

Stephen V. Bowles · Paul T. Bartone *Editors*

Handbook of Military Psychology

Clinical and Organizational Practice

 Springer

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Stephen V. Bowles
National Defense University
Institute for National Strategic Studies
Center for Technology and National
Security Policy
Washington, DC, USA

Paul T. Bartone
National Defense University
Institute for National Strategic Studies
Center for Technology and National
Security Policy
Washington, DC, USA

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Preface

Over 15 years of conflict in Afghanistan, Iraq, and other war-torn areas has led to a heightened recognition of the importance of psychological factors in the health, welfare, and performance of military personnel. Consequently, there has been a rapid increase in the number of psychologists employed by military and defense agencies around the world. This book is for them and for other behavioral scientists who share in the effort to preserve and protect the mental health of military personnel, veterans, and their families.

Military psychologists serve in many roles, applying their clinical, research, and consulting skills to address challenges at the individual, social, and organizational levels. They are practitioners and problem solvers. Our contributors represent all the military services, and are all experts with experience in their respective fields. For behavioral health scientists and practitioners working with military populations and for students preparing to do so, this book provides a timely overview of the important areas and issues they will likely be dealing with. It contains a wealth of information on the latest approaches to treatment and prevention, as well as applications to enhance selection, assessment, and performance.

Military psychology is of course not limited to the United States. Every nation is concerned with security, and nearly every nation employs military psychologists. While not pretending to be comprehensive, we have included several brief chapters describing the roles and activities of military psychologists outside of the United States. This will hopefully provide the reader with a deeper appreciation for the global reach and relevance of military psychology.

Washington, DC, USA

Stephen V. Bowles
Paul T. Bartone

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Our fantastic team of interns and assistants managed myriad details, including communicating with chapter authors, proofing and editing chapters, checking references, conducting literature reviews, and getting everything into proper format. For this we thank Matthew Allen, Kathryn Barlow, Shaina Bernstein, Serena Bethala, Allie Bond, Jade Burt, Andrea Calderon, Morgan Cohen, Frances Cooke, Kiana Cummings, Kaylah Denis, Sarah DiGregorio, Cynthia Fioriti, Laura Golian, Mark Greenhalgh, Je Ru Lee, Christine Leonhardt, Raechel Martin, Daniel McLaughlin, Adriana Penafiel, Erin Pontius, Aidan Schmitt, Samuel Swisher, Margret Talbot, and Christine Yu.

Lastly, we want to recognize military service members and families around the world, whose service and sacrifice help to assure our shared peace and security.

Disclaimer

The opinions, conclusions, and recommendations expressed or implied within are those of the contributors and do not necessarily reflect the views of the US Department of Defense or any other agency or organization of the Federal Government.

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About the Editors

Colonel (Retired) Paul T. Bartone, PhD is professor and senior research fellow at the Center for Technology and National Security Policy, Institute for National Strategic Studies at National Defense University (NDU). A Fulbright scholar, Bartone has taught leadership at the Industrial College of the Armed Forces (ICAF) and at the US Military Academy, West Point, where he also served as director of the Leader Development Research Center. While on active duty, Bartone was the senior research psychologist in the US Army and served as research psychology consultant to the Surgeon General and as assistant corps chief for medical allied sciences. He is a past president of the American Psychological Association's Society for Military Psychology, a charter member of the Association for Psychological Science, and a life member of the American Psychological Association. He holds an M.A. and Ph.D. in psychology and human development from the University of Chicago.

Colonel (Retired) Stephen V. Bowles, PhD, ABPP is currently serving as a visiting senior research fellow at the Center for Technology and National Security Policy, Institute for National Strategic Studies at the National Defense University and as an adjunct faculty at the Uniformed Services University of the Health Sciences. He served for 27 years in the US Army, is a veteran of Operation Iraqi Freedom, and is a graduate of the Eisenhower School at the National Defense University. He is a fellow in the American Psychological Association and the American Academy of Clinical Health Psychology. He is board certified by the American Board of Professional Psychology in clinical health psychology. Dr. Bowles is the incoming President-elect of the Society for Military Psychology, and is a past president of the District of Columbia Psychological Association. His more recent publications and presentations are in the areas of adaptive leadership and coaching, couples resilience and well-being, family fitness, mindfulness, and organizational fitness.

About the Contributors

Major Joseph H. Afanador, PsyD is a fellowship-trained forensic psychologist. He currently serves as the chief of Campus Behavioral Health Services, located on Fort Sam Houston, Texas, and is the forensic consultant for Regional Health Command – Central.

Colonel Hubert Annen, PhD is the head of military psychology and military studies at the Swiss Military Academy at ETH Zurich and the head of the assessment centers for career officer candidates, career NCO candidates, and general staff officer candidates. His research interests include the evaluation and validation of assessment and selection procedures for military leaders, motivational aspects in the military context, military values and virtues, and the trainability and measurability of individual resilience.

Patrick Armistead-Jehle, PhD, ABPP-CN is the chief of the concussion clinic at Munson Army Health Center, Fort Leavenworth, Kansas. He is board certified in clinical neuropsychology and remains active in clinical care. His research interests include traumatic brain injury, as well as performance and symptom validity testing.

Margaret M. Baer, BA is a research associate in the Laboratory for the Treatment of Suicide-Related Ideation and Behavior at the Uniformed Services University of the Health Sciences. Her program of research focuses on suicidal and non-suicidal self-injurious behaviors across the lifespan. Specific interests include clarifying links between suicidality and non-suicidal self-injury and understanding the role of dysregulated emotion across self-injurious behaviors, to include eating disorders.

Lieutenant Kyle M. Bander mann, PhD is currently serving as staff psychologist at the US Naval Hospital Guam and embedded mental health provider with Commander, Submarine Squadron 15. His research interests and clinical skills focus on multicultural intersectionality, preventive interventions, and population health/health psychology.

Captain David M. Barry, PhD is an active duty Army psychologist. He attended graduate school at the Uniformed Services University of the Health Sciences (USUHS) in Bethesda, Maryland, and later completed his clinical internship and postdoctoral residency training at Madigan Army Medical

Center. He recently served as the national Student Affairs Committee chair and Membership Committee chair for the Society for Military Psychology (Division 19 of the American Psychological Association).

Jennifer A. Barry, MA is a doctoral candidate at the American School of Professional Psychology (Argosy University, Northern Virginia). In 2015, she was awarded the F. Edward Hébert Armed Forces Health Professions Scholarship by the US Army. Ms. Barry is a former chair of the Society for Military Psychology (Division 19 of the American Psychological Association) Student Affairs Committee.

Major Jeffrey Ian Bass, PsyD, ABPP is currently the chief of the US Army Recruiting Command, Office of the Command Psychologist. MAJ Bass has been deployed to both Iraq and Afghanistan as a brigade psychologist and served as the clinical psychology residency director at Tripler Army Medical Center. MAJ Bass is a board-certified forensic psychologist and graduate of the Command and General Staff College.

Lieutenant Colonel (Retired) Mark J. Bates, PhD is a retired US Air Force clinical psychologist and former pilot, who serves as the associate director for psychological health promotion in the Deployment Health Clinical Center at the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury. His directorate focuses on advancing the science and practice of psychological health advocacy and early intervention. Dr. Bates completed his doctorate at the Uniformed Services University of the Health Sciences, a residency in clinical psychology at Malcolm Grow Medical Center, and undergraduate degrees at the US Air Force Academy.

Marissa Berman, PhD is an organization development consultant and staff psychologist with the VHA National Center for Organization Development (NCOD), providing organization consulting services to VHA facilities nationwide. She earned her doctorate (PsyD) in clinical psychology from the University of Denver in Denver, Colorado, and completed a postdoctoral fellowship in organization development consulting at VHA NCOD and a postdoctoral residency and predoctoral internship at the University of California at Davis Counseling and Psychological Services with an emphasis in sport psychology. Dr. Berman is a former US Ski Team athlete and a national champion and World Cup medalist in the sport of inverted aerials. She is also a military spouse.

Captain (Retired) Kevin G. Berry, MD is the vice president for operations at Thought Leadership and Innovation Foundation assisting organizations in applying good science to the creation of well-being, fitness, and resilience. A graduate of Georgetown School of Medicine and a general pediatrician by residency training, Dr. Berry's 30-year activity consists of duty career combat deployments and a full range of leadership experiences. His research interests rally around how readiness happens.

Françoise Bertrand, PhD holds a PhD in work and organizational psychology at the University of Liège and works as a research psychologist at the recruitment center of the Belgian Defense. Her current projects focus on the assessment of competencies, skills, and behaviors. Her research interests include military commitment, attrition during military training, psychological contract, competency measures, and situational judgment test. As the person responsible for scientific projects, she established collaboration with various universities.

Commander Wayne C. Boucher, PsyD, ABPP is assigned to the 5th Marine Regiment, 1st Marine Division, where he serves as the Operational Stress Control and Readiness (OSCAR) psychologist. CDR Boucher has five combat deployments: OIF-1 (USS Nimitz), OIF-6/7 (7th Marines), OIF-9 (6th Marines), and OEF-11/12 (5th Marines). His research interests include acute stress disorder, PTSD, and the impact of combat trauma.

Lieutenant Colonel (Reserves) Christopher W. Bunt, MD, FAAFP is an associate professor in the Department of Family Medicine at the Medical University of South Carolina, where he works in undergraduate medical education and is the College of Medicine's military medical advisor. He is a board-certified family medicine physician, a battlefield acupuncture instructor, and a lieutenant colonel in the US Air Force Reserve.

Lieutenant Commander Justin S. Campbell, PhD, MBA is a lieutenant commander in the US Navy Medical Service Corps. He is a designated aerospace experimental and research psychologist and has worked to address issues of sleep and fatigue in several operational military contexts including aviation human factors; combat and operational stress control during deployments to Iraq, Afghanistan, and Guantanamo Bay; and a global health deployment at sea to the Western Pacific.

Colonel (Retired) Rick L. Campise, PhD, ABPP is a pediatric psychologist who earned his PhD from the University of Kansas and completed a postdoctoral fellowship in pediatric psychology at Harvard. Dr. Campise served for 28 years as a US Air Force psychologist, during which time he served as a group commander, squadron commander, chief of Air Force deployment psychology, and chief of the Air Force Suicide Prevention Program, and retired in 2015 as the director of the Department of Defense National Center for Telehealth and Technology. Dr. Campise has deployed to Iraq and Saudi Arabia and published 20 professional journal articles and book chapters on military mental health topics.

Major Daniel G. Cassidy, PhD is a clinical health psychologist at Wilford Hall Ambulatory Surgical Center, Lackland Air Force Base, Texas, where he currently is the associate program director for the APA-accredited clinical health psychology postdoctoral fellowship. Maj or Cassidy's research concerns motivational interviewing and habit formation as it pertains to health behavior change.

Major Cara E. Cox Coleman, PsyD is currently the director of the Aeromedical Psychology Training Course at the US Army School of Aviation Medicine in Fort Rucker, Alabama. She has been deployed to Afghanistan in support of Operation Enduring Freedom. Her professional interests include aeromedical psychology, clinical health psychology, and the integration of behavioral health and aviation medicine.

Michelle Costanzo, PhD is a research assistant professor of medicine at the Uniformed Services University of the Health Sciences and a research neuroscientist in the War Related Illness and Injury Study Center at the Washington, DC, VA Medical Center. Her research applies psychophysiology and neuroimaging methods to examine cognitive and emotive processes in military service members, elite athletes, and physicians. Her current research focuses on PTSD and mTBI utilizing fear conditioning, combat-related virtual reality, affective Stroop, and telemedicine to reveal insight into the etiology of persistent symptoms in order to inform the next generation of rehabilitation and treatment.

Evan D. Chinoy, PhD is a sleep research scientist with Leidos working at the Naval Health Research Center in San Diego, California. His research focuses on sleep and circadian rhythms, aiming to understand how these systems are affected by various stimuli, work/sleep schedules, and stress, and their ultimate impact on performance and health. Dr. Chinoy also investigates ways that sleep can be examined with novel devices.

Major (Retired) Corey Christopherson, MSW was a US Air Force officer deployed with the US Army in Afghanistan in 2008/2009, during which time he provided resilience training using a new treatment model blending mindfulness, positive psychology, and CBT into “positive mindfulness-based cognitive therapy (positive MBCT).” He is currently in private practice in Arizona.

David Cooper, PsyD currently works as the mobile apps lead at the National Center for Telehealth and Technology. His work focuses on how to leverage technology for behavioral health to benefit US service members and veterans. Specifically, Dr. Cooper leads teams of designers and developers in the creation, dissemination, and implementation of mobile applications and other innovative technologies.

Cindy Crawford, BA is a senior program manager at Thought Leadership and Innovation Foundation where she directs the SEaRCH services for bringing good evidence into practice. She is an expert in research methodology and has authored more than 30 peer-reviewed systematic reviews on topics related to complementary and integrative health and patient-centered care.

Annemie Defranc, MA attained her master’s degree in psychology at the KU Leuven and works as a research psychologist at the recruitment center of the Belgian Defense. Her projects focus on the predictive validity of selection instruments, cognitive and psychomotor tests, and classification models.

Eileen M. Delaney, PhD is a clinical research psychologist at the Naval Center for Combat and Operational Stress Control (NCCOSC). In her role at NCCOSC, she assists with science and analytics related to research studies and program evaluations focusing on military combat and operational stress control and resilience building.

Commander Vicky De Nil, MSc is a research psychologist at the Belgian Armed Forces Centre for Recruitment and Selection. She worked from 2003 until 2010 as a selection psychologist in the Belgian Defense Selection Centre and since 2011 as research staff member at the research and development department of the Centre for Recruitment and Selection.

Major Erik De Soir, PhD is a crisis and operational psychologist and associate professor at the Department of Behavioral Sciences of the Royal Military Academy, and research manager in human factors and medicine at the Royal Higher Institute for Defence, Brussels. As a crisis psychologist in the Belgian military, he regularly deployed in peace support operations in Somalia, Croatia, and Bosnia to study the different problems of deployed soldiers and their families. He received his PhD from Utrecht University and lives in Leopoldsborg, Belgium.

