracy depicted in the Walter Reed scandal, when compared to ordinary Americans, service members and veterans do have a decent range of medical options: they can seek treatment in a military medical facility or use their Tricare benefits—similar to an HMO plan—to receive care from the civilian physician of their choice. Those who have been discharged or retired from the service may also choose treatment from a Veterans Administration (VA) facility. The latter of these options has the most specialized care for the most serious combat injuries and in many instances provides a case manager to help the patient and family navigate the system, make appointments, raise awareness with regard to resources, and ensure continuity of care (Okie, 2006).

Similarly in a move to address the concerns from Walter Reed regarding the treatment of combat veterans in medical hold units, the Army created the Warrior Transition Command in 2007. Led by a brigadier general who also serves as the Assistant Surgeon General for Warrior Care and Transition, the organization's mission at the unit level is to develop resources for wounded service members, closely manage individual soldier health care, and serve as a bridge between the military and the civilian life for those who are medically retired from active duty. But this organization has not been without its own criticism and charges of bureaucratic red tape less than three years from inception. In April of 2010, a *New York Times* exposé charged that convalescing soldiers are essentially “warehoused” in these units—mistreated by leadership and so heavily medicated that they can barely function (Dao & Frosch, 2010). What is clear, however, is that the improved survivability from these wars has introduced significant long-term challenges for the military to provide these combat veterans the quality of life they deserve.

But the news regarding health and quality of life for active duty soldiers is not all bad, despite the significant risks associated with combat and the unique occupational hazards of military service. A recent study conducted in conjunction with the Gallup-Healthways' Well-Being Index measured

well-being on six sub-scales to include how Americans rate their lives, emotional and physical health, and work environment, among other factors, and found that active-duty personnel are significantly more likely to be thriving and less than half as likely to be suffering as their civilian counterparts (Witters, 2010a). There was also no difference for the most part in well-being between those who had been deployed to combat and those who had never previously deployed; although younger combat veterans fared slightly less well than their non-deployed peers, they still maintain higher well-being than most Americans in general (Witters, 2010b). This does not hold true for veterans who have either retired or been discharged from the service. This group reported significantly less thriving and more struggling and suffering when compared to both active-duty service members and civilian workers, particularly over the age of 45 (Witters, 2010a). This stands to reason, as those who remain medically fit enough to serve from both a physical and mental standpoint benefit from the military resources that support or enhance well-being and quality of life.

Similar results were found by researchers in Norway: military personnel had better health quality of life than the general population, despite their repeated exposure to considerable hazards and a stressful work environment. Physical activity appeared to be the most positive lifestyle factor (Mageroy, Riise, & Johnsen, 2007). Hence, soldiers who can and do continue to serve in the military appear to benefit from improved quality of life as a result.

Benefits and Job Satisfaction

Military Pay

Though it is doubtful that many military personnel choose to enlist for the money alone, pay and benefits are important to recruiting and retention as they play a significant role in soldier and family quality of life. The 1990s tech boom siphoned off a considerable segment of the military talent pool, partially due to the rising living standards of ordinary Americans that made military standards of living appear meager in comparison. Hence, Congress took action in an attempt to level the playing field and make military service appear more attractive financially (Goldich, 2003).

A regular topic of discussion among service members is the “military pay gap.” Although commonly misinterpreted as the difference between the amount a military member and a civilian get for

performing similar work, the term actually refers to a measure of the change in relative pay between the military and civilian sectors (Congressional Budget Office, 1999; Maze, 2010). The reported gap typically only refers to military basic pay and disregards allowances and other benefits.

The U. S. Congress was particularly sensitive to military wage issues after a significant decline in recruit quality was attributed to low pay in the late 1970s. Hence, an across-the-board increase in basic pay was approved, as well as increases to special pay and bonuses and a reversal of planned pay reductions for retirees (Goldich, 2003). The result of eleven straight annual raises at least one-half a percentage point higher than the average civilian increase helped close the gap from 13.5 percent in 1999 to about 2.4 percent as of this writing (Maze, 2010).

Whether or not this pay gap figure is accurate, or if it even exists, is a matter of some debate. A recent report by the Congressional Budget Office suggested that a pay surplus is actually more likely than a pay gap, if the full range of military compensation—including special-duty pay, housing and food allowances, medical and tax benefits—is considered in the calculations (Maze, 2010). Although this may be the case, the fact remains that a lower enlisted soldier with more than one child generally is qualified for some form of public assistance benefits such as food stamps or subsidized child-care in many states.

When the all-volunteer force was first established in the 1970s, far fewer enlisted men and women were married or had children than today. Hence the relatively low pay categories were adequate for single soldiers’ needs. Given that many more young enlisted people either enter the service with families, or marry earlier in their careers, this is no longer the case today. Military families’ receiving welfare is perhaps as bad for recruiting and retention as it is for those same families’ assessment of their quality of life. However, studies show that far fewer low-income military families receive public assistance than low-income civilian families, although the number is rapidly rising, specifically with regard to food-stamp usage (Gifford, 2003; Jowers, 2010).

Regardless of whether families seek outside aid, more than one-third of lower-ranking enlisted soldiers still report having financial difficulties, according to the most recent Defense Manpower Data Center’s (DMDC) Status of Forces Survey, although this figure is down since 2002 (Department of Defense, 2009b). However, it is unclear how much

debt these respondents brought with them when they entered the military or if any specific crisis contributed to their problem. Also unknown is how many members of this group have taken advantage of the abundant financial counseling and education services offered by the military.

In contrast, roughly the same number of junior-ranking service members indicate that they contribute regularly to a long-term savings plan, and more than half keep at least \$500 put away in case of emergency (Department of Defense, 2009b). Also despite the serious state of the U. S. economy and widespread reports of financial hardship in the civilian white-collar sector, roughly 70 percent of Army officers report being very satisfied with the amount of pay they receive. This coincides with a high degree of job security both groups also report experiencing (U. S. Army Research Institute for the Behavioral and Social Sciences, 2008).

Additional Benefits

Beyond direct monetary compensation, military personnel are also entitled to other benefits such as education assistance, tax-free housing, subsidized childcare, and free medical care, as previously discussed. While a decade of protracted conflict has challenged recruiting, most notably in the largest service branch—the Army, rising unemployment rates have contributed a much-needed boost to attracting quality candidates (Eighmey, 2006). This fact, coupled with the increased demand in the civilian labor market for skilled workers, have particularly drawn those seeking educational opportunities. Although it is unclear how many service members actually complete a college degree during their tenure or immediately after separation, since the 1990s nearly all enlisted personnel have elected to participate in college benefit programs (Asch, Kilburn, & Kleman, 1999).

The link between advanced educational opportunities and military service was forged following World War II when the original “G. I. Bill” (the Servicemen’s Readjustment Act of 1944) was enacted by Congress. Whereas the original law was conceived in the national interest to facilitate the transition of nearly 16 million draftees to civilian life, the less generous 1987 Montgomery G. I. Bill was an individual incentive to attract and retain recruits, many of whom already had high school diplomas, to the volunteer force (Greenberg, 2008). The revamped Post-9/11 Veterans Educational Assistance Act introduced in 2008 represents a renewed emphasis on education not only for military

personnel but also for their families. For the first time ever, benefits are transferable from the service member to a spouse or dependent child (Steele, Salcedo, & Coley, 2010). While not as generous in financial terms as the original G. I. Bill package, this new plan covers the cost of full tuition at public institutions, or the equivalent amount applied toward a private college, as well as a stipend for housing, fees, and books (Greenberg, 2008). A number of studies from the 1990s suggested that educational opportunities provided by the military served as a means for social mobility—particularly for disadvantaged minorities (Kleykamp, 2006). Exactly how much today’s veterans and their family members will benefit from the current package remains to be seen, but it certainly represents a positive step toward improving QOL.

Housing

Except in very extenuating circumstances, lower-ranking single enlisted soldiers are housed in barracks on the military installation. In contrast, married soldiers or those with dependent children have the option of either residing in military housing on base, or applying their tax-free allowance toward renting or purchasing a home in the surrounding community. Historically, on-base barracks and family housing were managed and maintained by the government, which, due to a series of tight budget years coupled with an aging housing inventory, led to deteriorating conditions. But in an effort to downsize, Congress turned over these tasks in many locations to private contractor companies beginning in 1996, who embarked on a large-scale construction and modernization program (Office of the Deputy Undersecretary of Defense Installations and Environment, 2010). The intent of this initiative was to improve conditions and construct badly needed new housing units in a more rapid and efficient manner than DOD could provide under the old system (Benner, 2003). Although the upgraded housing is a step in the right direction toward improving military quality of life, more than half of Army personnel still report being very dissatisfied with both the quality and availability of government housing.

The latter complaint possibly reflects the high demand for on-base quarters as a result of the civilian mortgage crisis. During the housing boom of the early 2000s, military families could easily purchase a house, and at least expect to break even or be able to rent it out for the cost of their monthly mortgage when they received new assignment

orders. However, declining property values and hefty adjustable-rate mortgage increases left many service members in financial ruin (Fuentes, 2007). The government responded by introducing the Defense Department Homeowners Assistance program, a \$555 million program that covers 95 percent of a loss for select soldiers forced to sell their homes (Lazo, 2009). However, the program does not automatically cover all service members, and the full extent of the financial and emotional stress to soldiers and their families as a result of the crisis has yet to be determined. That overall quality of life would be negatively impacted for military families affected by the housing collapse appears to be a foregone conclusion.

Military personnel are almost two and a half times more likely to move, and significantly more likely to move farther distances, than their employed civilian counterparts (Cooney, Segal, & De Angelis, 2003). Soldiers with families are more likely to experience moving stress than single soldiers. However, this is dependent on location, timing, new job duties, spouse employment, and educational opportunities (Burrell, 2006).

Spouse Employment

The declining U. S. economy has also disproportionately affected military spouse employment at a time when supplemental income is vital to family survival. The poor job market is certainly partly to blame for the inability to find suitable work, but this fact is compounded by frequent moves, followed by military member absence due to deployment, temporary duty, unpredictable work schedules, and parenting responsibilities (Castaneda & Harrell, 2008). Compared to their civilian counterparts, military spouses are less likely to find work, and those who do, earn lower wages (Harrell et al., 2004). A study of spouses from all four branches of service found nearly two-thirds of military spouses interviewed believe the military has a negative effect on their employment (Castaneda & Harrell, 2008).

Despite these difficulties, work remains important to military spouses, not only for financial reasons but also for non-monetary motives such as personal fulfillment, maintaining a sense of independence, and avoiding boredom. (Harrell et al., 2004). A Marine Corps QOL study discovered that the least-satisfied spouses received all of their financial compensation directly from the Marine Corps, while the most satisfied spouses got more than a quarter of their income from a source outside the military (Castaneda & Harrell, 2008).

Family Demands

QOL for military families largely resides in their ability to adjust to the multiple demands of Army life. In her seminal work, Mady Wechsler Segal (1986) identifies both the military and the family as “greedy” institutions that place significant demands on an individual in terms of loyalty, time, and energy. Hence conflict between the two is inevitable, but imperative to reconcile as much as possible for the good of the nation as well as for service members and their families. Family issues affect retention more than readiness, including perception of unit morale, confidence in other unit members, and overall preparedness for combat (Schumm, Bell, & Resnick, 2001). From a readiness perspective, the greatest predictor of a soldier’s commitment to the military is the spouse’s commitment to the same (Bourg & Segal, 1999).

The Bourg and Segal study also found that spouse satisfaction was significantly affected by perceived military interference with family needs. Younger spouses reported the most work–family conflict, perhaps reflecting a lack of experience or expectation management. Assignment to a combat unit and the presence of children were also factors that increased reported military–family conflict.

This is important, as the number of service members married and/or with children is the highest in history (Booth et al., 2007). The DMDC reports 55 percent of active-duty personnel and nearly 50 percent of reservists are married (Department of Defense, 2009b). In contrast, 80 percent of active-duty officers, who are comparatively older than their enlisted counterparts, are married—a figure that has remained relatively stable since 1952 (Schumm et al., 2001). More than half of all combat deployments result in at least one dependent family member being left behind (Department of Defense, 2009b).

Sustained high operations tempo may have an effect on marriages, but empirical evidence is sparse at best. Karney and Crown (2007) analyzed military data for 10 years and found no higher divorce rates as predicted. Women and enlisted personnel are more likely to end their marriages than officers. However, this can be explained primarily by age, which predicts marriage stability, and perhaps by social roles to some degree. What is not known is the divorce rate of soldiers after they separate from the military. This raises questions that some aspects of deployment may be beneficial for families in terms of financial compensation, job satisfaction, sense of purpose, and opportunities for advancement that ultimately benefit the family.

As Segal (1986) noted, several unique demands are placed upon military families: prominent among these are concerns regarding service members' risk of injury or death, geographic mobility, residence in a foreign country, and prolonged separation from the service member. In a survey of 346 U. S. military spouses serving in Europe, researchers found that the subjective perception of the impact of time apart is more important than the actual number or length of separations. There were significant negative relationships between these subjective appraisals and both physical and psychological well-being, satisfaction with the military, and marital satisfaction. Residence in a foreign country did not predict any of the well-being or satisfaction outcome measures, and fear for soldier safety was only negatively correlated, although the researchers concede that the latter finding may be dependent on the location of deployment (Burrell et al., 2006). This study underscores the subjective and dynamic means by which family members assess their overall QOL.

The current war has also created newfound demands, perhaps most notably, caregiving for wounded warriors in light of the unprecedented survival rate of catastrophic wounds. This is a recent area of study with the military population and will not be explored in detail here, but it deserves mention, as it certainly relates to QOL along a number of dimensions. As noted earlier, deployments have a significant impact on service members, and not surprisingly, their family members are also affected. Given that deployments may relate to all of the demands mentioned above to varying degrees, the following discussion will be primarily focused on how deployments are related to family QOL. Three QOL areas are examined and include: health, healthcare utilization, and marital satisfaction.

Deployments and Family Health Outcomes

Studies of deployment stress focus on the myriad physical and psychological symptoms that may befall service member families. However, not all of the outcomes are negative. Orthner and Rose (2009) sought, in part, to determine if spouses of soldiers who were frequently absent reported less psychological well-being compared to spouses whose soldiers were less frequently absent. Data was compiled for 8,056 female spouses who completed the 5th Survey of Army Families between late 2004 and early 2005. Spouses were predominantly white, with a mean age of 34 years. Well-being was measured by a summation of six Likert items focused on: (1) personal satisfaction, (2) day-to-day stresses,

(3) getting along when the soldier is absent, (4) emotional or nervous problems in the last six months, (5) management of their own health, and (6) how loneliness was handled in the last 12 months. Separation risk was measured as the number of work-related months the soldier was away in the 36 months prior to completing the survey and was significantly associated with less well-being.

Depression was the primary outcome of interest in a survey study of 872 spouses who were Family Readiness Group members of a Brigade Combat Team due to deploy (Warner et al., 2009). The Patient Health Questionnaire 9 (PHQ-9) was used to indicate depression severity, with scores ranging from 5 (mild depression) to 20 (severe depression). Although, number of prior deployments was not a significant predictor of depression severity, a spouse's global level of perceived stress was significantly and positively associated with depression severity. Thus, it is possible that the perceived stress associated with deployment was captured with this measure and that the perception of the deployment as stressful is more important than the actual number of deployments when it comes to depression severity. Almost eight percent of spouses (74 out of 940) from a large military installation in the eastern United States whose soldiers were deployed in support of OIF or OEF screened positive for either major depression or generalized anxiety disorder (Hoge, Castro, & Eaton, 2006). Additionally, 17 percent (155) of these spouses indicated that they were experiencing a moderate to severe emotional, alcohol, or family related problems, and 22 percent (197) reported that their problems negatively impacted their quality of work or other life activities.

Stress that a soldier experiences—in this case, post-traumatic stress disorder—may act as a secondary traumatic stressor for their partners (Nelson et al., 2009). The authors hypothesized that partners of soldiers experiencing greater trauma history and symptoms would also experience greater secondary trauma symptoms. The findings for the 45 couples partially supported the hypothesis. A soldier's trauma history did not predict partner trauma symptoms, but soldier symptoms (re-experiencing, avoidance, and arousal) were predictive of increased symptoms in their partners. Avoidance was the most significant predictor of the three symptom types.

Findings from the above studies suggest that deployments are associated with poorer health outcomes; however, other questions remain, including: "What is the health status of spouses whose service members are not deployed?" "What are the health

impacts on children?” and “Are there any positive outcomes associated with deployment?” The last question will be addressed later, in the section on coping and social support. With regard to the first question, Burton, Farley, and Rhea (2009) surveyed 130 spouses from two military installations in the mid-Atlantic region to assess potential differences between spouses whose soldiers were deployed and those whose soldiers were not deployed with regard to stress and somatization (i.e., the phenomenon where mental and emotional stress produce physical symptoms). Stress was measured using the Perceived Stress Scale 10 (PSS-10) which is a global measure of stress; and somatization was measured using the Patient Health Questionnaire 15 (PHQ 15). Examples of symptoms measured from the PHQ 15 include trouble sleeping, feeling tired, back pain and feeling your heart pound or race. Spouses of non-deployed soldiers reported significantly less stress and less somatization. Additionally, regardless of deployment status, increased levels of perceived stress were associated with increased somatization. Similar differences in deployed and non-deployed spouses were noted in an early study of Navy spouses by Nice and Beck (1980). Specifically they found that wives whose husbands were deployed had significantly higher depression scores during the pre- and mid-deployment phases than did the non-separated wives.

As with spouses, children also are not immune to the effects of deployment, as typically what affects the parents affects the children (Manos, 2010). To date, more than one million parents have been deployed, and studies of military children have dramatically increased. At the onset of OIF in March 2003 and in May of 2003, 149 youths from an inner-city high school in Augusta, Georgia, were surveyed regarding their perceived stress, and had heart rate and blood pressure measures taken (Barnes, Davis, & Treiber, 2007). Of the 121 students who completed these evaluations, 48 had parents who were civilians, 53 had parents who were currently not deployed, and 20 had at least one parent who was deployed. Univariate analyses indicated that military children had the highest mean heart rate. Further analyses indicated group-by-ethnicity interactions, with the highest systolic blood-pressure measurements and highest perceived levels of stress observed and reported in European-American military children of a deployed parent.

From February to October of 2008, 171 active-duty Army and Marine Corps families that included

6- to 12-year-old children participated in a study of the psychological and behavioral effects of deployment. Service members were currently deployed or recently returned from Iraq or Afghanistan. Thus, the active-duty service member (recently returned), the civilian parent, and the child all participated in the study. Child behavior, anxiety, and depression were measured, as was parent anxiety, depression, and post-traumatic stress. The results showed that the number of months a parent was deployed and parental depression (civilian and active-duty parent) was predictive of externalizing behavioral symptoms in their child (Lester, 2010).