Anthony DiBella, PhD is a professor of strategic leadership at the National Defense University in Washington, DC. His focus is organizational effectiveness with expertise in managing across cultural boundaries. His PhD is from the Sloan School at MIT. He has also taught at Boston College, the Thunderbird School of Global Management, and the US Naval War College and is the author of three books – *How Organizations Learn*, *Learning Practices*, and *Systemic Change Management*.

JoAnn Difede, PhD is a professor in the Department of Psychiatry at Weill Cornell Medical College of Cornell University, an attending psychologist at the New York-Presbyterian Weill Cornell Medical Center, and the director of the Program for Anxiety and Traumatic Stress Studies (PATSS). Dr. Difede has served as the PI of several DoD- and NIH-funded treatment studies concerning the development of innovative treatments for PTSD. She is an internationally recognized expert in the assessment and treatment of post-traumatic stress disorder (PTSD) and a pioneer in the application of virtual reality technology to the treatment of PTSD.

Colonel Jay E. Earles, PsyD is the chief of the Department of Behavioral Health at Dwight D. Eisenhower Army Medical Center, Fort Gordon, Georgia. He has been an Army psychologist for 23 years and is the former psychology consultant to the Army Surgeon General. His clinical focus is in clinical health psychology.

Kathryn Ellis, OTR/L is an occupational therapist at Walter Reed National Military Medical Center at Bethesda since 2011. She is the department subject matter expert and program developer for sex and intimacy occupational ther-

apy. Her research focuses on the impact of occupational therapy intervention for sex and intimacy for improving quality of life and occupational therapy's role in healthy sex and intimacy promotion and its impact on service members and their families. She has experience providing trainings to the military medical community and coauthored *Sex and Intimacy for Wounded Veterans: A Guide to Embracing Change* published in 2015.

Captain (Retired) Matthew S.A. Feely, PhD retired from Naval service in 2013. He has taught economics at the US Naval Academy and the Naval Postgraduate School and leadership at the National Defense University and Columbia University. He continues to lecture at Columbia while providing leadership and economics advice to businesses and political entities. Dr. Feely is a graduate of the US Naval Academy, earned an MBA and PhD at the University of Pennsylvania, and is a distinguished graduate of the National Defense University.

Lieutenant Colonel Rachel E. Foster, PhD currently serves as the research liaison to the Office of the Secretary of Defense Family Advocacy Program and as an augmentee from the Office of the Air Force Surgeon General. She earned her PhD in social work from the University of North Carolina at Chapel Hill. Her research and clinical skills primarily focus on the prevention, response, and phenomena of family maltreatment and sexual assault.

Jessica A. Gallus, PhD is the research program manager for the U.S. Army Sexual Harassment/Assault Response and Prevention (SHARP) Office; her research foci include sexual harassment and assault prevention and understanding the sexual assault of male service members. She has a PhD in industrial/organizational psychology and has published on various aspects of workplace mistreatment (e.g., sexual harassment, toxic leadership, workplace incivility).

John Byron Gassaway, PsyD is a clinical sport psychologist at Luke AFB and the official sport psychologist for Region 1 Gymnastics and provides relaxation training at HealthSouth Rehabilitation Hospital. He travels around the country providing performance enhancement training for athletes ranging from recreational children to professional adults. Dr. Gassaway has presented at professional organizations and facilities and published articles related to mental toughness and life skills.

Thomas M. Gehring, PhD is associate professor of clinical psychology at the University of Basel, Switzerland, and head of the Department of Psychology of the Swiss Armed Forces Joint Staff. He is the author of the *Family System Test (FAST)*.

Randy J. Georgemiller, PhD, ABPP is a clinical psychologist specializing in adult clinical neuropsychology at Dwight D. Eisenhower Army Medical Center where he has been appointed the program leader of the Transgender Care Team. Much of his professional career has been devoted to LGBT issues

and advocacy which includes serving as a past president of the Society for the Psychological Study of Lesbian, Gay, Bisexual, and Transgender Issues (Division 44 of the American Psychological Association).

Anne Germain, PhD is associate professor of psychiatry at the University of Pittsburgh and is director of the Sleep and Behavioral Neuroscience Laboratory. Her federally funded research program focuses on the neurobiological underpinnings of stress-related sleep disturbances, on the impact of acute and chronic sleep loss of mental health and performance, and on the treatment of sleep disorders comorbid with post-traumatic stress disorder.

Marjan Ghahramanlou-Holloway, PhD is an associate professor of medical and clinical psychology and psychiatry at the Uniformed Services University of the Health Sciences (USUHS) and the chair of the North Atlantic Treaty Organization (NATO) Task Group on Military Suicide. She has previously served as a member of the Defense Health Board Task Force on the Prevention of Suicide by Members of the Armed Forces. Dr. Holloway's Laboratory for the Treatment of Suicide-Related Ideation and Behavior at USUHS focuses on military suicide prevention and the development of empirically based suicide prevention programs.

Major Michael A. Glotfelter, PsyD is a clinical health psychologist serving as faculty for clinical psychology residency and the director of clinical health psychology at Wright-Patterson AFB, Ohio. In addition to interests in health-related behavior change and self-management of chronic medical conditions, she has interests in healthcare providers' attitudes toward sexual minorities and the impact of gender self-esteem on attitudes toward gender and sexual minorities.

Captain Jeffrey L. Goodie, PhD, ABPP is a board-certified clinical health psychologist and an associate professor of medical and clinical psychology and family medicine at the Uniformed Services University (USU). He currently serves as the director of clinical training of the clinical psychology program at USU. CAPT Goodie served for 9 years in the US Air Force before transitioning to US Public Health Service. He is a fellow of the American Psychological Association and the Society of Behavioral Medicine.

Jorge E. Grandela, PsyD is a licensed professional counselor at Bright Horizons Counseling Services and has over 20 years of experience with mental health and substance abuse. He is also affiliated with the US Army Substance Abuse Program at Fort Belvoir, Virginia.

Captain Ryan R. Green, PhD, ABPP is a board-certified clinical psychologist and active duty Army officer who is completing his fellowship in neuropsychology at Tripler Army Medical Center in Honolulu, Hawaii. His primary areas of interest are in the philosophy of neuropsychology, the relationship between neurology and psychology, and the intersection of cognition and personality.

Colonel (Retired) Carroll H. Greene III, PhD, ABPP is currently the command psychologist at the Marine Special Operations School. During deployments for Operations Enduring Freedom and Iraqi Freedom, he supported joint and combined special operations task forces. For over 20 years, he has developed and managed diverse programs for the selection, training, and support of elite military special operations forces.

Major Emily Grieser, PhD is currently the chief of psychological applications at the 26th Special Tactics Squadron. She earned her PhD in behavioral medicine from the University of North Texas and completed a postdoctoral fellowship in health psychology at Wilford Hall Ambulatory Surgical Center. Her research interests include behavioral sleep medicine and the impact of fatigue on human performance.

Arno Hartholt, MSc is the director of research and development integration at the University of Southern California Institute for Creative Technologies where he leads the virtual human integration and central asset production and pipeline group. He is responsible for much of the technology, art, and processes related to virtual humans and related systems, in particular at the interchange between research and industry capabilities. He has a leading role on a wide variety of research prototypes and applications, ranging from medical education to military training and treatment.

Colonel (Retired) Sally Harvey, PhD is currently serving as the staff psychologist for the Integrated Disability Evaluation System at Fort Hood, Texas. Prior to her retirement in 2016, she served as command psychologist for the Intelligence and Security Command, Fort Belvoir, Virginia, with previous tours at Landstuhl Regional Medical Center, Germany; Womack Army Medical Center, Fort Bragg, North Carolina; Tripler Army Medical Center, Honolulu, Hawaii; and William Beaumont Army Medical Center, Fort Bliss, Texas. In addition to an interest in operational psychology, she has been increasingly involved as an advocate for military psychology within her professional organizations.

Staff Sergeant Sarah Hawley, MS is currently serving on active duty with the US Army. She has worked as a research assistant for many years on a variety of topics, including post-traumatic stress disorder in service members, resiliency and well-being in service members and their spouses, and communication in romantic couples. SSG Hawley will be starting medical school in the fall of 2017 and plans to continue serving in the Army as a physician.

Krista Beth Highland, PhD is a senior clinical scientist at the Defense and Veterans Center for Integrative Pain Management at the Uniformed Services University of the Health Sciences. Her research focuses on the prevention and treatment of chronic pain and PTSD through enhanced biopsychosocial assessment and integrative treatment modalities.

Jeremy Howick, PhD is a senior researcher at the University of Oxford who works in the Behavioural Medicine Research Group. He is also the director of the Oxford Empathy Programme. He has over 70 academic publications on the methodology of evidence-based medicine, placebo effects, and (more recently) the health benefits of empathy and hope.

Wouter Huybens, MSc is a research psychologist at the recruitment center of the Belgian Defense. He studied at the KU Leuven and the Universität Leipzig. His projects concern the predictive validity of selection instruments, personality tests, and resilience and physical tests.

Major Daniel A. Jacobson, PhD is a clinical psychologist and active duty Air Force officer who is completing his fellowship in neuropsychology at Tripler Army Medical Center in Honolulu, Hawaii. His interests lie primarily on the physiological mechanisms underlying cognitive impairment.

Commander Bjørn Helge Johnsen, PhD is a professor in personality psychology at the University of Bergen, Norway, and a commander in the Royal Norwegian Navy, Medical Branch. His research is focused on the subject of adaptation to radically changed environments, and his clinical experience is mainly related to Naval personnel. Johnsen has also been used as a psychologist in the selection of personnel to police assets defined as national police resources.

W. Brad Johnson, PhD is a professor of psychology in the Department of Leadership, Ethics, and Law at the US Naval Academy and a faculty associate in the Graduate School of Education at Johns Hopkins University. He is the author of 13 books on the topics of mentoring and professional ethics.

Captain Scott L. Johnston, PhD has served as a clinical psychologist in the Navy for over 23 years and is currently assigned to Naval Special Warfare and leads over 200 active duty Navy psychologists. He has been stationed around the world and deployed five times to include Iraq, Cuba, and the Persian Gulf. He has lectured and published on post-traumatic stress disorder, psychological transitioning from combat, and mindfulness.

Tanja Jovanovic, PhD is an assistant professor in the Department of Psychiatry and Behavioral Science at Emory University. Her research program focuses on the interaction of traumatic experiences, neurophysiology, neuroendocrinology, and genetics in mental disorders in adults and children in high-risk populations. She is the director of the Grady Trauma Project in Atlanta, Georgia, which combines psychophysiological methods with analyses of genetics and epigenetics and neuroimaging in order to translate laboratory paradigms to clinical populations.

Colonel (Retired) Karen Kimmel, PhD serves on the faculty of the Federal Executive Institute in Charlottesville, Virginia, where she has taught a variety of courses in the Leadership for a Democratic Society Program since 2008.

Dr. Kimmel served for 21 years in the US Air Force and previously taught for 5 years at the Leadership Development Center at the US Coast Guard Academy in New London, Connecticut. Her current field of inquiry is the application of research from the fields of education, psychology, and neuroscience to improve senior leadership skills. Dr. Kimmel is a certified positive psychology practitioner and earned her PhD at Texas A&M University.

Julie T. Kinn, PhD is a clinical psychologist and the deputy director of the Mobile Health Program at the National Center for Telehealth and Technology (T2). She oversees the development and integration of mobile health applications to support the military community and researches technology solutions to prevent suicide and support behavioral health.

Katherine M. Knies, MA is a fifth-year doctoral student in the clinical-community psychology program at the University of South Carolina. Her research focuses on the development and implementation of a training model for novice therapists, as well as ADHD within the context of adult romantic relationships. Her clinical interests include couples and trauma, especially within the veteran population. She has extensive training in emotionally focused couples therapy and is eligible for certification upon licensure.

Lieutenant (Junior Grade) Viktor Koltko, BS is a doctoral candidate at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. His research focuses on suicide prevention decision-making processes used by behavioral health providers in primary care settings.

Lieutenant Colonel (Reserves) Oliver Krueckel, Dipl.-Psych currently works as the head of operational psychology in the German Army Training Command where his focus is primarily on psychological training and doctrine. He worked with the US Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) during a 1-year exchange program. LTC (Res) Krueckel has been deployed to Kosovo, Afghanistan, and Mali.

Colonel (Retired) Gerald P. Krueger, PhD devoted a 25-year active duty career as a military research psychologist doing occupational medicine research. He followed that with 20 years of research and consulting on equipment operator performance under stressful working conditions. He is recognized for his expertise in worker alertness, fatigue, and performance as well as worker health, wellness, and fitness. He continues to serve as a human factors psychology consultant to numerous federal agencies.

Vineeth V. Kumar, PhD is associate professor at the School of Management, BML Munjal University, Gurgaon, India. His areas of interest include psychometric testing, personality assessment, and nurturing resilience through positive psychological interventions in target population. His recent works include a book entitled *Military Psychology: Concepts, Trends and Interventions*.

Ann Landes, PhD is a psychologist for the Department of Veterans Affairs. As a primary care psychologist and health behavior coordinator, she provides services to veterans and their families for issues such as PTSD, depression, chronic illness management, coping with chronic pain, and behavioral health problems. Her areas of clinical, teaching, and training competence include reintegration, PTSD, motivational interviewing, health coaching, patient-centered care, caregiving, and team building. She has been invited to speak with and provide training for healthcare professionals at the local and national level.

Major Ryan R. Landoll, PhD, ABPP is currently an assistant professor of family medicine and medical and clinical psychology at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. He has served in Operation Enduring Freedom/Operation Freedom's Sentinel while stationed at the Craig Joint Theater Hospital, Bagram Airfield, Afghanistan. Dr. Landoll has authored over 55 publications and presentations on topics related to primary care behavioral health, adolescent peer relationships, social anxiety, and depression.

Lieutenant Commander Kristin L. Landsinger, PhD, ABPP is an assistant professor of psychology in the Department of Leadership, Ethics, and Law at the US Naval Academy. She is also a postdoctoral fellow in neuropsychology at Johns Hopkins University.