Deployments and Healthcare Utilization

The degree to which spouses seek treatment for symptoms directly associated with deployments or other life stressors associated with the military is uncertain. Establishing the healthcare use of spouses of Reserve and National Guard members is especially onerous, since the majority of their healthcare is administered through civilian providers and therefore not recorded in the Defense Medical Surveillance System, which tracks visits to military treatment facilities and is maintained by the Armed Forces Health Surveillance Center.

A review of electronic medical record data for outpatient care of 250,626 wives of active-duty soldiers was conducted to assess the relationship between deployment and use of mental health services (Mansfield et al., 2010). Data were collected on 6,585,224 visits made between January 2003 and December 2006 for outpatient visits to a military treatment facility or for outpatient visits to a non-military treatment facility in which military medical insurance was used. Mental health diagnoses fell into 17 different categories that included disorders such as depression, anxiety, alcohol use, sleep disorders, and stress-related disorders. Depression, anxiety, sleep disorder, adjustment disorder, and acute stress reaction were the most common diagnoses, regardless of whether or not the husband was deployed. Of those whose husbands were deployed, 36.6 percent had at least one mental health diagnosis, compared to 30.5 percent of spouses whose husbands were not deployed during the study period. Spouses of deployed personnel were younger and had more outpatient visits regardless of whether or not they had a mental health diagnosis. When compared to wives of soldiers who were not deployed (reference group), wives whose soldiers were deployed for one to 11 months and for 11 months or more received more diagnoses of sleep disorders,

depressive disorders, anxiety, acute stress reaction, and adjustment disorders.

Self-report of mental health service use was also measured in the Hoge study mentioned earlier, in which 940 spouses provided data on stress, alcohol use, as well as symptoms associated with anxiety and depression (Hoge et al., 2006). Use of mental health services included services provided by primary care professional, specialty mental health services, or pastoral counseling. Overall, eight percent of the spouses screened positive for major depression or generalized anxiety disorder. Of the spouses who screened positive for a mental health problem, the primary source of mental health service care was the primary care physician at the medical treatment facility, who treated 44 percent of spouses. Civilian mental health professionals were the second-most-used source and were seen by 32 percent of spouses. Spouses who screened positive for a mental health disorder were three times more likely to seek care than married soldiers who also screened positive for mental health disorders. They were also much less likely to indicate that they experienced barriers to care (e.g., stigma) compared to married soldiers. The most commonly reported barriers to care included child-care problems and difficulty getting time off work. Other barriers to care that were endorsed by at least 20 percent of the sample included: concerns that it would harm the service member's career, embarrassment, being seen as weak, and not knowing where to go for help. Similar barriers and percentages were endorsed by spouses of soldiers preparing for deployment (Warner et al., 2009).

Deployments and Marital Satisfaction

Another variable found to be associated with deployment is marital satisfaction. According to the Mental Health Advisory Team Report V (Office of the Surgeon General, 2008), of the non-combat related concerns, being separated from family was the top concern out of 11 possible choices, and was also the concern with the strongest relationship to mental health problems. Both preparation for and return from deployment place several demands on relationships. Spouses who remain at the home station may be placed in the role of temporary single parent and are responsible for ensuring that the entire household runs smoothly while the soldier is away. Communication is more difficult given the separation, and may actually create additional stress for the soldier if problems arise that he or she has no control over and is unable to provide assistance to the spouse. Of course, it is also stressful for the

spouse back home who is left to take care of whatever problems may arise. Repeating this cycle over multiple deployments may exacerbate any existing issues that were not adequately addressed from the start. Additionally, if the soldier is experiencing mental health concerns due to deployment, this additional stressor may be associated with marital distress (Erbes et al., 2008).

As noted earlier, the well-being of the spouses who remain at home may also be affected by deployment. Thus, a marriage in which one or both spouses experience health-related issues, whether psychological or physical, may experience additional strain. Soldiers who experience avoidance behaviors associated with PTSD may potentially distance themselves from their family physically and via emotional numbing. In turn, this behavior may result in less marital closeness, intimacy, and communication (Erbes et al., 2008).

McLeland and Sutton (2008) examined marital satisfaction in 46 male civilian and reserve component service members from the Army, Navy, and Marine Corps Reserve as well as 74 active Army personnel from Fort Riley, Kansas. The Kansas Marital Satisfaction Scale comprises three items related to satisfaction with one's marriage, satisfaction with the relationship one has with one's spouse, and satisfaction with one's spouse. Service members who were either preparing for or recently returned from deployment reported lower satisfaction when compared to those who were not in either of those two categories.

National Guard soldiers who served in a 12-month deployment in support of OIF from 2005 to 2006 were the focus of another study regarding marital satisfaction (Renshaw, Rodrigues, & Jones, 2009). Specifically, the study assessed the relationship between marital satisfaction and mental health and that between marital satisfaction and combat exposure. The sample of 50 soldiers completed several surveys to include the Combat Exposure Scale (CES), PTSD Checklist–Military Version (PCL-M), the Center for Epidemiological Studies Depression Scale (CES-D), and the Relationship Assessment Scale (RAS). Overall, soldiers reported a high level of marital satisfaction. However, marital satisfaction was negatively correlated with PTSD symptoms as well as symptoms of depression, but was not significantly related to combat exposure.

While the above studies focused on marital satisfaction from a service member perspective, studies of their spouses indicate that deployments also are

related to spouse satisfaction (Steelfisher, Zaslavsky, & Blendon, 2008). Spouses of active-duty soldiers from 10 major posts who were either currently deployed or were deployed since 2001 completed a telephone survey. Spouses were further categorized by whether or not the soldier's deployment was extended beyond the expected term or not extended. Questions were asked about their marriages, their own jobs, daily stressors, mental well-being, finances, and support from the Army. Only nine percent of the total sample reported problems with their marriages; however, when comparing the extended and non-extended deployment groups, 14 percent of the extended group reported problems compared to only six percent of the non-extended group, which was a significant difference. This underscores the need for military commanders to recognize the second- and third-order effects of operational decisions and to carefully manage expectations with both soldiers and family members.

In a study of 434 couples that included active-duty male soldiers and their civilian spouses, marital functioning and its relationship to PTSD symptoms and recent deployment was assessed (Allen et al., 2010). The couples were married approximately five years; were, on average, 27 years old; and had at least one child living in the house at least part-time. Marital satisfaction was measured using the Kansas Marital Satisfaction Scale described above, while other measures of marital functioning included confidence in marital strength and stability, positive bonding experiences, parental alliance, dedication to the relationship, satisfaction with sacrifices made to accommodate spousal needs, and problems communicating. Although recent deployment was not correlated with any of the marital functioning measures, soldier PTSD symptoms were correlated with almost all indices of marital functioning for themselves and their spouses. Further mediation analyses were conducted to determine if communication, parental alliance, or positive bonding mediated the impact of PTSD symptoms on marital satisfaction. Significant indirect effects of the three variables occurred suggesting partial mediation effects.

Coping and Social Support

Based on the research presented thus far, we can see that the military way of life can be stressful and it can affect QOL in a multitude of ways. As in the case of any stress-response process, how one responds to stress depends on one's appraisal of the stressor, the interpretation of the stressor, and the coping behaviors that are then implemented (Lazarus &

Folkman, 1984). In the Lazarus and Folkman model of stress and coping, first an assessment of how much of a threat or challenge that stressor poses or how much harm has occurred takes place. A secondary appraisal follows an evaluation of the stressor and involves an assessment of one's previous experience with similar stressors, as well as one's coping resources.

Following this appraisal process, an individual may choose basically one of two methods of coping with a stressor. One method is known as "emotion-focused coping" and reflects attempts to manage emotional responses during or after experiencing a stressor. A second method of coping is known as "problem-focused coping," which is a direct attempt to solve the problem rather than focusing on the emotional aspects of the situation. Generally, problem-focused coping has been related to positive outcomes (Billings & Moos, 1981; Long, 1989); however, emotion-focused coping may be better for situations in which the stressors cannot be changed (Folkman & Lazarus, 1980; McCrae, 1984).

So how do service members and their families cope with the stress of military life? As expected, not everyone copes in the same manner, and the strategy chosen will probably be situation-dependent. Military spouses were the focus of a study of coping and health outcomes. Specifically, 77 wives of deployed 4th Infantry Division service members, ranging in age from 19 to 51 with an average age of 33, completed a survey as part of Spouse Appreciation Day (Dimiceli, Steinhardt, & Smith, 2010). Spouses identified the most stressful military-related experience they had encountered in the past five years, the controllability of the situation, as well as how they coped using the Brief Coping Orientations to Problems Experienced scale (Brief COPE). Additionally they completed questions related to depressive and physical illness symptoms. Deployment-related stressors were endorsed by 85 percent of the sample, followed by relocation for 11 percent and other stressors by four percent. In terms of coping strategies, both problem-focused and emotion-focused coping strategies were used. However, problem-focused coping strategies were used most frequently despite the uncontrollable nature of the deployment. Main effects of emotion-focused coping strategies were found with regard to physical symptoms but not depressive symptoms, while problem-focused coping displayed main effects for depressive symptoms. An increase in emotion-focused coping was associated with an increase in physical symptoms, while an increase in problem-focused coping was

associated with fewer depressive symptoms. An interaction effect for problem-focused coping and controllability of the stressor indicated that physical symptoms were reduced provided that the spouses felt they had little control over the situation, illustrating that individual outcomes are largely situation-dependent.

Garnering social support is another strategy that has been found to be useful in dealing with life stressors. Spouses are likely to rely on a support system that may include family, friends, as well as the community, but the need for support is likely to be greater when the service member has deployed. Social support can be defined as information that allows someone to believe that they are loved and cared for and is a member of a network of people (Cobb, 1976). Social support has both structural and functional properties that are tied to mental and physical health outcomes. Structural support refers to variables such as the size of the support network, the sources of support, and the type of support (e.g., informational, monetary) (Berkman, 1984; Griffith, 1985); while functional properties refers to the perception of whether or not support exists, and if it does, the degree of its usefulness (Cohen, 1988; Ganster & Victor, 1988; Holahan & Moos, 1981).

There are two primary hypotheses regarding social support and its relationship to health outcomes. The first is the “main effects” hypothesis, which states that a lack of support is stressful even if an individual is not experiencing stress. The second is the “buffering” hypothesis, which states that support has beneficial effects on health during times of stress, but without stress, the level of support garnered does not really matter (Cohen & Hoberman, 1983; Fleming, 1982; Turner, 1981; Wilcox, 1981).

Each of the services has similar unit and larger organizational programs in place to help support military personnel and their families cope with the unique demands imposed by the military. The military unit a service member is assigned to has tremendous potential to directly impact QOL of both soldiers and their families. While the specific mission and an individual’s sense of fit within the team are critical ingredients, a unit’s leadership is directly responsible for the “command climate” and whether the immediate social environment is a positive one (Jones, 2003). In a study of 1,923 soldiers who were members of 52 different companies deployed to Haiti, Bliese and Britt (2001) measured consensus among unit members regarding the social environment and specifically the unit leadership, and found

that the quality of the social environment moderated relationships between work stressors and morale, as well as between work stressors and depression. Hence this suggests that positive unit environments foster social support to help individuals cope with stressors and contribute to an improved QOL.

Similar to social support, strong unit cohesion—a multidimensional concept that describes the degree to which individuals are bonded to both one another as well as to the higher-level organization or institutional ideology—has been positively correlated not only with readiness and individual and group performance, but also with personal well-being (Griffith, 2002). A study of 330 U. S. Marines and Navy Corpsmen who had recently returned from a seven-month deployment to Iraq found that higher levels of unit cohesion served as a significant buffer between combat exposure and post-traumatic stress (Armistead-Jehle et al., 2011). Thus, facilitating unit cohesion may have considerable benefits not only for the entire team, but for the individual members as well.

Another reality is that in addition to themselves and their comrades, military personnel often face significant concerns on the home front. The ability of service members to cope with stressors during deployment is also related to their perception of how well equipped their family members are to deal with the separation. Over 34,000 active-duty Air Force members completed a survey to determine their perspectives on how their spouses/significant others would cope with deployment, as well as what support mechanisms (community, leadership, formal base agencies) might predict one’s ability to cope (Spera, 2009). Perceptions of a spouse’s ability to cope was dependent upon rank and time married, with 35 percent of junior enlisted personnel and 30 percent of those married less than three years of marriage reporting that their spouses would have a serious or very serious problem coping with a deployment. However, if support from the community, leadership, or formal base agencies was high, concerns regarding a spouse’s ability to cope decreased.

A community needs assessment was completed in another study of Air Force service members from 82 bases in the United States (Bowen et al., 2003). The purpose was to examine the relationship between unit support, informal community support, sense of community, and the ability of the family to adapt to stress. Structural equation modeling showed that sense of community had the largest overall effect on

family adaptation, followed by unit support; however, the effect of unit support was indirect and mediated by a sense of community as well as informal community support. Informal support had the smallest effect on family adaptation, but the effect was direct. In all cases, these sources of support were positively related to family adaptation.

Within the military population, the sense of community—the degree to which individuals feel connected to others who share similar values and interests—may be more complex than previously considered, due to the dynamic nature of military life and rapid technological advances that connect service members and their families to each other in new ways. Historically, researchers have been primarily concerned about sense of community exclusively within military bases, reflecting the trend for families to live in relative isolation and self-sufficiency from the civilian environs. However, the majority of military personnel—more than two-thirds—now live off-post in the civilian community (Hoshmand & Hoshmand, 2007). Furthermore, the Internet has become an indispensable means of informing and connecting military families both formally and informally, and it may be a significant contributor to members' feelings of belonging to the wider military institution (Booth et al., 2007). Hence, there may be additional facets to sense of community, beyond the confines of the military base, that positively impact QOL for service members and their families.

Formal Support Programs

In addition to the informal support available to service members and their families through relatives and friends, unit members, the local community, and even cyberspace, a growing number of formal programs have been implemented by both the government and an unprecedented number of non-profit agencies to facilitate well-being and adjustment to military life. DOD programs are designed to increase readiness as well as facilitate recruiting and readiness. Non-governmental organizations (NGOs), which have mushroomed in the past decade, vary greatly in scope and direction but fill very valid needs. Also, as civilian endeavors they often help bridge the military-civilian divide by providing support to service members and their families. However, the degree to which they are effective in comparison to taxpayer-funded programs has yet to be determined. The renewed emphasis and increased resources to both government-sponsored and private non-profit military

support programs underscores their importance during this time of high operational tempo and protracted war.

Each service component is mandated by DOD to maintain a robust morale, welfare, and recreation (MWR) program. These programs cover a wide variety of resources recognized by the government as essential to well-being and quality of life for military personnel and their families, and include not only activities such as physical fitness centers, outdoor recreation, entertainment, and shopping, but also child and youth programs and family services (Department of Defense, 2009a). Among these, several critical programs are maintained at unit level while the remainder exist predominantly at the installation level. However, online MWR programs that serve the wider military community are growing in utility and popularity.

Initially established as informal social groups, the Family Readiness Group (FRG) is the cornerstone of formal social support at the unit level. Unit commanders are directed to maintain a support group for spouses and immediate family members, although the scope and activity level vary from group to group. For example, Army regulations label the FRG a “commander’s program” whose purpose is to increase readiness by providing critical information to family members (Department of the Army, 2001). However, since the groups are composed almost entirely of volunteer family members, usually spouses, the organization and effectiveness vary tremendously across units—a fact borne out in a number of qualitative studies (Ender et al., 2007; Harrell, 2001). While FRGs are vital to mission readiness overall, the variability between groups makes it difficult to comprehensively assess their true impact on members’ QOL.

Installation programs typically have greater oversight and consistency across military bases and may be easier to assess. In a comprehensive study of 13 different MWR programs implemented by the Navy to include deployment support, clinical counseling, youth services, financial assistance, and child development, over 10,000 participants were surveyed during a six-month period. Every single program evaluated showed a strong positive correlation with respondents’ QOL (Schwerin et al., 2002). A follow-on study found similar results with more than 75 percent of participants reporting increased sense of community, reduced stress, and improved coping skills (Schwerin et al., 2003) Other installation programs that are less service-oriented but more directly focused on support and facilitating

community cohesion such as Army Family Team Building, for example, have been found to positively influence sense of fit and satisfaction with the Army and contribute to QOL for both the service member and their spouse (McFadyen, Kerpelman, & Adler-Baeder, 2005). Thus those who choose to participate in these types of programs report direct benefits.

Not all family members are able or willing to participate in programs at the unit or on the installation. Some family members choose to return home during deployment to be near grandparents or other extended family members; some have multiple commitments that prevent them from accessing certain programs; and the majority of reservist families are geographically located far from a military installation. For these people, the Internet has become an invaluable resource for getting information and staying connected (Ender, 2009). In addition to informal cyber-networks that have proliferated since 2001, DOD has formally implemented several virtual support programs that appear to be effective for those who take advantage of them. For example, Sprenkel, Ko, and McDermid (2006) found that users of Military One Source reported reduced stress related to deployment, reunion, finances, and work, as well as reduced personal stress and improved personal relationships. However, of the more than 10,000 service members surveyed, only approximately five percent reported taking advantage of the service. Of the non-users, 81 percent reported not being familiar with the resource. It is worthwhile noting that the study was done when Military One Source was in its relative infancy, so a more updated assessment of this program along with other virtual resources is in order to determine their effectiveness and contribution to QOL.

Conclusion

This chapter has endeavored to illustrate that military quality of life is both complex and dynamic. While it varies among persons and situations, there are still observable trends that may be generalized across services, service members, and family members. The past decade at war has definitely impacted QOL, both in positive and negative ways.

We have also attempted to highlight the systemic nature of QOL in accordance with the ecological model. Issues that affect the service member also affect the family, and vice versa, such as the relationship between service member PTSD and depression in family members. Likewise, as soldiers and family members participate in government programs and respond to military policies, they potentially

influence changes in the unit, the community, and the overall institution that affect individual QOL. The Homeowner Assistance Program is one example of how needs of the service member shape institutional programs that may have positive results.

Two additional things should be clear about military QOL at this point. The first is that it is inextricably linked to leadership. Leaders at the national level need to develop and resource programs that contribute to improved military QOL, and those at local and unit levels need to ensure that their subordinates are informed and have access to the same. Likewise, military personnel and family members need to communicate their needs in an open and honest way to their respective chains of command.