Gerry Larsson, PhD is a licensed psychologist, a professor of leadership psychology at the Swedish Defence University, and an adjunct professor of stress psychology at Innlandet University College, Norway. During the period 2004–2009, he also served as vice president of the Swedish Defence University. He has published extensively in the areas of leadership, stress, personality, and organization. His PhD is from the University of Gothenburg, Sweden.

Colonel (Retired) Jeffrey C. Leggit, MD is an associate professor in the Department of Family Medicine at the Uniformed Services University of the Health Science (USUHS), Bethesda, Maryland. He is a board-certified family physician with a certificate of added qualification in primary care sports medicine as well as a medical acupuncturist. He is the clinical module director for the musculoskeletal curriculum for the School of Medicine. He is also the director of healthcare operations for the University Family Health Center.

Colonel (Retired) Bernard Lim, PhD was the chief psychologist of the Singapore Armed Forces and the head of Singapore's Defence Psychology Department from 2008 to 2015. He is a past president of the Singapore Psychological Society, a chartered occupational psychologist, and an associate fellow with the British Psychological Society. He is presently the director for leadership and organizational development at a public sector organization.

Lieutenant Colonel Ingrid Lim, PsyD is a military clinical psychologist who currently leads the Surgeon General's initiative to improve sleep throughout the Army. She leads the development of the sleep curriculum for the Performance Triad for Soldiers and Families, chairs the Office of the Surgeon General's Performance Triad Sleep Work Group, and continues to educate and train others on operationalizing sleep principles to improve and sustain health, readiness, and performance of soldiers.

Anne Lindqvist, MSc is a licensed psychologist and chief of military psychology in the Swedish Armed Forces. Her primary role is to initiate and coordinate strategic development efforts in the field of military psychology. She has a background as a psychologist with the Swedish Defence Recruitment Agency and previously led an in-house occupational healthcare center for military personnel. In 1993 she deployed to Croatia as part of UNPROFOR.

Xufeng Liu, PhD is a professor and deputy director in the Department of Medical Psychology at the Fourth Military Medical University. His research interests include personnel selection, diagnosis of preclinical mental diseases, and mental health promotion in special environments for military services. He serves as the vice chairman of the Military Psychology Branch in the Chinese Psychological Society.

Stefano Livi, PhD is professor in social psychology at the Department of Social and Developmental Psychology, Sapienza University of Rome, Italy. Dr. Livi has authored a number of works about social and cognitive factors involved in group processes and in particular in leadership, group socialization, marginalization, and intergenerational transmission.

Major Isabella Lo Castro, PsyD currently serves at the Italian Defense General Staff. During her 17-year service, she has been dealing with the impact of deployment on military personnel and their families, psychological recovery of injured and wounded soldiers, sport and disability, operational stress management, and training on communication and leadership. In her 17 years of service, she has been deployed to both Iraq and Bosnia providing psychological support to troops.

Colonel (Retired) Carla Long, PhD retired from the US Army in 2016 after 26 years of service. Prior to her retirement, she served as the command psychologist for the US Special Operations Command, MacDill Air Force Base, Florida. During her career, she was assigned to a variety of organizations including Dwight D. Eisenhower Army Medical Center, Fort Gordon, Georgia, and US Army Special Operations Command, Fort Bragg, North Carolina. She deployed numerous times to Afghanistan and Iraq. She has a professional interest in operational psychology and military psychology.

Lieutenant Commander David J. Loomis II, PsyD is a Navy clinical psychologist, who currently serves as the clinic head for the Outpatient Substance Abuse Rehabilitation Program for Naval Medical Center San Diego.

Operational experience includes 2 years on an aircraft carrier, deploying with a carrier strike group, and 3 years embedded with a Marine Corps infantry regiment.

Joseph B. Lyons, PhD is a senior research psychologist with the Air Force Research Laboratory where he has led research teams in the areas of organizational effectiveness and human-machine trust. Between 2011 and 2013, he served as a program officer for the Air Force Office of Scientific Research where he created a basic research portfolio to study both interpersonal and human-machine trust as well as social influence. He has served as editor for *The Military Psychologist* and associate editor for the journal *Military Psychology*.

Nidhi Maheshwari, PhD is scientist at the Strategic Behaviour Division, Defence Institute of Psychological Research, DRDO, Delhi. She specializes in the area of combat stress management, psychographics, and special forces profiling. Her most recent work is in the form of a book entitled *Military Psychology: Concepts, Trends and Interventions*.

First Lieutenant Sybil Mallonee, MA, LPC is currently a clinical psychology PhD student in the Department of Medical and Clinical Psychology at the Uniformed Services University of the Health Sciences. Her research focuses on evaluating the effectiveness of the training programs conducted at the Center for Deployment Psychology and on the factors impacting couple's post-deployment transition and long-term relationship satisfaction. Her clinical work has focused primarily on the treatment of PTSD and domestic violence.

Rachel Markwald, PhD is a research physiologist who directs the Sleep and Fatigue Research Laboratory at the Naval Health Research Center in San Diego, California. Her research program has both a clinical and operational focus including the early identification of sleep disturbances, the implementation of sleep interventions at military treatment facilities, and the impact of insufficient sleep and fatigue on the health and performance of active duty military. Dr. Markwald holds an adjunct research position with the Sleep Clinic at Naval Medical Center San Diego.

Michael D. Matthews, PhD is currently professor of engineering psychology at the US Military Academy. He is a Templeton Foundation senior positive psychology fellow, a fellow of the Army Chief of Staff's Strategic Studies Group, and the author of *Head Strong: How Psychology Is Revolutionizing War* (Oxford University Press, 2014).

Major Tracy E. Mayfield, PsyD is currently serving as an aerospace psychologist at the Air Force Safety Center in Albuquerque, New Mexico. In this capacity, she collaborates with medical and operational experts from the widest range of disciplines to ensure that Air Force missions are accomplished efficiently, effectively, and safely. She has previously served as a staff clinician and directed mental health clinics at Joint Base Andrews, Maryland, and

Mountain Home Air Force Base, Idaho, and served in Afghanistan as both a survival, evasion, resistance, and escape psychologist and a forward operating base clinician.

Captain Erick C. Messler, PhD is a clinical psychologist assigned to Malmstrom AFB, Montana. He completed his PhD at the University of South Dakota. Capt Messler is a generalist at heart but particularly enjoys research and clinical work in the areas of brief interventions and addictive behaviors. He is the USAF POC for the VA/DoD Clinical Practice Guideline for Opioid Therapy for Chronic Pain and is an editorial board member for the *Journal of Rural Mental Health*.

Danmin Miao, MD is a professor in the Department of Medical Psychology at the Fourth Military Medical University. His primary research focuses on the selection, classification, and placement in military services, as well as the forewarning and prevention of information trauma. He ranks as one of the senior professors in the Chinese military and developed the standards to guide the military psychological selection of recruited youths and new cadets in China. He is also one of the founders as well as the honorary chairman of the Military Psychology Branch in the Chinese Psychological Society.

Commander Jeffrey Millegan, MD, MPH is the director of the Naval Center for Combat and Operational Stress Control and clinical associate professor of psychiatry at the Uniformed Services University. CDR Millegan founded the Naval Medical Center San Diego Mind Body Medicine Program which was awarded the 2015 Military Health System Trailblazer Award.

Major Chad E. Morrow, PsyD, ABPP is the command psychologist for the US Air Force 24th Special Operations Wing. He earned his PsyD from La Salle University. His research interests include assessment and selection, operational support, and performance enhancement.

Jacques Mylle, PhD head of the Psychology Department at the Royal Military Academy (1990–2010), who is specialized in personnel, work, and organizational psychology and in mathematical psychology, leads the research group Human Factors and Military Operations. He published more than 80 articles, research papers, and book chapters, mostly related to optimizing behavior in military operations.

Lieutenant Colonel Elizabeth Najera, PhD is an active duty Air Force psychologist and has served for 13 years in the military with one deployment to Afghanistan. Her research involvement focuses on relationship enhancement within military couples. She currently oversees mental health services at Keesler Air Force Base, Mississippi.

SPEC OF-3 (Major) Can Nakkas, MSc, UZH is currently head of the psychology division of the Psychological-Pedagogical Service of the Swiss Armed Forces. He previously has been a research assistant at the Swiss

Military Academy, focusing on stress and motivation in service personnel, and a visiting lecturer at the ETH Zurich.

Laura L. Neely, PsyD is a licensed psychologist in the states of Maryland and Virginia. Dr. Neely is currently serving as a research psychologist at the Department of Defense Suicide Prevention Office (Research and Program Evaluation), where she manages a research portfolio and supports an integrated public health, community-based approach to suicide prevention in the US military.

Major Matthew K. Nielsen, PsyD, ABPP is a mental health flight commander in the US Air Force (USAF), currently stationed at Nellis Air Force Base, Nevada. He has served in the USAF for 10 years and has research interests in integrated primary care behavioral health and suicide risk assessment.

Seth D. Norrholm, PhD is an associate professor of psychiatry in the Emory University School of Medicine. His primary research focus is the translational study of trauma-, stressor-, and anxiety-related disorders from “mice to men.” Dr. Norrholm has authored or coauthored over 80 peer-reviewed publications, and his work has been funded by the Department of Defense and VA Merit Program.

Deborah O. Norris, PhD is psychologist-in-residence and director of the Psychobiology of Healing Program at American University and founder of The Mindfulness Center based in Washington, DC. Dr. Norris produces online mindfulness and related mind-body training programs and has authored a number of works, including *In the Flow: Passion, Purpose and the Power of Mindfulness*. She served 15 years as the lead neurobehavioral toxicologist for the US EPA Office of Pollution Prevention and Toxics.

Major Jessica Parker, PsyD is an aeromedically trained clinical neuropsychologist. She currently serves as the National Training Coordinator for Army Clinical Psychology, and is the Chief of the Post-traumatic Stress and Resiliency Branch at the AMEDD Center and School, US Army Health Readiness Center of Excellence.

Lieutenant Colonel (Retired) Ross H. Pastel, PhD currently works as a research consultant and is an Adjunct Assistant Professor in the Department of Medical and Clinical Psychology at the Uniformed Services University of the Health Sciences. He served for 26 years as an Army research psychologist, including serving as the chief of research at the National Intrepid Center of Excellence for Traumatic Brain Injury and Psychological Health.

Helga Peeters, PhD is lecturer and researcher at the Department of Applied Psychology (Howest). In the past, she received her PhD from Ghent University and worked as a Human Relations research expert at Securex, a large HR services company. Her teaching and research are mainly situated in the field

of innovative recruitment and selection instruments, such as situational judgment tests.

Colonel (Retired) James J. Picano, PhD is the senior operational psychologist at NASA's Johnson Space Center/USRA and has conducted extensive military psychology research in selection and assessment. He served formerly as a US Army clinical psychologist and as assistant chief of mental health at the VA Northern California Health Care System.

Liz Davenport Pollock, PhD, LCMFT has a PhD in family science from the University of Maryland and is a licensed marriage and family therapist. Dr. Pollock has spent 8 years working in support of military families in the areas of relationship strengthening, resilience, the mind-body connection, and total force fitness and is particularly interested in the translation of research to practice.

Colonel Rebecca Porter, PhD, ABPP was commissioned as a distinguished military graduate of the University of Washington ROTC program in 1983. COL Porter has served as a special assistant to the Chief of Staff (Army) and as director of psychological health for the US Army. She commanded the Dunham US Army Health Clinic at Carlisle Barracks, Pennsylvania, and was the director of the DiLorenzo Tricare Health Clinic at the Pentagon. She is a board-certified clinical health psychologist, a fellow of the American Psychological Association, the former president of the Society for Military Psychologists, and a recipient of the Order of Military Medical Merit.

Lieutenant Commander Steven J. Porter, PsyD is a clinical neuropsychologist at Naval Health Clinic Annapolis, where he serves as department head for the Behavioral Health Department and the Neuropsychology Assessment Unit. Dr. Porter completed a postdoctoral subspecialty in pediatric neuropsychology, and his expertise lies in pediatric neurocognitive assessment and pediatric and adult concussion management.

Lieutenant Commander Yaron Rabinowitz, PhD, ABPP is an active duty Navy clinical psychologist. Dr. Rabinowitz has extensive operational and clinical psychology experience and has authored or coauthored a number of works on a variety of topics related to military psychology. He maintains an active research program in his current position.

Chris Reist, MD is professor in the Department of Psychiatry at the University of California at Irvine School of Medicine and associate chief of staff at the VA Long Beach Health Care System. He has had a research career focused on the biology and treatment of serious mental illness and PTSD. Dr. Reist is currently studying the role of sleep in the pathogenesis and treatment of PTSD in addition to collaborating on other projects with researchers in the trauma field.

David S. Riggs, PhD is chair of the Uniformed Services University Medical Psychology Department and the executive director of the Center for Deployment Psychology. His work has focused on trauma, violence, and anxiety with a particular interest in the impact of PTSD and other anxiety disorders on the families of those directly affected. He has trained numerous student and mental health professionals from the United States and other countries in techniques for treating PTSD, OCD, and other anxiety disorders. As the director of the Center for Deployment Psychology, Dr. Riggs oversees training of behavioral health professionals to prepare them to provide for the needs of deployed service members and their families.

Joann Rigoglioso, LCSW is the deputy department head of the Substance Abuse Rehabilitation Program (SARP) at Navy Medical Center San Diego, which is the Department of Defense's largest substance abuse/co-occurring treatment facility servicing all military branches of service worldwide. She graduated with a master's degree in social work from the Catholic University of America, Washington, DC, and is licensed as a clinical social worker (LCSW) in California. She has over 30 years of clinical experience in co-occurring disorders, substance abuse treatment, and program development, having worked in civilian programs and the Army and the Navy.

Albert "Skip" Rizzo, PhD is the director of the Medical Virtual Reality Group at the University of Southern California Institute for Creative Technologies and has research professor appointments at the USC Department of Psychiatry and Behavioral Sciences and at the USC Davis School of Gerontology. He conducts research on the design, development, and evaluation of virtual reality (VR) systems targeting the areas of clinical assessment, treatment, and rehabilitation. This work spans the domains of psychological, cognitive, and motor functioning in both healthy and clinical populations.