Finally, despite the challenges and significant burdens military personnel and their families are asked to bear for the nation, the benefits of service to health and well-being appear to be mostly positive. A decade of war has imposed significant hardships—particularly on those who have been seriously wounded either physically or psychologically—but leadership at all levels has attempted to respond with policies and programs that improve QOL; and where the government or military have been unable to meet certain needs, other, civilian, organizations have made an effort to step in and fill the gaps. This is not to say that there are not significant challenges still to be met, but rather that all citizens—military and civilian alike—recognize that continuously improving QOL for service members and their families in response to rapidly shifting conditions is essential to maintaining military readiness and our national defense. It is the very least these men and women deserve.

Future Directions

Military life in the twenty-first century is markedly different than in previous decades. The events of 9/11, two significant and concurrent conflicts, a struggling economy, and rapid technological advancements are among the factors that have considerably challenged as well as improved QOL for service members and their families. However, the long-term effects of these events remain to be seen, thus providing several potential research areas that could ultimately benefit both individual well-being and military readiness. The following questions highlight opportunities for future work.

- What is the long-term impact of combat injuries, both physical and psychological, on service member well-being and QOL? How

effective are government health care resources and programs in meeting individual and family needs?

- How will the current budget crisis affect economic policies that contribute to military QOL?

- What is the long-term impact of the new G. I. Bill? How many military personnel and family members will receive college degrees as a result of this program? What are the subsequent positive QOL outcomes for beneficiaries?

- How will this era of persistent conflict and repeated deployments affect military marriages and families? What are the implications to health and well-being for caregivers of soldiers with long-term disabilities? What are the lasting physical and emotional consequences for a military child whose service member parent (or parents) has been absent for repeated deployments or suffers from PTSD?

- As this chapter has primarily focused on active-duty personnel, many questions remain with regard to National Guard and Reserve personnel. The current conflicts have demanded more from these citizen-soldiers than at any other time in recent history. Hence, how has the overall QOL of reservists and their families been impacted by repeated deployments, government policies and programs, and varying degrees of community support? What is the difference in QOL between active duty and reserve personnel and what special needs do each have?

- How do virtual support networks differ from physical ones? What are the positive effects for participants? Do these cyber-networks replace any traditional support group functions?

References

- Adams, G. A., Jex, S. M., & Cunningham, C. J. L. (2006). Work-family conflict among military personnel. In C. A. Castro, A. B. Adler & T. W. Britt (Eds.), *Military life: The psychology of serving in peace and combat*, 3, pp. 169–192. Westport, CT: Praeger.
- Allen, E. S. L., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2010). Hitting home: Relationships between recent deployment, post-traumatic stress symptoms, and marital functioning for Army couples. *Journal of Family Psychology*, 24(3), 280–288.
- Armistead-Jehle, P., Johnston, S. L., Wade, N. G., & Ecklund, C. J. (2011). Post-traumatic stress in U.S. Marines: The role of unit cohesion in combat exposure. *89*, 1, 81–88.
- Asch, B., Kilburn, M. R., & Kleman, J. A. (1999). *Attracting college bound youth into the military: Toward a development of new recruiting policy options*. Santa Monica, CA: RAND.
- Barnes, V. A., Davis, H., & Treiber, F. A. (2007). Perceived stress, heart rate and blood pressure among adolescents with family members deployed in Operation Iraqi Freedom. *Military Medicine*, 172(1), 40–43.
- Barrett, D. H., Doebbeling, B. N., Schwartz, D. A., et al. (2002). Post-traumatic stress disorder and self-reported physical health status among U.S. military personnel serving during the Gulf War period: A population-based study. *Psychosomatics*, 43(3), 195–205.
- Benner, J. (2003). Military aims to improve base housing—and morale; Private sector assists renewal of family units. *The Washington Post*, November 13, p. T.01
- Berkman, L. F. (1984). Assessing the physical health effects of social networks and social support. *Annual Reviews of Public Health*, 5, 413–432.
- Billings, A. G., & Moos, R. H. (1981). Social support and occupational stress: Talking to supervisors. *Journal of Vocational Behavior*, 36, 61–81.
- Bliese, P. D., & Britt, T. W. (2001). Social support, group consensus and stressor-strain relationships: Social context matters. *Journal of Organizational Behavior*, 22(4), 347–366.
- Booth-Kewley, S., & Larson, G. E. (2005). Predictors of psychiatric hospitalization in the Navy. *Military Medicine*, 170 (Jan), 87–93.
- Booth, B., Segal, M. W., Bell, D. B., et al. (2007). *What we know about Army families: 2007 update*. Family and Morale, Welfare and Recreation Command.
- Bourg, C., & Segal, M. W. (1999). The impact of family supportive policies and practices on organizational commitment to the Army. *Armed Forces & Society*, 25, 633–653.
- Bowen, G. L., Mancini, J. A., Martin, J. A., Ware, W. B., & Nelson, J. P. (2003). Promoting the adaptation of military families: An empirical test of a community practice model. *Family Relations*, 52(1), 33–44.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Brown, R. I. (1997). Quality of life: The development of an idea. In R. I. Brown (Ed.), *Quality of life for people with disabilities: Models research and practice* (2nd ed.). (pp.1–11). Cheltenham, UK: Stanley Thornes, Ltd.
- Burrell, L. M. (2006). Moving military families: The impact of relocation on family well-being, employment and commitment to the military. In C. A. Castro, A. B. Adler, & T. W. Britt (Eds.), *Military life: The psychology of serving in peace and combat*. Westport, CT: Praeger.
- Burrell, L. M., Adams, G. A., Durand, D. B., & Castro, C. A. (2006). The impact of military lifestyle demands on well-being, Army, and family outcomes. *Armed Forces & Society*, 33(1), 43–58.
- Burton, T., Farley, D., & Rhea, A. (2009). Stress-induced somatization in spouses of deployed and nondeployed servicemen. *Journal of the American Academy of Nurse Practitioners*, 21, 332–339.
- Carr, A. J., Gibson, B., & Robinson, P. G. (2001). Measuring quality of life: Is quality of life determined by expectations or experience? *British Medical Journal*, 322, 1240–1243.
- Castaneda, L. W., & Harrell, M. C. (2008). Military spouse employment: A grounded theory approach to experiences and perceptions. *Armed Forces & Society*, 34(3), 389–412.
- CBS News. (2008). Dad recalls “sad situation” at Fort Bragg. Retrieved from http://www.cbsnews.com/stories/2008/05/01/national/main4061147.shtml?source=RSSattr=HOME_4061147.
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38(5), 300–314.

- Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology, 7*(3), 260–297.
- Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*(2), 99–125.
- Congressional Budget Office. (1999). What does the military “pay gap” mean? Retrieved from <http://www.cbo.gov/doc.cfm?index=1354&type=0&sequence=1>.
- Cooney, R., Segal, M. W., & De Angelis, K. (2003). *Moving with the military: Race, class, and gender differences in the employment consequences of tied migration*. Paper presented at the annual meeting of the American Sociological Association Annual Meeting, Aug 08, 2003, San Francisco, CA.
- Cummins, R. A. (1997). Assessing quality of life. In R. I. Brown (Ed.), *Quality of life for people with disabilities: Models research and practice* (2nd ed.) (pp 116–150). Cheltenham UK: Stanley Thornes, Ltd.
- Cummins, R. A. (2000). Objective and subjective quality of life: An interactive model. *Social Indicators Research, 52*(1), 55–72.
- Cummins, R. A. (2005). Moving from the quality of life concept to a theory. *Journal of Intellectual Disability Research, 49*(10), 699–706.
- Dao, J., & Frosch, D. (2010). Feeling warehoused in Army trauma care units. *The New York Times*. April 25. p. A.1.
- Department of Defense. (2009a). Department of Defense Instruction Number 1015.10. Retrieved from <http://www.dtic.mil/whs/directives/corres/pdf/101510p.pdf>.
- Department of Defense. (2009b). *Report of the 2nd quadrennial quality of life review*. Retrieved from <http://www.military-homefront.dod.mil/12038/Project%20Documents/MilitaryHOMEFRONT/QOL%20Resources/Reports/Quadrennial%20Quality%20of%20Life%20Review%202009.pdf>.
- Department of Defense. (2010). 2010 quadrennial Defense review fact sheet. Retrieved from http://www.defense.gov/qdr/QDR_FACT_SHEET_Feb_2010.pdf.
- Department of the Army. (2001). *AR 210–22: Private organizations on Department of the Army installations*. Retrieved from http://www.apd.army.mil/pdffiles/r210_22.pdf.
- Dimiceli, E. E., Steinhardt, M. A., & Smith, S. E. (2010). Stressful experiences, coping strategies, and predictors of health-related outcomes among wives of deployed military servicemen. *Armed Forces and Society, 36*(2), 351–373.
- Eighmey, J. (2006). Why do youth enlist? Identification of underlying themes. *Armed Forces & Society, 32*(2), 307–328.
- Ender, M. G. (2009). *American soldiers in Iraq: McSoldiers or innovative professionals?* New York: Routledge.
- Ender, M. G., Campbell, K. M., Davis, T. J., & Michaelis, P. R. (2007). Greedy media, Army families, embedded reporting, and war in Iraq. *Sociological Focus, 40*(1), 48–71.
- Erbes, C. R., Polusny, M. A., MacDermid, S., & Compton, J. S. (2008). Couple therapy with combat veterans and their partners. *Journal of Clinical Psychology: In Session, 64*(8), 972–983.
- Fleming, R., Baum, A., Gisriel, M. M., & Gatchel, R. J. (1982). Mediating influences of social support on stress at Three Mile Island. *Journal of Human Stress, 8*(3), 14–22.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21*, 219–239.
- Fuentes, G. (2007). Mortgage crisis hits home for troops, vets. *Army Times*. November, 29. Retrieved from http://www.armytimes.com/news/2007/11/military_subprime_071129w/.
- Ganster, D. C., & Victor, B. (1988). The impact of social support on mental and physical health. *British Journal of Medical Psychology, 61*, 17–36.
- Gifford, B. (2003). *Fighting chance: Public assistance use among military families in the United States*. Paper presented at the Annual Meeting of the American Sociological Association, August 16, Atlanta, GA.
- Goldich, R. L. (2003). *Military pay and benefits: Key questions and answers*. The Library of Congress.
- Greenberg, M. (2008). The new G.I. Bill is no match for the original. *Chronicle of Higher Education, 54*(46), A56–A56.
- Griffith, J. (1985). Social support providers: Who are they? Where are they met? And the relationship of network characteristics to psychological distress. *Basic and Applied Social Psychology, 6*(1), 41–60.
- Griffith, J. (2002). Multilevel analysis of cohesion’s relation to stress, well-being, identification, disintegration, and perceived combat readiness. *Military Psychology, 14*(3), 217–239.
- Harrell, M. C. (2001). Army officer spouses: Have the white gloves been mothballed? *Armed Forces & Society, 28*(1), 55–75.
- Harrell, M. C., Lim, N., Castaneda, L. W., & Golinelli, D. (2004). *Working around the military: Challenges to military spouse employment and education*. Santa Monica, CA: RAND.
- Hoge, C. W., Castro, C. A., & Eaton, K. M. (2006). Impact of combat duty in Iraq and Afghanistan on family functioning: Findings from the Walter Reed Army Institute of Research Land Combat Study. In *Human Dimensions in Military Operations* (pp. 5-1–5-6).
- Hoge, C. W., Lesikar, S. E., Guevara, R., et al. (2002). Mental disorders among U.S. military personnel in the 1990s: Association with high levels of health care utilization and early military attrition. *American Journal of Psychiatry, 159*(9), 1576–1583.
- Holahan, C. J., & Moos, R. H. (1981). Social support and psychological distress: A longitudinal analysis. *Journal of Abnormal Psychology, 90*(40), 365–370.
- Hoshmand, L. T., & Hoshmand, A. L. (2007). Support for military families and communities. *Journal of Community Psychology, 35*(2), 171–180.
- Jones, S. M. (2003). *Improving accountability for effective command climate: A strategic imperative*. Carlisle Barracks, PA: U.S. Army War College.
- Jowers, K. (2010). Food stamp use in commissaries rises nearly 40%. *Army Times*, December 6, p.10.
- Karl, J., & Duck, J. (2007). Army Surgeon General resigns. March 12. Retrieved May 24, 2010, from <http://abcnews.go.com/US/story?id=2943873>.
- Karney, B. R., & Crown, J. S. (2007). *Families under stress: An assessment of data, theory, and research on marriage and divorce in the military*. Santa Monica, CA: RAND.
- Kavanaugh, J. (2005). *Stress and performance: A review of the literature and its applicability to the military*. Santa Monica, CA: RAND.
- Kelly, J. F., Ritenour, A. E., McLaughlin, D. F., et al. (2008). Injury severity and causes of death from Operation Iraqi Freedom and Operation Enduring Freedom: 2003–2004 versus 2006. *The Journal of TRAUMA Injury, Infection, and Critical Care, 64*(2), 21–27.
- Kleykamp, M. A. (2006). College, jobs or the military? Enlistment during a time of war. *Social Sciences Quarterly, 87*(2), 272–290.

- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer Publishing Company.
- Lazo, A. (2009). Stimulus aid to help U.S. families during housing crisis. *Washington Post*. March 19. Retrieved from http://www.boston.com/news/nation/washington/articles/2009/02/26/stimulus_aid_to_help_us_military_families_during_housing_crisis/.
- Lester, P., Peterson, K., Reeves, J., et al. (2010). The long war and parental combat deployment: Effects on military children and at-home spouses. *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(4), 310–320.
- Long, B. C. (1989). Sex role orientation, coping strategies and self-efficacy of a women in traditional and nontraditional occupations. *Psychology of Women Quarterly*, 13, 307–324.
- Mageroy, N., Riise, T., & Johnsen, B. H. (2007). Health-related quality of life in the Royal Norwegian Navy: Does officer rank matter? *Military Medicine*, 172(8), 835–842.
- Manos, G. H. (2010). War and the military family. *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(4), 297–299.
- Mansfield, A. J., Kaufman, J. S., Marshall, S. W., Gaynes, B. N., Morrissey, J. P., & Engel, C. C. (2010). Deployment and the use of mental health services among U.S. Army wives. *The New England Journal of Medicine*, 362(2), 101–109.
- Maze, R. (2010). Military pay gap fiction, nonpartisan CBO says. *Navy Times*. Jan 2. Retrieved July 19, 2010, from http://www.navytimes.com/news/2010/01/army_paygap_010210w/.
- McCrae, R. R. (1984). Situational determinants of coping responses: Loss, threat, and challenge. *Journal of Personality and Social Psychology*, 46(4), 919–928.
- McFadyen, J. M., Kerpelman, J. L., & Adler-Baeder, F. (2005). Examining the impact of workplace supports: Work-family fit and satisfaction in the U.S. military. *Family Relations*, 54(1), 131–144.
- McLeland, K. C., & Sutton, G. W. (2008). Marital satisfaction before and after deployments associated with the Global War on Terror. *Psychological Reports*, 103, 836–844.
- Miller, T. C., & Zwerdling, D. (2010). Military still failing to diagnose, treat traumatic brain injuries. National Public Radio. June 8. Retrieved from <http://www.npr.org/templates/story/story.php?storyId=127402993>.
- Nelson, G., & Prilleltensky, I. (Eds.). (2005). *Community psychology: In pursuit of liberation and well-being*. New York: Palgrave Macmillan.
- Nelson Goff, B. S., Crow, J. R., Reisbig, A. M. J., & Hamilton, S. (2009). The impact of soldiers' deployments to Iraq and Afghanistan: Secondary traumatic stress in female partners. *Journal of Couple and Relationship Therapy*, 8, 291–305.
- Nice, D. S., & Beck, A. (1980). *Feelings of depression in Navy wives prior to family separation*. San Diego, CA: Navy Personnel Research and Development Center.
- Office of the Deputy Undersecretary of Defense Installations and Environment. (2010). Military Housing Privatization. Retrieved from <http://www.acq.osd.mil/housing/mhpi.htm>.
- Office of the Surgeon General. (2008). *Mental health advisory team (MHAT) Operation Iraqi Freedom 2006–08: Iraq, Operation Enduring Freedom 8: Afghanistan*. Washington, D.C.: Office of the Surgeon General, United States Army Medical Command.
- Okie, S. (2006). Reconstructing lives—A tale of two soldiers. *New England Journal of Medicine*, 355(25), 2609–2615.
- Orthner, D. K., & Rose, R. (2009). Work separation demands and spouse psychological well-being. *Interdisciplinary Journal of Applied Family Studies*, 58, 392–403.
- Peake, J. M. (2005). Beyond the Purple Heart—Continuity of care for the wounded in Iraq. *New England Journal of Medicine*, 352(3), 219–222.
- Pflanz, S. E., & Ogle, A. D. (2006). Job stress, depression, work performance, and perceptions of supervisors in military personnel. *Military Medicine*, 171(9), 861–865.
- Priest, D., & Hull, A. (2007). Soldiers face neglect, frustration at Army's top medical facility. *The Washington Post*, February 18. Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2007/02/17/AR2007021701172.html>.
- Rappaport, J. (1977). Strategies and tactics of social intervention. In *Community psychology: Values, research and action* (pp. 158–213). New York: Holt, Rinehart and Winston.
- Renshaw, K. D., Rodrigues, C. S., & Jones, D. H. (2009). Combat exposure, psychological symptoms, and marital satisfaction in National Guard soldiers who served in Operation Iraqi Freedom from 2005 to 2006. *Anxiety, Stress & Coping*, 22(1), 101–115.
- Schnurr, P. P., Hayes, A. F., Lunney, C. A., & McFall, M. (2006). Longitudinal analysis of the relationship between symptoms and quality of life in veterans treated for post-traumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 74(4), 707–713.
- Schumm, W. R., Bell, D. B., & Resnick, G. (2001). Recent research on family factors and readiness: Implications for military leaders. *Psychological Reports*, 89, 153–165.
- Schwerin, M. J., Kelley, M. L., Farrar, K. L., & Lane, M. L. (2003). *Evaluation of Navy counseling and advocacy programs: Relating programs to readiness and retention* (NPRST-TN-03-9) Retrieved from <http://dodreports.com/pdf/ada411364.pdf>
- Schwerin, M. J., Michael, P. G., Glaser, D. N., & Farrar, K. L. (2002). A cluster evaluation of Navy quality of life programs. *Evaluation and Program Planning*, 25, 303–312.
- Segal, M. W. (1986). The military and the family as greedy institutions. *Armed Forces and Society*, 13(1), 9–38.
- Shackman, G., Liu, Y. L., & Wang, X. (2005). Brief review of world quality of life. Unpublished manuscript.
- Smith, B., Wingard, D. L., Ryan, M. A. K., Macera, C. A., Patterson, T. L., & Slymen, D. J. (2007). U.S. military deployment during 2001–2006: Comparison of subjective and objective data sources in a large prospective health study. *Annals of Epidemiology*, 17(12), 976–982.
- Speckhard, A. (2003). Acute stress disorder in diplomats, military, and civilian Americans living abroad following the September 11 terrorist attacks on America. *Professional Psychology: Research and Practice*, 34(2), 151–158.
- Spera, C. (2009). Spouses' ability to cope with deployment and adjust to Air Force family demands: Identification of risk and protective factors. *Armed Forces and Society*, 35(2), 286–306.
- Sprenkle, D. H., Ko, M. J., & MacDermid, S. M. (2006). *Military One Source: Its use, impact and effectiveness*. West Lafayette, IN: Military Family Research Institute at Purdue University.
- Steele, J. L., Salcedo, N., & Coley, J. (2010). *Service members in school: Military veterans' experiences using the Post 9/11 G. I. Bill and pursuing post-secondary education*. Washington, D.C.: American Council on Education.