Colonel Christopher Robinson, PhD, ABPP is the commander of the 99th Medical Operations Squadron, Nellis Air Force Base, Nevada. He is a clinical health psychologist with expertise in public behavioral health and health policy. Colonel Robinson received a Doctorate in psychology from Texas A&M University. He earned his Master's and Bachelor's degrees from the University of Oklahoma and also holds a Master's degree in public health from the Uniformed Services University of the Health Sciences.

Colonel (Retired) Robert R. Roland, PsyD provides operational and clinical psychology consultation to a diverse global clientele. Services and program developments include recruitment, assessment, selection, and training (RAST) and mission and family support. He is a fellow of the American Psychological Association and its Division 19, the Society for Military Psychology. Dr. Roland is the recipient of the Division 19 Gersoni Award for outstanding contributions to military psychology, the Flanagan Lifetime Achievement Award for career-long achievements in military psychology, and the Uhlaner Award recognizing excellence in outstanding contributions in research on military selection and recruitment.

Major David Ross, PhD is currently the command/operational psychologist at the 10th Special Forces Group (Airborne). His professional interests include performance enhancement and personnel assessment and selection.

Barbara Rothbaum, PhD, ABPP is a professor, the associate vice chair of clinical research, the director of the Emory Veterans Program and the Trauma and Anxiety Recovery Program, and the Paul A. Janssen chair in neuropsychopharmacology in the Department of Psychiatry at the Emory University School of Medicine. She is a past president of the International Society for Traumatic Stress Studies (ISTSS), is a pioneer in the application of virtual reality to the treatment of psychological disorders, received the Robert Laufer Award for Outstanding Scientific Achievement from ISTSS, and was a member of the Institute of Medicine's Study on Assessment of Ongoing Efforts in the Treatment of PTSD.

Michael J. Roy, MD, MPH, FACP is a professor of medicine, the director of the Division of Military Internal Medicine, and the principal investigator for the Recruitment Core of the Center for Neuroscience and Regenerative Medicine at the Uniformed Services University. He is a graduate of Brown University and its School of Medicine and was an internist in the Army for 24 years. He is a two-term past president of the Society for Brain Mapping and Therapeutics and a fellow of the American College of Physicians. Dr. Roy has authored well over 100 publications including the books *Physician's Guide to Terrorist Attack* and *Novel Approaches to the Diagnosis and Treatment of Posttraumatic Stress Disorder*.

Colonel Nicole L. Sadler, MPsych has served as a psychologist in the Australian Army since 1994. Throughout her career, she has worked in recruitment, assessment, counseling, training, research, strategic planning, and policy development and has deployed on operations on numerous occasions. COL Sadler was awarded a master of psychology (clinical) degree in 2005.

Commander Arlene R. Saitzyk, PhD is currently the group psychologist for the Marine Corps Embassy Security Group (MCESG) in Quantico, Virginia. Prior to arriving at MCESG, she served as the assistant officer in charge at the Naval Aerospace Medical Institute (NAMI), Pensacola, Florida. CDR Saitzyk has additional tours on the USS Nimitz (CVN-68); Naval Hospital Okinawa, Japan; Naval Branch Health Clinic Bahrain; Naval Hospital Naples, Italy; and Naval Medical Center San Diego. Professionally, CDR Saitzyk is interested in aeromedical psychology, assessment and selection, and women's identity and leadership development in the military.

Captain (Retired) Morgan T. Sammons, PhD, ABPP is the executive officer of the National Register of Health Service Psychologists. He is a retired US Navy captain, having served as the Navy's clinical psychology specialty leader and special assistant to the Navy Surgeon General for mental health and traumatic brain injury and in a number of positions in the United States and abroad. Dr. Sammons is a diplomate of the American Board of Professional Psychology

(Clinical). He is the author of two edited volumes and contributes frequently to the professional literature. He lectures extensively on professional issues in psychology.

Major (Reserves) Bettina Schmid, PhD a clinical psychologist, is a major and has served on active duty in the Army and Air Force. She also works at the VA Salt Lake City Health Care System in telemental health. Her areas of expertise include PTSD, substance use disorders, and gerontology.

Aidan Schmitt, BA works as a clinical research coordinator at Cincinnati Children's Hospital Medical Center and hopes to pursue a PhD in clinical psychology. Her research interests include mindfulness-related and other alternative treatments for anxiety and depressive disorders. In the past, she has worked on well-being research with military service members at the National Defense University and on mindfulness research at the Catholic University of America.

Sergeant First Class Dustin A. Seidler, MA is currently a clinical psychology doctoral student at Southern Illinois University at Carbondale. His current research interests focus on the effects both trauma and technology have within the military and veteran populations. SFC Seidler has served in the Army National Guard for 13 years and has deployed to Iraq on three tours of duty.

Major Lacey M. Sharkey, PsyD currently serves as an operational and aeromedical psychologist for the Special Operations Aviation Training Battalion (SOATB) and 160th Special Operations Aviation Regiment (Airborne). She earned her PsyD in clinical psychology from the Florida Institute of Technology. She has spent her career as a military psychologist in both clinical and operational settings, to include a deployment to Afghanistan. Her professional interests include applied aeromedical psychology, assessment and selection, and performance enhancement.

Lieutenant Colonel Laura Sinclair, MPsych is a current serving psychologist in the Australian Army. She has worked in the areas of Army Aviation human factors, psychology service provision, and special operations and has commanded units in garrison health service delivery and operational psychology. She has extensive deployment experience in all current theaters of operation. LTCOL Sinclair has a master of psychology degree, and she has commenced a PhD in human performance.

N.P. Singh, MA, MPhil is senior scientist and head of the Strategic Behaviour Division, Defence Institute of Psychological Research, DRDO, Delhi. He specializes in the area of strategic communication and sustaining military morale and motivation besides developing leadership counseling modules for the Indian Armed Forces.

Lieutenant Colonel (Retired) Mark A. Staal, PhD, ABPP currently serves as the president-elect of the American Psychological Association's Society for Military Psychology. He previously served as the Air Force's senior oper-

ational psychologist, held a position as associate professor of behavioral science and leadership at the US Air Force Academy, and was a postdoctoral fellow in human factors engineering at NASA. He has published numerous papers on topics of suicide, resiliency, ethics, and operational psychology.

Valerie A. Stander, PhD is a research psychologist at the Naval Health Research Center who studies family violence, sexual assault, and other types of interpersonal aggression. She earned her PhD in family studies at Purdue University. Dr. Stander is currently the principal investigator for the Millennium Cohort Family Study, a dyadic longitudinal program of research documenting the impact of military life stress on family relationships.

Lieutenant Colonel (Retired) Star Soh, PhD is currently a consultant and an educator. He was the chief psychologist of the Singapore Armed Forces and head of the Applied Behavioural Sciences Department (MOD) from 2004 to 2008. He was an associate professor in Nanyang Business School, Nanyang Technological University of Singapore, from 2008 to 2016. He is a coauthor of the book *Military Leadership in the 21st Century: Science and Practice*.

Margaret Talbot, BA earned a bachelor of arts in psychology from the George Washington University. She is currently pursuing a PhD in clinical psychology at the University of Colorado at Colorado Springs. Margaret looks forward to working with service members and their families in clinical settings in the future.

Cynthia J. Thomsen, PhD is a research psychologist at the Naval Health Research Center, where she is the head of the Health and Behavioral Sciences Department. Her research focuses on identifying risk and resilience factors for service members' mental and behavioral health outcomes, including sexual and family violence, suicidal behavior, substance abuse, PTSD, and depression

Major Veerle Tibax, MSc is an aviation psychologist and head of the research and development department at the Centre for Recruitment and Selection, Belgium.

Major David S. Tubman, PsyD, ABPP is currently the flight commander at the US Air Force 52nd Medical Group, Spangdahlem Air Base, Germany. His research and clinical interests are in the areas of evidence-based prevention interventions with military members, contextual behavioral science, and clinical health psychology.

Lieutenant Colonel Kylie A. Tuppin, MPsyCh currently serves as a psychologist in the Australian Army. Throughout her career he has worked in recruitment and selection, training, clinical assessment, counseling, and more recently career management. She has deployed in support of operations to Afghanistan, Iraq, East Timor, and Bougainville. LTCOL Tuppin was awarded a master of clinical psychology degree in 2010.

Captain Kristof Van Landeghem, MSc is a research psychologist at the Belgian Armed Forces Centre for Recruitment and Selection. He worked from 2009 until 2013 as a selection psychologist in the Belgian Defense Selection Centre and since 2013 as research staff member at the research and development department of the Centre for Recruitment and Selection.

Michael A. Vernale III, PhD is a clinical psychologist and currently the chief of the Alcohol and Drug Abuse Prevention Treatment Program for Dover US Air Force Base. Dr. Vernale's research interests include vocational rehabilitation, substance abuse, suicide prevention, and the treatment of combat-related PTSD. He recently coauthored *Sickle Cell Disease: Psychology, Pain, and Quality of Life*.

Colonel John Via, PsyD is a professor and command psychologist at the National Defense University, and he serves as the psychology consultant to the Army Surgeon General. He has deployed to both Iraq and Afghanistan.

Major J. Wesley Waggoner, PhD, ABPP is board certified in clinical neuropsychology and is currently the mental health flight commander at Misawa Air Base in Japan. His primary areas of clinical interest include the cognitive and psychological effects of traumatic brain injury and autoimmune disorders.

Hui Wang, PhD is a lecturer in the Department of Medical Psychology at the Fourth Military Medical University. Her research interests include personality psychology and recruitment selection. She serves as the council member of the Shaanxi Military Interpretation Committee.

Lieutenant Colonel Eric J. Weis, PhD currently serves as an associate professor and course director of the strategic leadership course at the Dwight D. Eisenhower School for National Security and Resource Strategy. An active duty Infantry officer with over 24 years of commissioned Army service, LTC Weis has served in command and executive leadership positions from platoon through regimental levels in both peacetime and combat environments. His primary research focuses on executive leadership and high-performance team dynamics.

Genelle I. Weits, PhD is a clinical health psychologist at Naval Medical Center San Diego, California. She heads the health psychology rotation for the APA predoctoral internship, working mainly with chronic pain and medical conditions among active duty military members. Dr. Weits' expertise lies in mindfulness meditation and acceptance-based modalities.

Colonel (Retired) Thomas J. Williams, PhD currently works as the element scientist for human factors and behavioral health at NASA's Johnson Space Center, Houston, Texas. He served for 30 years in the US Army, with assignments that took him to the Pentagon, the Walter Reed Army Medical

Center, the 902nd Military Intelligence Group, the 10th Special Forces Group in Iraq, and the US Army War College where he directed an executive health program for 12 years and developed the 360 Strategic Leadership Feedback Program for war college students and senior leaders. Dr. Williams has authored a number of works, including co-editing a book on *Ethical Practice in Operational Psychology: Military and National Intelligence Applications*.

Martin F. Wiskoff, PhD is a retired military research psychologist who served as director of the Manpower and Personnel Research Laboratory at the Navy Personnel Research and Development Center, San Diego, and was one of the founders of the Defense Personnel and Security Research Center, Monterey. He directed a joint-service effort that replaced paper-and-pencil military applicant tests with computer adaptive tests. Dr. Wiskoff is the founding editor of the journal *Military Psychology* published by the American Psychological Association. He is a fellow and past president of the Division of Military Psychology and recipient of the division's Lifetime Achievement Award.

Shengjun Wu, PhD is an associate professor in the Department of Medical Psychology at the Fourth Military Medical University. His primary research focuses on mental health testing and personnel psychological selection. He serves as committee secretary of the Military Psychological Branch of the Chinese Psychological Society.

Wei Xiao, PhD is an associate professor in the Department of Medical Psychology at the Fourth Military Medical University. His primary research focuses on the military personnel selection, including competence models development, psychological testing, etc. His second research direction is about the changes of decision-making and judgment-taking under stress. He serves as the deputy director of the National Tech-Center for Recruits Psychological Assessment.

Xia Zhu, PhD is a professor in the Department of Medical Psychology at the Fourth Military Medical University. Her research focuses on military psychological selection and mental crisis intervention. She serves as the executive council member of the Military Psychology Branch in the Chinese Psychological Society. She serves as the chairperson of the Rehabilitation Psychology Committee of the Chinese Association of Rehabilitation Medicine.

Major Denise M. Zona, PhD is a clinical health psychologist currently working as the director of psychological health at Ramstein Air Base, Germany. Her current clinical foci are behavioral sleep medicine, chronic pain conditions, TBI, and PTSD. She splits her time between direct patient care, prevention, and outreach. Self-care is a topic frequently briefed in clinical and community contexts with commanders, service members, and their families.

State of Psychology in the US Armed Forces

1

Scott L. Johnston, Christopher Robinson,
Jay E. Earles, John Via, and Eileen M. Delaney

Military psychology is a specialized branch of psychology that applies psychological knowledge and practice in order to promote the overall readiness of individual service members (SMs) and the military as a whole (Page, 1996). Military psychologists engage in a variety of services, such as providing direct clinical care, advising military commands, consulting, teaching, and conducting research activities. Military psychologists are comprised of military personnel (active duty, reservists, and retirees) as well as Department of Defense (DoD) personnel and contracted civilians. The application of psychology to military domains requires military psychologists to fully grasp military policies, procedures, and operations (Melton, 1957).

Moreover, active duty and reserve psychologists share the uniform of those they serve and often deploy themselves to support the needs of deployed units.

Unforeseen, the nascent field of American psychology came to have a substantial impact on the operations of the United States (US) military, starting with the First and Second World Wars and continuing into the postwar period. Through various accomplishments during this time, American psychology achieved greater public recognition and acceptance as an invaluable resource to its nation (Seligman & Fowler, 2011). All in all, the rapid advancement of American psychology throughout the twentieth century was predominantly the result of its work with the US Armed Forces.