- Steelfisher, G. K., Zaslavsky, A. M., & Blendon, R. J. (2008). Health-related impact of deployment extensions on spouses of active duty Army personnel. *Military Medicine*, 173(3), 221–229.
- Turner, R. J. (1981). Social support as a contingency in psychological well-being. *Journal of Health and Social Behavior*, 22, 357–367.
- U.S. Army Research Institute for the Behavioral and Social Sciences. (2008). *Well-being (quality of life) and job satisfaction: Active Army soldiers*. (Report No. 2009-04). Retrieved from www.army.mil/fmwrc/docs/QOLsurveyreport.doc
- Voelker, M. D., Saag, K. G., Schwartz, D. A., et al. (2002). Health-related quality of life in Gulf War–era military personnel. *American Journal of Epidemiology*, 155(10), 899–907.
- Warner, C. H., Appenzeller, G. N., Warner, C. M., & Grieger, T. (2009). Psychological effects of deployments on military families. *Psychiatric Annals*, 39(2), 56–63.
- Wilcox, B. I. (1981). Social support, life stress, and psychological adjustment: A test of the buffering hypothesis. *American Journal of Community Psychology*, 9(4), 371–385.
- Witters, D. (2010a). Gallup poll: Active duty military leads U.S. in well-being; veterans lag. Retrieved from http://www.gallup.com/poll/141089/Active-Duty-Military-Leads-Wellbeing-Veterans-Lag.aspx?utm_source=email%2Ba%2Bfriend&utm_medium=email&utm_campaign=sharing&utm_term=Active-Duty-Military-Leads-Wellbeing-Veterans-Lag&utm_content=morelink.
- Witters, D. (2010b). Gallup poll: Military well-being remains high among previously deployed. Retrieved from http://www.gallup.com/poll/141308/Military-Wellbeing-Remains-High-Among-Previously-Deployed.aspx?utm_source=tagrss&utm_medium=rss&utm_campaign=syndication&utm_term=Social Wellbeing
- WRAL Raleigh. (2008). Army Secretary: Soldiers moved from eight barracks after review. Retrieved from <http://www.wral.com/news/state/story/2847618/>.
- WRAL Raleigh (2009). Fort Bragg barracks demolition begins with a bang. Retrieved from <http://www.wral.com/news/state/story/5387922/>.
- Zouris, J. M., Wade, A. L., & Magno, C. P. (2008). Injury and illness casualty distributions among U.S. Army and Marine Corps personnel during Operation Iraqi Freedom. *Military Medicine*, 173(3), 247–252.
- Zouris, J. M., Walker, G. J., Dye, J., & Galarneau, M. (2006). Wounding patterns for U.S. Marines and sailors during Operation Iraqi Freedom, major combat phase. *Military Medicine*, 171(3), 246–252.

Military Psychology

Closing Observations and a Look Forward

Michael D. Matthews and Janice H. Laurence

Abstract

Beginning with the major wars of the twentieth century and continuing to the current conflicts of the twenty-first century, war pushed paradigm shifts in a variety of scientific disciplines, including psychology. Psychology and its closely associated disciplines are critical to success in contemporary war, and this need will lead to revolutionary developments in the science and practice of psychology. Collectively, the topics covered in this handbook describe the myriad ways that modern psychology influences warfare, and vice versa. Advances made in military psychology influence all sub-disciplines of psychology. This chapter synthesizes the themes drawn from the chapters in this book and explores potential future directions for military psychology. There are few other sub-disciplines of psychology that are as broad and far-reaching or where the potential exists to influence the lives of so many people.

Keywords: Psychology, military, military psychology, warfare, war

Military Psychology: Closing Observations and a Look Forward

The evolution of psychology, as a discipline distinct from philosophy and physiology (Boring, 1950), has been heavily influenced by war. Indeed, beginning with the major wars of the twentieth century and continuing to the current conflicts of the twenty-first century, war pushed paradigm shifts in a variety of scientific disciplines. As reviewed by Scales (2009), World War I saw dramatic developments in chemistry, World War II in physics (notably radar and nuclear technology), and the Cold War in information technology. Scales goes on to argue that psychology and its closely associated disciplines are critical to success in contemporary war, and that this need will generate paradigm-shifting changes in the science and profession of psychology. This is not without precedent. World Wars I and II drove explosive developments in aptitude testing, selection, and classification (Seligman & Fowler, 2011).

More recently, nearly 10 years of war have resulted in historically high rates of pathology among United

States military members, including suicide, post-traumatic stress disorder (PTSD), depression, and conduct disorders. The number of psychologically wounded soldiers, airmen, sailors, and Marines is beyond the capability of traditional clinical psychology, based on a treatment-based disease model of pathology, to adequately address. This overload of the military mental health system drove the U.S. Army to develop a wellness-based, preventive health-care program known as Comprehensive Soldier Fitness (CSF; see Seligman & Matthews, 2011), arguably the largest application of psychological science to the military in history (Seligman & Fowler, 2011). This program is described in detail by Cornum and Lester in Chapter 2 of this handbook.

Collectively, the topics covered in this handbook describe the myriad ways that modern psychology influences warfare, and vice versa. The authors are international subject-matter experts in their areas of expertise. Some are uniformed soldiers, others are civilian employees of the military or other government agencies. Some are university professors who

conduct research on matters of importance to the military. Still others are employed by defense contractors, and some are clinicians. Psychologists from several nations are represented. Collectively, the 25 topical chapters of this handbook provide an overview of modern military psychology and its tremendous influence on the military and society as a whole.

Training is critical to the military. Modern military systems place a significant cognitive workload on military personnel. Small-unit leaders have seconds or minutes to make decisions with strategic implications. Scales (2009) suggests that successfully integrating state-of-the-art digital technologies with domain-relevant training requirements may allow leaders to rapidly and bloodlessly develop the decision-making skills needed to make accurate and appropriate decisions on today's battlefields. Matthews (Chapter 16) describes aspects of cognitive psychology that may be leveraged to achieve this goal. With traditional military training methods, recipients are most prone to make mistakes during the first few days or weeks on the battlefield. The modern fighter pilot, in contrast, has flown hundreds of simulated missions before ever engaging the enemy. Similar immersive training systems for dismounted soldiers could radically improve both their combat effectiveness and survivability.

A number of the chapters address developments in what can loosely be described as basic and applied experimental military psychology. We have already mentioned Matthews' review of cognitive psychology. Other areas of military psychology that are grounded in experimental psychology are the sleep and engineering psychologies. Miller and colleagues (Chapter 20) review the latest developments and research methodologies utilized in studying sleep and its impact on mission performance. Sleep is now understood to affect psychological adjustment as well as basic cognitive and perceptual functioning. Engineering psychology, also known as human factors engineering, emerged during World War II because military systems began to challenge the upper limits of human physical and cognitive capabilities. Krueger (Chapter 18) reviews 65 years of research and development in this domain. Future military systems will continue to challenge their operators. This trend is now evident in ground vehicles, command and control systems, and robotics. No modern military can afford to neglect the human being who is part of the larger human-machine system.

We also mentioned Cornum and Lester's (Chapter 2) description of the U.S. Army's radical

new approach to improving soldier fitness. Modern warfare has necessitated innovations and improvements in other areas relevant to counseling and clinical psychology. In modern war, improved body armor coupled with extremely rapid casualty evacuation procedures have resulted in a huge increase in survival of wounds that once would have killed the victim. Many of these survivors are amputees and/or suffer from traumatic brain injury (TBI). American military medical personnel are learning new ways of treating these patients, and Porter's contribution (Chapter 4) summarizes the exciting and important developments in this field. In a related area of concern, psychological injuries of PTSD and related combat stress disorders are driving research and development into novel ways of treating these disorders. Wagner and Jakupek's (Chapter 3) description of their experiences with these patients, together with the other clinically related chapters mentioned above, offer new hope not only to wounded soldiers, but also to people from all walks of life who suffer trauma and loss in their lives.