America's military engagement in World War I (WWI; 1917–1919) born the first large-scale application of psychological principles to military operations. When the US entered WWI, the field of contemporary psychology had only recently been established. The first psychology laboratory was stood up in 1879 in Germany by William Wundt, shortly followed by the first American psychology laboratory by G. Stanley Hall, a student of Wundt's, in 1883. Hall then founded the American Psychological Association (APA) less than 10 years later. Before WWI, psychology was primarily a research-academic discipline with limited use in practical settings (Seligman & Fowler, 2011). One of the first applied psychological projects, initiated by The

S.L. Johnston (✉)
Naval Center for Combat & Operational Stress
Control (NCCOSC), San Diego, CA, USA
e-mail: scott.johnston@socom.mil

C. Robinson
USAF, Nellis AFB, NV, USA

J.E. Earles
Department of Behavioral Health, Dwight
D. Eisenhower Army Medical Center,
Ft. Gordon, GA, USA

J. Via
Health and Fitness Directorate, National Defense
University, Washington, DC, USA

E.M. Delaney
Naval Center for Combat & Operational Stress
Control (NCCOSC), San Diego, CA, USA

Committee on Methods for the Psychological Examination of Recruits and headed by Robert Yerkes, conducted over 4000 psychological screenings with Army and Navy recruits (Driskell & Olmstead, 1989). Two years into the war effort, approximately 1,726,966 recruits had been administered intelligence tests. The verbal Alpha and nonverbal Beta tests were administered for the purposes of placing individuals into certain jobs and specialties and were the first mental ability tests to be administered in a group setting (Driskell & Olmstead, 1989; Page, 1996). The Woodworth Personality Data Sheet (an earlier version of modern personality inventories) was also administered for rapid personnel selection and classification (Page, 1996). Psychology efforts during WWI “bolstered the perception of psychology as a valuable science that could produce results of practical and immediate significance” (Driskell & Olmstead, 1989, p. 44). Following WWI, membership in the APA vastly increased from 300 to 3000 members and over 30 universities established doctoral psychology programs (Seligman & Fowler, 2011).

Psychology was also heavily utilized by the US military during World War II (WWII; 1941–1945). After war was again declared in Europe, the Personnel Testing Section was established to develop plans for mass personnel selection (Driskell & Olmstead, 1989). In addition to testing, WWII expanded the use of psychological principles to various domains, such as clinical services, research, and consulting (Summers, 2008).

The field of clinical psychology emerged during WWII, with the demand of so many military personnel needing psychological care due to their wartime experiences. Prior to WWII, psychotherapy treatment was solely provided by psychiatrists. Due to a shortage of psychiatrists to meet the larger need as the war continued, psychologists began to play a role in treating mental illness (Seligman & Fowler, 2011). In addition to treating the psychological scars of war, military psychologists were needed to help SMs in adjusting from civilian to military life, dealing with the stressors of operational work, delinquency, and successfully transitioning back from overseas (Crawford, 1970).

Throughout WWII, significant advances were made in the study of human factors, training and job performance evaluation, and understanding the effects of environmental factors and stressors on human performance (Driskell & Olmstead, 1989). Psychology also led efforts to maintain and improve domestic morale for the war (Summers, 2008). More than 60,000 interviews were conducted with soldiers to learn about concerns they had as they engaged in war. Known as *The American Soldier* series, this was the first social psychological investigation conducted by American psychologists (Summers, 2008).

As WWII came to an end, psychology kept its footing within the clinical, applied, and research arenas to serve the military’s ever growing needs. By the end of the war, the number of psychologists in therapeutic roles propelled the establishment of one of the first clinical psychology training programs for advanced specialty mental health care at Brooke General Hospital at Fort Sam Houston (Summers, 2008). As 550,000 SMs were discharged from the military due to neuropsychiatric problems, which equaled about 49% of all medical discharges (Summers, 2008), the Veterans Administration (VA) launched a major program to fund the training of clinical psychologists to accommodate the mental health needs of returning SMs (Seligman & Fowler, 2011). Befittingly, the VA is noted to have been “the birthplace of professional psychology training (Summers, 2008, p. 626).” As the VA began having problems meeting the mental health needs of war veterans, Congress passed the Mental Health Act of 1946, which established the National Institute of Mental Health (NIMH). This legislation provided funds for training professionals in mental health service and research and also gave money to states to provide mental health treatment (Summers, 2008).

In 1946, the Society for Military Psychology (Division 19) was established within the APA to provide a forum for those interested in promoting the application of psychology within the military (Driskell & Olmstead, 1989). Also, from the success of utilizing psychological principles during the First and Second World Wars, the Secretary of the Navy announced the need for continued

psychological research. Congress established the Office of Naval Research (ONR) in 1946, the first federal organization to support scientific research (Driskell & Olmstead, 1989). In the 1950s, the Army Research Institute for the Behavioral and Social Sciences (ARI) expanded its capacities and created laboratories that employed psychologists to study human factors both within and outside the military context (Summers, 2008). Further demonstrating psychology's integral role in the war efforts, the first two volumes of the *American Psychologist* contained mostly psychology research conducted in WWII and summary reports about the use of psychology for military applications filled *Psychological Bulletin* (Crawford, 1970).

The utilization of psychology continued. During the late 1940s and early 1950s, human engineering was the most studied area within the military and engineering psychology soon became a separate line of study (Crawford, 1970). Subsequently, research on information flow and decision making moved to the forefront of military research (Crawford, 1970). Other research areas of interest that surfaced during the wars and continued to grow include training, effective leadership, unit cohesion, and team and group performance (Driskell & Olmstead, 1989). Also, studies of cross-cultural interactions emerged, establishing a new field of political psychology that focuses on improving the ability of the United States to interact with foreign counterparts (Crawford, 1970).

Advancing its efforts within selection and assessment, the Armed Forces Qualification Test (AFQT) was introduced in 1950 for screening and supplemental evaluation of military personnel. In 1974, the single test battery, the Armed Services Vocational Aptitude Battery (ASVAB), which is still used today, was established to screen and assign individuals to specific jobs within the services.

Today, a primary role of military psychologists is providing clinical treatment to military personnel and their families. Wars spanning from WWII to the Korean and Vietnam Wars to the recent wars in Iraq and Afghanistan have resulted in progressive conceptualizations and treatments

for deployment- and trauma-related problems (e.g., posttraumatic stress disorder; PTSD). The psychological needs of military families, who are also impacted by stressors of military life, have been acknowledged and have become an important area in military psychology. More recently, the past decade has seen the growth of positive psychology (Matthews, 2008). Positive psychology is the study of positive emotions, positive traits, and positive institutions (Seligman, Steen, Park, & Peterson, 2005). It is not meant to replace traditional psychological treatments that alleviate illness and dysfunction but can be another tool for military psychologists. Providing a framework of principles and techniques that can be used by the healthy majority, positive psychology can be used to enhance resilience and teach individuals to adjust more effectively to new circumstance and stressors (Matthews, 2008). The military is a prime environment for the use of positive psychological applications and resilience building since the majority of its workforce is composed of young, healthy individuals (Matthews, 2008; Seligman & Fowler, 2011).

Through its work with the military, American psychology rose to become a major scientific discipline and profession as well as the largest doctoral-level scientific society in the world (Seligman & Fowler, 2011). Since World War I, military psychology has served as a viable model for using science in practical ways to solve problems and answer questions (Crawford, 1970). As such, other fields such as industry, education, and engineering, have welcomed psychology and have used psychological principles to advance their fields (Driskell & Olmstead, 1989). It is without a doubt that both American psychology and the US military have benefited from its collaborations and continue to help each other thrive in areas of general understanding and innovative applications.

Military Psychology

Military psychologists perform a multitude of roles within the Armed Forces, such as providing psychological services to the ten million

beneficiaries of the Military Health System (MHS), working with operational forces, consulting with military commands/leaders, and providing expertise in assessment as well as program development, implementation, and sustainment. To advance these efforts, the Surgeon General of each service appoints a senior psychologist who serves as the subject matter expert on psychological health issues and is responsible for the overall health of the community. In the Army and Air Force, these senior psychologists are the Consultants to the Surgeon General. In the Navy, the senior psychologist is referred to as the Specialty Leader to the Surgeon General. These psychologists have wide-ranging responsibilities to include advocating for their communities, recommending personnel moves, advising on policy, filling open positions, drafting congressional testimony, answering various inquiries, and mentoring psychologists.

The following sections of this chapter were written by the Army Consultant, the Navy Specialty Leader, and the Air Force Consultant. Each senior psychologist describes how psychologists enhance the performance of SMs and commands and provide examples of the various ways that psychologists are utilized within the military branches. The Army Consultant provides details of how military healthcare systems function to serve all of its consumers efficiently, and describes the role of clinical psychologists within embedded behavioral health, an initiative that brings psychologists directly into military units. The Navy Specialty Leader highlights the assorted paths of how its clinical psychologists access into the military and reports on efforts to continuously assess the needs of its psychology community. The Air Force Consultant describes the career progression of its clinical psychologists and provides a closer look at one of the most critical military programs, suicide prevention. What is described within each section is not necessarily unique to that one service. The Army, Navy, and Air Force have many similarities, learn from each other, and continue to work toward tri-service collaborations to best take advantage of the valuable contributions that psychologists offer the military enterprise.

Army Clinical Psychology

Army behavioral health has experienced incredible growth and transformation over the last decade. The total number of outpatient behavioral health visits increased from approximately 900,000 encounters in Fiscal Year 2007 (FY2007) to over two million in FY2013. Behavioral health resources also dramatically increased as the number of civilian psychology positions doubled from around 500 to 1000 over the same time period. Since 2012, the behavioral health officer authorizations in all Army Brigade Combat Teams doubled from one to two, dramatically increasing both the Active Component and Reserve Component psychology authorizations. Starting in 2013 and continuing through 2017, the majority of Functional Support Brigades and Army Special Operations Command units also grew to two behavioral health officer authorizations each. The total number of behavioral health officer authorizations almost tripled from 65 in 2010 to 179 in 2015. The number of psychology authorizations has increased to its highest total of 248 psychologists for FY2017. Also, to meet the growing needs of operations, internships and residency programs have increased. The internships in the Army are now up to five locations, as well as various residency programs. Similarly, the Navy and Air Force have also recently augmented their training programs to meet the operational needs of their branches.

The Behavioral Health Service Line

On Army posts (also referred to as garrison), behavioral health needs for soldiers and their families are now supported through the Army's Behavioral Health Service Line (BHSL), which provides standardized, integrated, and centralized tracking of its behavioral health programs and behavioral health patients (Lopez, 2013). The BHSL implements Army-wide standards to provide soldiers and families a uniform care experience at any Army post. The BHSL operates as a single behavioral health system that supports the readiness of the force by promoting

health, early identification of behavioral health issues, delivery of evidence-based care, leveraging the broad Army community, and monitoring efficiency and quality metrics. The BHSL is made up of 11 standard clinical programs, which include Embedded Behavioral Health, Primary Care Behavioral Health, and Child and Family Behavioral Health Services, to include School Behavioral Health. Along with providing direct care, these programs proactively address the stigma related to seeking behavioral healthcare by focusing on reaching soldiers and families where they are located, thereby decreasing barriers to care and improving access to care. In addition to the BHSL programs, there are several Army-wide healthcare programs that rely on psychologists to be successful, such as Interdisciplinary Pain Management, Traumatic Brain Injury, and the Patient Centered Medical Home.

Behavioral Health Data Portal A key BHSL program is the Behavioral Health Data Portal (BHDP). BHDP is an Army-wide, web-based application that includes standardized behavioral health intake questions and assessments as patients enter into behavioral health clinics. Clinicians can then use the patient-entered data to inform their clinical care and to track outcome measures. BHDP allows for real-time display of outcome measures for clinical care and aggregates data at a clinic level for meaningful program evaluation.

Key elements of BHDP include (1) rapid check-in capability using a military ID card, (2) sorting and filtering patient lists by provider and clinic, (3) provider ability to track patient care, (4) clinical outcomes graphed, (5) report of deployment history, (6) integrated deployment health assessment data, (7) Warrior Transition Unit status, (8) standardized documentation templates integrated with patient reported data, (9) provider determined risk levels over time, and (10) patient satisfaction data. Along with clinical outcome measures of PTSD (PCL-5), depression (PHQ-9), and anxiety (GAD-7), BHDP was updated in 2014 with evidence-based screening for suicidal ideation using the Columbia Suicide

Severity Rating Scale (C-SSRS). This allows for better detection of suicidal ideation among patients accessing behavioral health care and should lead to earlier intervention to help prevent suicidal behavior.

BHDP was piloted in April 2012 and was adopted as an Army-wide program in December 2012 via Operational Order 12-47. By June 2014, BHDP had been used in over 50,000 behavioral health encounters a month with a total of over 550,000 surveys collected Army-wide. In 2015, the National Guard received funding to roll-out a version of BHDP to all 52 states and territories. BHDP is being tested in settings outside of Army behavioral health clinics as well. It is being piloted for use as a behavioral health screening tool for patients in primary care settings working with primary care psychologists. Capability is also being built within BHDP for use in Child and Family behavioral health clinics.

The former Assistant Secretary of Defense for Health Affairs mandated in September 2013 that BHDP be adopted throughout Air Force behavioral health and Navy mental health clinics. Tri-service goals for BHDP are to improve patient care by implementing a centralized and standardized system that collects various types of care-related information. This not only reduces redundancy, streamlines care, and prevents patients from becoming lost during transitions, but also allows the opportunity for clinical outcomes to be tracked in order to better assess the effectiveness of clinical care in the military.

The Embedded Behavioral Health (EBH) Program The EBH program, an Army-wide BHSL program that was established by a Headquarters Department of the Army Order in July 2012, demonstrates the valuable role that military psychologists serve as consultants to unit leaders on a variety of issues. The EBH program was designed as a public health model where clinic providers establish longitudinal relationships with a unit's chain of command. EBH is an early intervention and treatment platform that promotes soldier and unit readiness. EBH consists of multidisciplinary behavioral

health clinics within the supported unit's area and ensures close communication between unit leaders and behavioral health providers. These providers are aware of the unit's mission readiness and soldiers' safety status, and regularly report trends to leadership.

Consultation with military leaders has always been a key role for military behavioral health/mental health providers in all of the services (Bey & Smith, 1971). Military psychologists consult with leaders about individual SMs, systemic issues, and unit functioning. They frequently need to make determinations of fitness for duty in order to ensure the readiness of the unit. They evaluate and treat medically-not-ready SMs and consult with their respective leaders on how the unit can assist in the rehabilitation of the individual or provide an environment to prevent further deterioration of SMs while they are being separated from the military. Finally, they coordinate follow-up care after a SM is discharged from an inpatient psychiatric hospital stay. Unit-level consultation can include predeployment or resiliency classes, stigma that may prevent engagement in behavioral health care, unusually harsh or lenient unit climates, rates of acute admissions or safety-related events, lack of follow-through on recommendations, and delayed processing of behavioral health related administrative separations.

Throughout the military enterprise, engaging leaders is especially vital because the behavioral health of a unit and its members is impacted to a large degree by leader behavior (Britt, Davison, Bliese, & Castro, 2004). SMs who had a more positive view of their leaders and described higher unit cohesion reported lower stigma and perceived barriers to behavioral health care (Wright et al., 2009). This is critical as stigma and barriers to care in the military have been well documented (Olmstead et al., 2011). Military psychologists can address cohesion and overall unit functioning with leaders, which proactively addresses the stigma related to seeking behavioral health care, and thus impacts the behavioral health status of a unit.

To optimally perform their roles, military psychologists must understand military norms as they pertain to culture, behaviors, and expecta-

tations. Cultural competence is as necessary in the military subculture as it is in any unique culture. Unit psychologists must speak the "language" of their service and avoid psychological jargon. They shape the expectations of leaders in what services psychologists provide and what the limitations are of the profession. The restrictions of communication with unit leaders are clarified in several DoD Instructions [DODI 6490.08 (2011); DODI 6490.04, (2013)]. Military psychologists can only share protected health information in specific situations that include harm to self or others, harm to the mission, inpatient care, acute medical conditions interfering with duty, substance abuse treatment, and command-directed mental health evaluations. To inform SMs of these boundaries, they are included in the standardized limits of confidentiality forms used in military behavioral health clinics.

Operational Psychology

Similarly throughout all the services, psychology has expanded into other areas of the military outside of health care facilities and direct clinical care. Operational psychology is an area of increasing emphasis. "Operational psychology involves the application of the science of behavior to national security, law enforcement, and military operations (Williams, Picano, Roland, & Bartone, 2012, p. 37)". It is the use of psychological principles and skills to enhance the effectiveness of military and intelligence operations. The roles of operational psychologists are varied. They may perform clinical duties on post or deployed, but their primary mission is to assist with military operations and/or national security. The initial role of operational psychologists was to conduct assessments as part of the selection of personnel for training of particular missions. The scope of their services has now expanded far beyond that. Roles for psychologists with special operations units include consulting with intelligence teams, contributing to indirect assessments, counterintelligence operations, and security clearance evaluations.

The importance of operational psychology is exemplified by that fact that some officer positions typically have a finite number of authorizations while operational psychology positions continue to grow. The efforts of operational psychologists have increased the acceptance of behavioral health within various operational communities such as special operations, aviation, and recruiting as evidenced by the rapid growth of operational psychology positions as well as the expansion of their roles.

Navy Clinical Psychology

The mission of Navy clinical psychology is to improve the psychological health of Sailors and Marines by promoting evidence-based comprehensive care, supporting warriors across the deployment cycle, and building a ready and resilient fighting force. As of August 2016, Navy clinical psychology had over 200 positions (or billets) for active duty psychologists across the world. Almost all of these 200 billets are filled, resulting in the Navy clinical psychology community being just about 100% staffed. There has been tremendous growth within the Navy clinical psychology community, almost doubling over the past 10 years. As both the number of billets and the percentage of manning increase, a key aspiration of the Navy clinical psychology community is that each Sailor and Marine continues to receive the highest quality of care.

The majority of Navy clinical psychology billets are located at Military Treatment Facilities (MTFs), with a quarter of those located overseas. About 20% of the billets are located within operational commands and about 5% on aircraft carriers. Finally, about 15% are training billets. As the Specialty Leader makes billet recommendations, priority goes to overseas and operational billets. Active duty psychologists rotate duty stations about every 2 or 3 years. Similarly across the services, to make billet rotation decisions, the Specialty Leader/Consultant utilizes the “detailing triangle.” That is, needs of the military, professional considerations, and personal concerns are considered when choosing the best next duty station.

In an effort to reach and maintain 100% staffing, the accession paths for each military branch are constantly being adjusted to try to anticipate future needs. There are currently five accession paths to become a clinical psychologist in the Navy. The first is to attend the Uniformed Services University of the Health Sciences (USUHS) Clinical Psychology Ph.D. program. Two new students are accepted each year. After 4 years of tuition-free training, the officer is required to complete 7 years of obligated service. With the Health Professions Scholarship Program (HPSP), individuals attend a civilian doctoral program and then attend the Navy APA internship program at Naval Medical Center Portsmouth (NMCP). The Navy currently selects five HPSP recipients each year. The third accession path is to enter through one of the 12 APA predoctoral internship slots at Naval Medical Center San Diego (NMCSD) and Walter Reed National Military Medical Center. The fourth accession path is to enter through one of the two APA postdoctoral internship slots at NMCP. Both the pre- and postdoctoral internships incur 3 years of obligated service. The final accession path is through direct accession. A direct accession psychologist is required to already be licensed in any state and incurs 3 years of obligated service. The number of direct accessions varies from year to year, but has averaged about three per year.

In order to improve accession and retention rates of Navy clinical psychologists there are various opportunities for special pay. There is incentive pay for being licensed, retention bonuses for signing up for additional years of service, and board certification pay, which can all add up to about \$30,000 of additional pay per year. The Navy accesses about 25 psychologists at various levels of training and loses about 15 psychologists per year. This net growth of 10 psychologists per year will hopefully maintain the community at 100% staffing.

Navy Operational Psychology

Similarly across all three services, psychologists have been rapidly expanding into operational roles. Prior to the year 2000, an active duty psy-

chologist could easily spend his/her entire career practicing in MTFs. In the late 1990s, psychologists started expanding their operational involvement as they began serving on aircraft carriers. As combat operations expanded in the Middle East, the positions available for clinical psychologists grew significantly and have almost doubled over the past 10 years. For Navy psychologists, the vast majority of the growth has occurred in operational settings, such as Marine infantry and special operations units, Presidential support duty, and Survival-Evasion-Resistance-Escape training units.

Operational commanders increasingly realized that psychologists directly assist in accomplishing their missions and in keeping SMs prepared in the fight. Navy psychologists started being assigned to Marine infantry units and Navy Special Warfare units as embedded mental health providers as well as the submarine community and units in the Marine Logistics Group. The largest changes for these embedded psychologists were that they now found themselves assigned to line units, reporting to line commanders, and involved in more prevention work vice treatment. To facilitate integration into the line units and to decrease stigma, these embedded psychologists often found themselves on convoys, at combat outposts, and out on patrols. There is some debate as to whether psychologists should be in these embedded roles. Advocates cite increased return to duty rates, improved access to care, decreased mental health stigma, and accolades from line leadership. Those opposed cite danger, unnecessary risk to scarce psychological resources, and compassion fatigue.

Assessing the Needs of Navy Psychologists

Given the various work- and military-related stressors that psychologists in the military have the potential to face, it is important to routinely monitor their wellbeing and readiness. In collaboration with the Navy Specialty Leader, the Naval Center for Combat & Operational Stress Control (NCCOSC) conducted a needs assessment of Navy clinical psychologists in 2014.

There were 86 psychologists who completed the questionnaire and they reported low to average levels of distress and high life satisfaction. Psychologists reported average scores on a general stress measure, yet a little over 20% endorsed high levels of stress. Although psychologists endorsed a high level of life satisfaction overall, 20% reported below average life satisfaction.

The needs assessment also found that job satisfaction was high for psychologists whereas professional burnout was mixed. For all dimensions of job satisfaction that were assessed, the psychologists scored higher than comparison norms. When assessing professional burnout, emotional exhaustion (i.e., feelings of being emotionally overextended by one's work) was higher than a comparison sample whereas levels of depersonalization (i.e., having an unfeeling and impersonal response toward patients or those you care for) were similar. Scores on personal accomplishment (i.e., feelings of competence and successful achievement) were higher than the comparison group. Additionally, psychologists endorsed more challenges in balancing work and family compared to nonmilitary norms.

Finally, the needs assessment found that psychologists generally reported positive deployment experiences. Approximately, 36% of psychologists had been deployed one time and 60% were deployed two or more times. Overall, exposure to combat and aftermath of combat as well as PTSD scores were low. And, following deployment, 14.3% of psychologists felt they required mental health services. For those who had deployed, 81% described their deployment experiences as positive overall.

Being ready to deploy to anywhere around the world with little notice is a hallmark of being a Navy psychologist. As the needs assessment indicated, over the past 15 years, psychologists have deployed frequently to Iraq, Afghanistan, Djibouti, Bahrain, and aboard ships. One psychologist summed it up well: "These memories are of tremendous happiness, pride, struggle, and horror, but through them all I doubt I will ever feel a greater sense of purpose, camaraderie, and honor." (The Navy Psychologist, 2015). This is the essence of serving as a clinical psychologist in the military.

Air Force Clinical Psychology

Air Force clinical psychology is a vibrant community and is better manned than ever. The Air Force pursues a range of options to close the manning gaps of active duty Air Force psychologists. One such effort has been to continue the increased compensation and training efforts to recruit and retain psychologists. Since 2009, the Air Force has been offering special pay plans for psychologists including incentive bonuses for licensed psychologists of \$5000 per year and retention bonuses of up to \$20,000 per year for a 4-year commitment. To attract new psychologists, the Air Force has continued with its three APA-approved clinical psychology internships with 20–24 interns accessed and trained per year. The Air Force has also introduced accession bonuses of up to \$15,000 per year for fully qualified applicants, resulting in the accession of many fully qualified applicants to the Air Force psychologist community. The Psychology Consultant works closely with the Air Force Personnel Center to maintain and further develop specialty-specific sustainment models. These efforts appear to be paying dividends as the Air Force is now at 92% manned for active duty psychologists, up from 89% last year, and 70% 3 years ago. There are currently 262 positions for psychologists in the Air Force with 241 well qualified active duty psychologists on hand to fill those positions.

Retention of these skilled individuals is critically important. Currently, junior psychologists tend to separate from the Air Force prior to completing a 20-year career at a greater rate than the Air Force average. This is likely due to other opportunities and/or family demands available for these young psychologists that pull them away from a career in the Air Force. The more senior psychologists tend to stay in for a full 20-year career at greater rates than the Air Force average. This makes sense because these are individuals who have committed to an Air Force career and as a result find it satisfying, rewarding, and tend to remain. Fortunately, since 2011, accessions into the Air Force have outpaced retirements and separations out of the Air Force.

There are some specific milestones critical for successful promotions for Air Force psychologists that directly impacts retention. Psychologists come into the Air Force as Captains (all services bring in new officers that are completing their graduate degree at an O-3 grade that is Captain in the Air Force and Army and Lieutenant in the Navy). At this stage, they are actively engaged in obtaining all their basic professional qualifications. They are completing their APA-approved internship, doctoral degree, and postdoctoral supervision requirements. They are expected to obtain their psychology licensure within 18 months of graduation from the internship and to learn to apply clinical skills in a military environment. In addition, they are expected to be involved with junior leadership and other professional development activities. They are encouraged to participate in flight and squadron activities and even Installation-wide events in order to learn officer skills. Their typical first duty assignment (after internship) is to work in a Mental Health Element, Alcohol Drug Abuse Prevention and Treatment program, or Family Advocacy with a focus on ultimately leading an element as the Element Chief.

After several years on active duty, these young psychologists become more senior Captains and Majors. At this point, they have obtained the basic professional qualifications as a psychologist. Although they are fully licensed and capable of independent practice, they continue to obtain training in various empirically-based therapies, such as exposure-based therapies (e.g., Prolonged Exposure). They are also much more involved with larger scale wing and hospital or clinic projects. They are encouraged to seek opportunities to expand management and supervisory skills. They are also encouraged to complete Squadron Officer School, which is the rank-appropriate professional military education for Captains, and Air Command & Staff College, which is the rank-appropriate professional military education for Majors. At this stage, they are generally on their second or third duty assignment opportunities in small leadership roles as Element Chief and or even as a Flight Commander at a smaller clinic. They can consider overseas assignments,

and this is a good time to apply for fellowship specialty training in psychology. At this juncture, they obtain advanced professional qualifications by seeking advanced board certification in a specialty area. They are also becoming more polished Air Force officers with enhanced leadership and professional development activities. They work at Major Commands (MAJCOM), AF-level working groups, lead base Integrated Delivery System, and possibly attend the Intermediate Executive Skills Course. Job opportunities expand and they can become faculty at a psychology training site and attend a postdoctorate fellowship in Clinical Health Psychology, Neuropsychology, Forensic Psychology, Combat Operational/Aviation Psychology, or Pediatric Psychology. They are also eligible for MAJCOM Mental Health Consultant or a Mental Health Flight Commander leadership position.

The next step for a psychologist is to become a Lieutenant Colonel. As senior psychologists, there are more leadership and professional development opportunities available to them. They attend the Intermediate Executive Skills, if they have not already, and seek out and become a squadron commander course (if selected). They then attend rank-appropriate professional military education, Air War College (or equivalent). Job opportunities for Lieutenant Colonels include Internship director, Air Staff action officer, Squadron commander, or other Specialty positions such as Air Force Inspection Agency Inspector, Special Operations, or Air Force Safety Center.

The next step is Colonel, and once this rank is obtained, members seek out and complete advanced leadership and professional development activities such as Interagency Institute for Federal Health Care Executives, and MHS CAPSTONE. Professional military education includes the Senior Developmental Schools (i.e., Air War College, The Eisenhower School). Potential duty assignment opportunities as Colonel include Group commander, large squadron commander, AFMOA Mental Health Division Chief, and SG Consultant for Air Force Psychology. Other specialized leadership positions are also available including SAMMC

Department Chair, AFSOC, and other DoD staff positions. After this stage, psychologists are eligible to become General Officers and, if selected, are then moved into very senior AF Medical Service leadership positions.