Traditional topics of selection, classification, and training are addressed by Rumsey (Chapter 11), Picano and Roland (Chapter 12), and Goldberg (Chapter 19). Selection and classification of military personnel, as we have seen, dates back to World War I. What predicted success for a "doughboy" in that war falls short of assessing the aptitudes and skills needed to succeed in the modern digital military. Rumsey's review of state-of-the-art work in this area underscores the continued importance of refining and improving selection and classification tools and procedures. Military special forces units are increasingly the difference-makers in modern conflict. One can be fully qualified to be a soldier, yet not begin to possess the knowledge, skills, and aptitudes needed to excel in these highly specialized units. Picano and Roland (Chapter 12) offer a seldom-seen insight into the selection of such individuals. It is likely that the trend will be for militaries around the world to continue to expand these types of units, hence this chapter is of special importance. Once selected and classified, military personnel must be trained. Goldberg (Chapter 19) reviews contemporary training strategies, with a special emphasis on simulations.

The military continues to be a place for cutting-edge leadership research. Kolditz (2007) has introduced the concept of *in extremis* leadership. This refers to leading where survival and physical well-being are on the line. Is there anything special about

leading in these situations? Campbell (Chapter 13) offers an innovative perspective on this topic. Another emerging area of leadership is swift trust (Lester & Vogelsgesang, Chapter 14). Swift trust occurs in situations—common in the military—where followers must form quick judgements about new leaders and peers. Coupled with Larsson's (Chapter 15) treatment of leader development in the natural context, readers can begin to discern that there is a systematic body of knowledge that may inform strategies to develop effective leaders more quickly and effectively.

One of the most exciting developments in military psychology is the utilization of behavioral and social science professionals in operational settings. McFate and colleagues (Chapter 9) describe formation and deployment of human terrain teams. These teams, comprising psychologists, sociologists, and anthropologists, are deployed in combat theaters and are tasked with providing commanders with a detailed understanding of the local culture and its undercurrents. The vital focus on socio-cultural knowledge is consistent with Scales's (2009) contention that social science will determine who is victorious in modern war. Shuffler, Pavlas, and Salas's discussion of military teams (Chapter 21) is germane to these new interdependencies as well enhancing the flexibility and adaptability of the military's more traditional units.

In a democratic military, it is important that ethnic minorities and other marginalized groups, to include gays, lesbians, bisexuals, and the transgendered, are treated fairly both for recruitment and utilization once in the military. This is a dynamically evolving area of concern, as evidenced by the United State's recent decision in December, 2010, to allow gays and lesbians to serve openly in the armed forces. This handbook addresses key issues in this domain, and the chapters by DeAngelis and Segal (Chapter 23) and Estrada (Chapter 24) clearly unpack the key issues facing the military in developing fair policies for these groups.

Venerable topics such as morale remain important, and Ender addresses this in Chapter 22. Military families bear a great burden and their care contributes to their morale. The deployment of a loved one is emotionally and sometimes financially stressful to family members. Indeed, CSF aims its resilience programs at improving adjustment for family members (Gottman, Gottman, & Akins, 2011; Park, 2011). In this volume, Booth and Lederer (Chapter 25) and Ryan and Burrell (Chapter 26) focus on these issues. To the extent that military families are supported

and empowered, the combat power of the military is strengthened. If soldiers can trust their families are well cared-for in their absence, morale is improved, along with tangible benefits of improved retention and performance.

Among the most exciting topics in this volume are those driven by the unique events stemming from 10 years of continuous warfare. These include the emergence of operational psychology as a bone fide sub-discipline of military psychology (Williams et al., Chapter 5) and the emerging psychology of terrorism (Lygre & Eid, Chapter 7). Puckett and Atwood (Chapter 8) offer an insightful review of crime on the battlefield, something that has occurred in all wars but is much more visible in an era of nearly instant world-wide communication. Ethics, human rights, and interrogations (Behnke & Moorehead-Slaughter, Chapter 6) are principles vital to the conduct of warfare, but are especially challenging in twenty-first-century warfare characterized by ideological (versus geographical) lines and against insurgents who often do not adhere to ethical principles of warfare that evolved over the centuries.

This handbook includes authors from several different nations, and this reflects the truly international flavor of contemporary military psychology. A simple Internet search will reveal many international military psychology organizations and meetings that are held each year. Depending on their history and culture, nations may have different needs for their military psychologists, but many of the topics reviewed in this handbook are widely relevant across nationalities. Eid and colleagues (Chapter 10) offer a unique insight into the international nature of military psychology. International collaboration in this domain will grow exponentially in the coming years.

This collection of chapters is radically different than what would have been written merely 10 years ago. The nature of warfare has changed, and the military has adapted, at least for now. Soldiers are better educated and better trained. Technologies exist that would have been science fiction just a few years ago. Individual citizens have a stronger voice than ever before, as evidenced by the recent events in Egypt and Libya where civil war was enabled by cell phone and other digital communication technologies. There are no secrets in the twenty-first century. States and their militaries must embrace these technologies and learn how to leverage them for their own purposes.

Advances made in military psychology affect all other areas of the field. Improved training for

decision-making in combat will help improve training for police, fire, and other non-military organizations that respond to life-and-death situations. Better treatments for combat stress will generalize to helping survivors of earthquakes and other natural disasters. Advances in leadership theory and practice will improve worker morale and productivity in industry and other sectors. The effective integration of minorities and other disenfranchised groups into the military may be a model for successfully doing so in the corporate sector. Furthermore, such integration may enable members of such groups to pass the “litmus test” for political office. The ethic of taking care of worker’s families is unparalleled in most other institutions. In short, knowledge gained from military psychology improves the lives of people in all domains.

What can we expect for the future of military psychology? What will be the content of a similar handbook published in 2050? One can only speculate, but here are some guesses:

- Autonomous and semi-autonomous military systems will be prevalent. What are the human factors, broadly speaking, behind these technologies? This question will span the breadth of military psychology, from engineering psychology to the social psychology of trust.

- Changing culture and allegiances will be the focus of military operations, not killing great numbers of the enemy. Thus, psychological and cultural knowledge will be the ammunition of the future in contrast to the emphasis on kinetic energy (i.e., bombs and bullets) of the past. Successful military organizations will learn how to integrate both types of strategies (lethal and non-lethal) to obtain desired effects.

- Killing, when employed, will become increasingly remote and impersonal. Today, unmanned aerial vehicles (UAVs) drop bombs on targets, directed by operators seated in front of computers a half a world away. Similar lethal technologies will multiply in coming years. A soldier may kill a band of insurgents, then go home for dinner with his or her family. The psychological implications of this have not begun to be properly investigated.

- Medical technology will continue to enable soldiers with wounds that were once debilitating to continue to serve. These improvements will be in the area of intelligent prostheses, neural control of artificial limbs, and perhaps carbon-based computer chips that may replace neural tissue.

This opens a Pandora’s box of psychological issues that will need to be addressed.

- The traditional hierarchical nature of military organizations will become flatter and wider. We already see this today, where lieutenants sometimes make decisions that battalion commanders made in past wars. Leadership strategies must evolve to maximize the effectiveness of these organizational structures.

- In light of the military’s complex, global responsibilities, it is increasingly necessary to conduct interdependent operations across services, components, federal agencies, and national boundaries. Psychology’s lessons from research on teams should be brought to bear in overcoming resistance and adapting individual Army, Navy, Marine Corps, and Air Force cultures for Joint Service, multinational coalition, and inter-agency operations. There seem to be deficiencies in terms of forging shared goals, cooperation, and trust, and thinking of the “joint” groups as teams.

- Military personnel will increasingly be specialists and not generalists. Highly educated and trained people will be needed to operate complicated systems. Traditional recruitment, selection, and classification methods must be refined to identify, attract, and retain people with these skill sets.

- The old military system of promotion and assignment based mostly on rank and time in grade must give way to a more fluid system based on ability. To retain skilled people, military pay systems must be overhauled. This represents a radical departure from the current way of doing business and will require extensive support from industrial/organizational psychologists to implement.

- There will be another revolution in military training. Virtual simulations that offer nearly 100 percent ecological validity to real warfare will be developed, allowing soldiers and their leaders to prepare as never before for combat operations. Cognitive psychologists must place the right experiences at the right times into these simulations, and the parameters of training must be clearly identified.

In conclusion, modern military psychology is diverse, relevant, and dynamic. It represents the state of the art of all of psychology. There are few other sub-disciplines of psychology that are as broad and far-reaching or where the potential exists to influence the lives of so many people. The editors

hope that this snapshot of military psychology of the early twenty-first century has been valuable to the readers, and we hope that you will be inspired to contribute to the evolution of the field in the years to come.

References

- Boring, E. G. (1950). *A history of experimental psychology*. New York: Appleton-Century-Crofts.
- Gottman, J. M., Gottman, J. S., & Atkins, C. L. (2011). The Comprehensive Soldier Fitness program: Family skills component. *American Psychologist, 66*, 52–57.
- Kolditz, T. (2007). In *extremis leadership: Leading as if your life depended on it*. San Francisco, CA: Jossey-Bass (Wiley).
- Park, N. (2011). Military children and families: Strengths and challenges during peace and war. *American Psychologist, 66*, 65–72.
- Scales, R. H. (2009). Clausewitz and World War IV. *Military Psychology, 21*(Suppl. 1), S23–S35.
- Seligman, M. E. P., & Fowler, R. D. (2011). Comprehensive Soldier Fitness and the future of psychology. *American Psychologist, 66*, 82–86.
- Seligman, M. E. P., & Matthews, M. D. (Eds.). (2011). Comprehensive Soldier Fitness [Special Issue]. *American Psychologist, 66*, 1–86.

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