Embedded Air Force Psychologists

Similar to the Army and Navy, embedding psychologists into Air Force operational units has become a critical alliance between medical and the line. The primary purpose of using psychologists embedded into line units is to enhance warfighters' operational effectiveness, to ensure the highest state of psychological readiness at all times, to prevent negative mission impact, and to reduce mental health stigma. The embedded psychologist provides units with many types of psychological health activities, including prevention and education on mental health related issues. This education is largely accomplished in briefings specifically tailored for the individual or unit's mission (i.e., suicide prevention, stress management/relaxation training, anger management, sleep hygiene, "warrior mindset," alcohol and drug abuse prevention, etc.).

The embedded psychologist allows unit members to be identified and referred for mental health treatment early enough to prevent degraded performance both professionally and personally. This embedded model is also an effort to decrease negative stigma about seeking mental health treatment by encouraging early help seeking. It capitalizes upon the proximity effect of having a familiar face in the unit, so that unit members are more likely to find the psychologist approachable. The embedded psychologist provides a link to the local leadership, a critical element in communicating with the leadership on unit morale, individual mental health, and mission effectiveness. Through consultation and referral, the embedded psychologist liaises with other helping professionals (i.e., chaplain, medical personnel, military family life consultants, etc.) to foster a healthy community within the unit. No medical treatment is provided in the unit setting. All treatment must occur within the Mental Health

Clinical area in the hospital or clinic. Once the embedded psychologist identifies someone in need of care, they arrange to have the individual seen within the clinical areas.

In March of 2012, the Air Force Surgeon General directed Air Force Mental Health to establish a full-time embedded mental health provider at seven bases to care for high operational units. This effort has since expanded to nine bases. Preliminary data indicate a reduction in both distress and PTSD incident rates in this population. One operator who had contact with the embedded mental health team stated that, “without their proximity, the level of services engaged by members of our group would drop off dramatically, as they simply would not seek help from across the base. Proximity is essential.” It appears that the embedded role of the Air Force clinical psychologist will continue to be a mainstay in the Air Force, along with the rest of the military branches.

Fundamental Issues Addressed by Military Psychology Across the Services

Suicide Prevention

Suicide prevention is a vital initiative across all three services. The Air Force Suicide Prevention Program (AFSPP) is a community-based, evidence-based approach that has demonstrated a reduced suicide rate in the 15 years since the program was initiated. The 11 key elements of the AFSPP foster a much stronger Wingman culture. These elements can be grouped into three broad categories:

- Leadership and community: commander’s involvement, unit-based preventive services, wingman culture, suicide tracking and analysis, post suicide response (“postvention”), Integrated Delivery System, Community Action Information Board, and the Community Assessment Survey.
- Education: suicide prevention training for all Airmen, addressing suicide prevention through

professional military education, guidelines for commanders on the use of mental health services.

- Protections for those under investigation: investigative interview policy and Limited Privilege Suicide Prevention program.

The installation suicide prevention program manager is a mental health provider and a subject matter expert on suicide prevention and as such leads the program. Air Force suicide prevention is a community program and so involves the shared responsibility of all the base helping agencies, leadership, and the individual members themselves.

Leaders at all levels are a key component of the AFSPP. Leaders are taught and encouraged to stress the importance of individual well-being and the important role this plays in suicide prevention. This includes removing barriers to help seeking and creating a climate that does not tolerate any actions that belittle, humiliate, or ostracize those who are in need of help. The idea is to communicate strength-based messages focusing on resilience, overcoming life’s challenges, and early help seeking. A good way to do this is to highlight examples where an Airman sought help early and as a result had a successful outcome. Also, the AFSPP emphasizes personal responsibility so that each Air Force member knows to be a good Wingman to others as well as themselves (e.g. Ask Care Escort [ACE]), and Airmen are taught to seek personal support when needed.

Training is a key component of the AFSPP and psychologists are heavily involved with this aspect. In 2015, the Air Force shifted the training vehicle from a computer-based suicide prevention annual training program to in-person training within small groups. The training is designed to be facilitated in small groups by supervisors or leaders from the Airmen’s own unit and has been lauded as a welcome change. Additional training includes the Frontline Supervisor Refresher Training, which is an annual refresher course reinforcing the in-person the Frontline Supervisor Training for at-risk career fields. There is also Memorial Guidance training which supports leaders in postsuicide efforts by offering recom-

mendations regarding memorial services and other efforts to comfort the grieving, support survivors, and encourage those in need to seek help, all the while avoiding glamorization of the death to prevent copycat suicides.

An additional Air Force resource is the Family Guide for Suicide Prevention. This is a user-friendly pamphlet providing straightforward information on suicide protective factors, risk factors, and warning signs to better educate our family members. The Post-Suicide Response Supplement for Installation Suicide Prevention Program Managers, another key resource, provides information and recommendations for installation suicide prevention programs to effectively support leaders in their responses to suicides and suicide attempts. Offering support early is associated with increased help-seeking behavior and should always be highly encouraged by unit leaders.

The Army and Navy also have their own suicide prevention programs. The Navy's suicide prevention program is part of the larger twenty-first Century Sailor & Marine initiative, which provides Sailors and Marines and their families with the support network, programs, resources, training and skills needed to overcome stress and adversity and thrive. The Every Sailor, Every Day campaign educates individuals on strategies to manage stress, recognize risk, seek help and intervene early, while promoting proactive and open communication. In the Fall of 2015, a new message as part of the campaign was launched which encourages simple acts that may contribute to saving someone's life. The "1 Small ACT" campaign, formed from the Navy's Ask Care Treat (ACT) model, aligns with the collaborative communications efforts between the DoD Suicide Prevention Office and Veterans Affairs (VA) campaign of the Power of 1 concept, which promotes the idea that one simple act has the power to make a difference (Navy Expeditionary Combat Command Public Affairs [NECC], 2016).

The Army's Health Promotion Risk Reduction policies and programs includes various suicide prevention efforts, particularly at battalion and brigade precommand courses. Interventions such as

the Ask, Care, Escort-Suicide Intervention program and Applied Suicide Intervention Skills Training program aim to identify personnel who may be at risk for suicide, as well as promote suicide prevention and provide outreach services. The Army has also created various working groups at the installation level, which includes the Suicide Senior Review Group, the Survivor Outreach Services, and the Specialized Suicide Augmentation Response Team/Staff Assistance Team Visits. Additionally, the Army Study To Assess Risk and Resilience in Service members (Army STARRS) is the largest study of suicide and mental health among military personnel to date. A primary aim is to identify risk and protective factors for suicide among SMs and provide a scientific basis for effective and practical interventions to reduce suicidal behavior and also target associated mental health problems (Morales, n.d.).

Posttraumatic Stress Disorder

Posttraumatic Stress Disorder (PTSD) continues to be a significant issue that military psychologists must identify, address, and monitor throughout all branches of the military. PTSD can occur after someone experiences, or witnesses, a traumatic event. Examples of such events can be combat, a terrorist attack, sexual or physical assault, a serious accident, a natural disaster, or childhood sexual or physical abuse. PTSD can be a significant condition especially when symptoms continue more than 1 month after exposure to a trauma and significant distress or impairment in social, occupational or other important areas of functioning. The symptoms of PTSD fall into four main categories: intrusions (e.g., nightmares); avoidance; negative alterations in cognitions and mood (e.g., guilt); and alterations in arousal and activity (e.g., hyperarousal). The vast majority of people who experience or are exposed to traumatic events will have an immediate reaction and may experience some initial challenges, but they will recover quickly and have no long-term effects. While some people may experience stress symptoms after experiencing trauma, diagnosis of PTSD by a qualified medical provider is

different. If symptoms continue for more than 1 month after a trauma and/or worsen, cause significant distress, and/or interfere with daily functioning at home and work then an evaluation by a medical provider is needed to determine if a diagnosis of PTSD is appropriate.

The incidence rate of PTSD for active duty personnel is 0.6%. This number is based on SMs being diagnosed in a medical setting and may be artificially low due to stigma and other barriers that prevent some members from seeking help (see also Riggs & Malonnee, Chap. 3, this volume). Higher rates of PTSD have been cited, but those accounts are often referring to positive answers to anonymous screening questions on the health assessment questionnaires (Hoge et al., 2004).

Efforts to Reduce Mental Health Stigma

In addition to identifying and treating mental health disorders (e.g., PTSD), military psychologists lead the effort to reduce mental health stigma in all the services and work with commanders and leaders to promote early help seeking.

Concerns that seeking mental health care will impact one's career or security clearance is an issue that is shared across all three services. For example, according to the 2013 Community Assessment Survey, 33% of Airmen report a belief that seeking counseling is not likely to have a negative impact on their career and 26% believe that seeking counseling is likely to have a negative career impact.

To learn more about patterns of communication between mental health providers and unit leaders, a study of 1205 Airmen at eight installations by Rowan and Campise (2006) found that in 90% of cases where Airmen self-referred to mental health, no contact was made with the member's unit. In the 10% of cases involving contact with the unit, 70% of the contacts were made to inform the command there were no concerns or to provide recommendations to support the airman. In 25% of cases when the chain of command referred, no unit contact

occurred. Out of the 75% of cases that contacts occurred after the command referral, 93% were to inform the command that there were no concerns or to provide recommendations to support the Airman.

Information is typically only shared with the senior leadership in the unit (e.g., the Commander and/or First Sergeant in an Air Force unit) and typically involves issues surrounding the SM's safety, fitness for duty, and what the command can do to help improve the likelihood that a SM will benefit the most from treatment. If the SM is not World Wide Qualified (i.e., fit for duty), the individual is placed on temporary medical profile in order to complete treatment. Senior leadership is often a tremendous asset by collaborating with individuals in care to address work/family issues and modifying schedules to facilitate treatment. As is the case for all three services, promoting appropriate communication between behavioral/mental health providers and command leaders improves overall care and recovery and can be an impetus for reducing mental health stigma throughout the military.

Conclusion and Thoughts for the Future

Military psychology has served as a model to the broader discipline for how to bridge science and practice. Collaborations between the field of psychology and the US military resulted in significant advances in clinical and research arenas, such as assessment and selection, psychological treatment, training and job performance evaluation, as well as understanding the effects of environmental factors and stressors on human performance. Military psychology also showcases an exemplary training program and professional development philosophy that will foster generations to come. The military is strongly committed to the training and professional development of its new accessions. Each branch offers excellent training opportunities through APA approved internships and fellowships in a variety of settings (e.g., operational, intelligence, aerospace) and subspecialties (e.g.,

pediatric, forensic, neuropsychology). Moreover, military psychologists enter into leadership positions relatively early into their careers, equipping them with the experiences and abilities to lead and serve valuable roles in a multitude of ways such as clinical leadership in department settings, medical leadership within operational units, and supervisory and administrative leadership in strategic staff positions.

Military psychologists play a pivotal role within the overall military organization and have become behavioral science assets essential to all military communities, and there is no doubt their roles and responsibilities will continue to increase in scope and demand. Similarly, military psychology continues to grow within the psychological community as a whole. Division 19 ([Society for Military Psychology](#)), one of the original 19 chapters of APA, has a strong commitment to advancing science and practice, promoting scholarship and leadership, and building a community and collaborative efforts that includes national and international initiatives. Although membership in the overall APA organization has been getting smaller, Division 19 continues to experience an increase in its membership.

After a remarkable history, recent trends suggest that military psychology is approaching another important inflection point. This time, the major change will be consolidation between the services. The Goldwater-Nichols Department of Defense Reorganization Act of 1986 drove the interoperability of military services, but each branch has retained its unique customs, cultures, and practices. Meanwhile, military medicine is blazing toward true integration. Several military medical facilities, including flagship medical centers such as Walter Reed National Medical Center in Washington DC, are now administered by the Defense Health Agency (DHA) rather than individual services. When operating overseas as part of Joint Task Forces, psychologists provide services not just to those wearing their own service uniform but any soldier, Sailor, Airmen or Marine assigned to the mission.

A true joint future might be close at hand. In 2015, The Military Compensation and Retirement Modernization Commission, working at Congress's

behest, recommended more tightly integrated medical capabilities across the MHS. As this chapter goes to press, both houses of Congress have passed draft legislation that would increase the authority of DHA and reduce authorities for individual service medical departments. It is not hard to imagine a near future in which even more training, deployments, and other assignments for psychologists are conducted jointly.

Regardless of which agency ultimately becomes responsible for training and organizing military psychologists, several things are nearly certain. The continued destigmatization of mental health and behavioral health services will rightly increase the demand for clinical psychology within the military. Humanitarian and peace missions will continuously require the services of deployable uniformed psychologists to address the mental health and behavioral health concerns among impacted populations and those SMs deployed to assist these populations. Meanwhile, so long as the US finds itself engaged in low level conflicts where special operations and intelligence capabilities are at the forefront, we can expect robust demand for operational psychology as well.

To meet these needs, military psychologists must not only deliver excellence every day, but also communicate how the behavioral sciences support SMs and military units/commands as well as the military and nation as a whole. Attracting talent to the ranks will require messages that highlight military psychology's excellence, diversity and contributions. As this chapter has demonstrated, military psychology has a great story to tell, a proud history, and a bright future.

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Part I

**Advances in Practice, Treatment, and
Prevention**

Arlene R. Saitzyk, Tracy E. Mayfield,
Lacey M. Sharkey, and Cara E. Cox Coleman

Aviation, aeromedical, and aerospace psychology are integrative fields that draw upon the specialty areas of clinical, operational, and industrial/organizational psychology with the intent of optimizing the selection, training, performance, safety, and well-being of aviation and aerospace personnel. We use the term aeromedical psychology in this chapter, but the terms aviation, aeromedical, and aerospace psychology have been used interchangeably. The field has been defined as an “integration of aviation medicine and clinical psychology, and involves the application of clinical psychology principles, methods, and techniques to address individual and group issues within the aviation community” (King, 1999). Although on the surface this definition appears centered on clinical issues such as individual mental and physiological well-being, equally

important is the role of the organization “within the aviation community.” The organization creates multiple conditions that can affect the integration and performance of individuals in these systems, such as rules and decisions that govern everyday activities, supervision/safety/equipment issues, person-machine “fit,” oversight policies, and an overarching climate or culture for a particular squadron, platform, or military service branch.

In this chapter, we discuss several ways in which aeromedical psychology research and practice contribute to military and other aviation operations, with a focus on the practical application of principles. Aeromedical psychology is a critical component of military psychology and may be considered a subspecialty of operational psychology, per the description provided by Williams, Picano, Roland, and Banks (2006), that is, “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 ... 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.” As members of the team serving the special duty population of aviation personnel, and just like the following two classic movie titles suggest, aeromedical psychologists do everything we can to

A.R. Saitzyk (✉)
Marine Corps Embassy Security Group,
Quantico, VA, USA
e-mail: arlene.saitzyk@usmc.mil

T.E. Mayfield
1st Special Ops Group, United States Air Force,
Hurlburt Field, FL, USA

L.M. Sharkey
Psychology, United States Army,
Fort Campbell, KY, USA

C.E. Cox Coleman
United States Army School of Aviation Medicine,
Fort Rucker, AL, USA

select those with “The Right Stuff,” (Brubaker, Chartoff, Winkler, & Kaufman, 1983), and then to “Keep ‘Em Flying” (Tryon, Lubin, & Creer, 1941).

History of Assessment and Selection of Aviation Personnel

Psychologists have a long history of providing broad-based organizational services such as developing and refining assessment and selection measures, and offering individualized clinical evaluations and interventions for this special group of operators in the aviation community. Parsons’ (1918) first attempt to capture the higher standard of reliability and performance under stress required for flight duty suggested the following essential “ingredients”: coolness under strain, dependability to take the correct action at a critical moment, mental and physical alertness, lack of any inherent fear of being in the air, and persistence and perseverance in ambition. Accurately measuring those characteristics, however, would take psychologists the next several decades.

An excessive loss of students from flight training during the time of WWI drew attention to the fact that the standard flight physical did not sufficiently measure these qualities, and subsequently, flight surgeons were encouraged to add psychiatric interviews to the basic examination. The concept of “aeronautical adaptability” first appeared in the Manual of the Medical Department (Bureau of Medicine and Surgery [BUMED], 2005) in 1927, and was scored numerically from 0 to 4.0. If the aviator failed to score above 2.5, they were deemed “Physically qualified but not temperamentally adapted.” The numeric score was replaced by a “favorable or unfavorable” classification in 1937. In WWII, continued pilot training failures were estimated to be largely due to emotional instability. This resulted in two outcomes that incorporated both a more global look at selection, and an individualized focus in evaluating aviators. Specifically, increased efforts were directed toward improving pencil-and-paper psychological tests for screening aviators as a group, and flight surgeons were

required thorough training in psychology and psychiatry for their evaluations. Navy psychologists were directly involved in the former endeavor, called the Pensacola Project on the Selection of Naval Aviators, which was funded by the Civil Aeronautics Administration and the National Research Council (Olson, McCauley, & Kennedy, 2013).

While the aforementioned developers worked on what would later become today’s Aviation Selection Test Battery (ASTB), the test all Naval aviators and navigators must take in order to qualify for training, clinical psychologists continued to develop better methods and models to assess for fitness and suitability for aviation duty on an individual level, and to assist flight surgeons in their assessments. After WWII, there was a move away from simple reliance on measures of psychopathology, and the concept of aeronautical adaptability was further clarified. By the late 1970s, the concept came to be defined in terms of maladaptive personality traits, as well as what was considered “Axis II” disorders in prior versions of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, or DSM-5 (American Psychiatric Association [APA], 2013). When Naval aviation personnel were diagnosed with either Personality Disorders, or determined to possess subclinical Personality Traits that might significantly interfere with safe flying, aircrew communication and coordination, or mission completion, they were considered Not Aeronautically Adaptable (NAA). In 1987, separate definitions of aeronautical adaptability were specified for candidates and designated personnel, as follows. Navy and Marine Corps flight candidates or “applicants” are considered aeronautically *adaptable* (AA) if they demonstrate the potential to adjust to the rigors of aviation by possessing emotional stability and coping skills to allow for full attention to flight and successful completion of training. Designated Naval aviation personnel are considered aeronautically *adapted* based on demonstrated performance, ability to tolerate the stress and demands of operational training and deployment, and long-term use of highly adaptive coping (BUMED, 2005). Again, in contrast, with a determination of Personality Traits or Disorder, they are considered NAA. In

the Air Force, aviators with maladaptive personality traits or personality disorders may be found “unsatisfactory” under the Adaptability Rating for Military Aviation (ARMA) in a similar fashion. In the Army, according to Army Regulation 40–501, paragraph 4-29a (Army Regulation, 2011), an unsatisfactory Aeromedical Adaptability (AA) rating (formerly ARMA) is a result of “socio-behavioral factors that are considered to be unsuitable for or unadaptable to Army aeronautics.” The unsatisfactory AA may be a manifestation of underlying psychiatric disease or may be accompanied by nonmedical disqualifications. The unsatisfactory AA is not a diagnosis, but is a determination by the Army flight surgeon and aviation commander or supervisor of suitability or adaptability, often based on the aeromedical psychologist’s comprehensive evaluation and recommendations.

Embedded Support

Toward the end of WWII, increased emphasis was placed on treating psychiatric issues for all troops returning from war, and this resulted in increased roles for clinical psychologists in aviation as well. Notably, in the early 1980s, the Air Force developed a program to attach doctoral level mental health providers (psychologists and social workers) to flying squadrons under the aeromedical services model. That is, the mental health providers were teamed up with flight surgeons to provide care to aviators. This program was considered successful by leadership and soon earned the attention of the United States Air Forces in Europe (USAFE) Surgeon General’s office. Typical duties of an embedded psychologist varied depending on the needs of the organization. In regular flying units, embedded Air Force psychologists were consultants to commanders on the psychological health of the organization, and assisted with mitigating common challenges such as performance issues and personality conflicts within the unit. They also delivered support services to members of the organization and their families, focusing on stress management, relationship issues, and coping techniques. Finally, they were frequently involved in mishap investigation support as human

factors experts. In a flight training organization, aeromedical psychologists were involved in cases of student pilots failing to progress in upgrade training in Flying Evaluation Boards. Psychologists helped determine causes for failure to progress and recommended interventions to help students recover. One common reason for failure to progress is recurrent airsickness. Psychologists developed and implemented airsickness mitigation training for students struggling in this domain. The training was based on operant conditioning models utilizing a Barany Chair (spin chair) to retrain the brain (AETCI 48–102/58, 2010). The Barany Chair is a training device used to increase awareness of adverse physiological events, such as airsickness, spatial disorientation, and motion or visual illusions. For airsickness, the chair helps individuals increase awareness of precursor symptoms and learn how to remain functional despite the symptoms, in other words, train oneself out of the symptoms (e.g., move the eyes, then the head, then the body). For spatial disorientation, the increased awareness helps to mitigate symptoms as they appear, in order to prevent a full blown spatial disorientation episode or safety concern.

While the idea of an embedded psychologist is not new to the Army either, it was not until Fiscal Year 2014 that all Active Component Combat Aviation Brigades (CAB) had slots allocated on their Modification Table of Organization and Equipment (MTO&E) for two organic behavioral health providers, with one slot to ideally be filled by an aeromedical psychologist. Army aeromedical psychologists organic to a CAB are consultants to the flight surgeon, the commander, and safety officer, and may deploy with the CAB. The knowledge of an aeromedical psychologist in the areas of human factors and aviation allows them not only to participate in traditional behavioral health activities (e.g., therapy and psychoeducation) but also in unique capacities, such as Accident Investigation Boards, providing recommendations to ensure proper crew rest, collaborating with safety officers, and performing in-flight evaluations.

As part of the 160th Special Operations Aviation Regiment, Airborne, 160th SOAR (Abn) (i.e., “Night Stalkers”) aeromedical psychologists are a significant part of the formal

assessment and selection process that every officer and enlisted Soldier attempting to join the regiment must go through. The assessment and selection process evaluates Soldiers through the lens of what it takes to function not only in an aviation unit, but also in a Special Operations Forces (SOF) environment. The psychological assessment at the 160th SOAR (Abn) examines potential Night Stalkers' social and behavioral history and functioning through completion of questionnaires, psychological testing, and an individual interview. Similar to the CABs, the aeromedical psychologist at the 160th SOAR (Abn) also consults with Command on soldiers with elevated psychosocial stressors that have the potential to impact work performance (financial issues, marital concerns, etc.) to assist Command with ensuring the soldiers have been offered all available appropriate resources.

Whether embedded in a CAB, part of the 160th SOAR (Abn), or assigned to a Health Readiness Platform (HRP), the primary skill set of the aeromedical psychologist is the ability to conduct aeromedical psychological evaluations. While most Army psychologists are proficient at conducting Fitness For Duty evaluations (e.g., assessing the medical fitness of an individual), it is the aeromedical psychologist who has the ability and knowledge to assess whether the individual who meets medical fitness standards also meets the standards for Full Flying Duty, given the nuanced stressors of the aviation environment. For example, while having a diagnosis of generalized anxiety disorder may not cause significant impairment in an individual's ability to function overall in the military, anxiety symptoms are incompatible with flight duties, and if the symptoms do not remit with treatment or if symptoms recur after a course of treatment, then the individual is likely to be considered psychiatrically unfit for flying duties. When significant flight or other behavioral performance issues arise in an aircrew member, the aeromedical psychologist can be called upon to evaluate that individual to assess for underlying psychiatric causes and to make a recommendation as to whether the individual is still safe for full flying duties or warrants a recommendation to the flight surgeon of temporary or permanent grounding.

Aeromedical psychologists in the Navy have not yet been embedded at the squadron level, but they have had a role in assisting commanders, particularly in training units. In an effort to acknowledge the significance of human factors on flight training and performance, the Chief of Naval Air Training (Human Factors Councils and Human Factors Boards, 2012) and Commanders of Naval Air Forces U.S. Pacific Fleet (COMNAVAIRPAC), U.S. Atlantic Fleet (COMNAVAIRLANT), and Naval Air Reserve Force (COMNAVAIRRESFOR) established guidelines to provide formalized mechanisms of human factors feedback to commanders who could then use this information for risk assessment and subsequent decisions regarding safety of flight issues (Human Factors Councils and Human Factors Boards, 1997). These instructions (CNATRA INSTRUCTION 5420.13H, COMNAVAIRPAC INSTRUCTION 5420.2B, COMNAVAIRLANT INSTRUCTION 5420.5C, COMNAVAIRESFOR INSTRUCTION 5420.2) specify that Human Factors Councils be convened a minimum of quarterly, and that all aircrew qualified to fly on the unit's flight schedule are reviewed regarding several issues, including incidents of poor air discipline, lack of professionalism, mishap-conducive attitudes, adverse medical conditions, and personal and professional circumstances causing unusual stress. In contrast, Human Factors Boards are convened whenever any aircrew member's ability to safely perform flight duties is in question. The information gleaned from these meetings is intended to be confidential, and provides non-punitive recommendations to the unit commander. Though psychologists are not considered mandatory members of these Councils or Boards, their input is frequently requested and conveyed via the flight surgeon, who is a member of both groups. That said, if a local psychologist is available they may be invited to attend and assist with recommendations. Because there are several aviation trained psychologists in proximity to the Aviation Training School, Navy psychologists regularly participate when a Progress Review Board (PRB) is convened and provide guidance when aviators and navigators may be having difficulty at this early stage of their training (Administration of Progress Review Boards at Aviation Training Schools, 2015).

Aeromedical Evaluations and Waivers

Aeromedical psychologists play an integral role in assisting flight surgeons to determine whether their aviation personnel should be considered for a waiver when they do not meet the psychiatric standards outlined in the various services' medical manuals, that is, when they have a history of psychological disorders or current DSM-5 diagnosis (APA, 2013). These "higher" psychiatric standards (i.e., typically more strict than general military duty requirements) help ensure the most qualified personnel are accepted and retained for military aviation duties. That being said, a waiver process was developed for consistent and proper management of disqualified individuals, and to potentially continue to utilize the unique abilities of trained aviation personnel. While a waiver does not make an individual psychiatrically qualified, it may provide an opportunity to enlist, commission, or maintain a special duty despite the presence of a disqualifying condition. Although initial aviation applicants may also be considered for waiver, typically more rigorous standards are applied. When it comes to psychological treatment of aviation personnel, the type of diagnosis and severity of symptoms are important factors in determining how occupational functioning will be impacted. Treatment for minor diagnoses related to psychosocial/environmental issues (former "Axis IV" codes) can sometimes be conducted while an aviation member remains on flight status, as long as the symptoms do not interfere with their flight duties. For example, if an individual is undergoing marital therapy to learn ways to better communicate with their spouse and to deal with frequent time away for trainings and deployments, then the individual may be allowed to continue with full flight duties, and no waiver is necessary. More significant (Axis I) diagnoses, such as posttraumatic stress disorder, mood, or anxiety disorders, dictate that the member be temporarily grounded from flight duties. Recommendations to the flight surgeon as to whether the individual is safe to return to flying duties following a period of treatment is preferably made by an aeromedical psychologist. If a recommendation to return to flight

duties is endorsed by the flight surgeon, then the flight surgeon will apply for a waiver through its respective service. The reader is directed to Saitzyk, Alfonzo, Greydanus, Reaume, and Parsa (2013) for a comprehensive guide to psychiatric conditions and different routes for waiver requests, continuation of waivers, and appeals processes for all branches of the service.

Performance Enhancement

In addition to evaluation, treatment, and disposition recommendations, aeromedical psychologists may engage in a variety of performance enhancement/prevention interventions at both the group and individual level (see also Bowles et al., Chap. 13, this volume). At the group level, this can be accomplished through psychoeducation classes on topics such as sleep hygiene, effective communication, and stress management. On the individual level, performance enhancement strives to increase an individual's overall self-awareness of factors that negatively and positively impact their performance. It often includes completion of measures of personality traits and cognitive abilities in order to identify strengths and weaknesses and to facilitate creation of a performance optimization plan. Aeromedical psychologists may also assist with fatigue mitigation on both group and individual levels. The organization is responsible for promoting and providing adequate time and space for rest (i.e., controlling the length of the duty period, thoughtful shift work scheduling), and the individual is responsible for taking advantage of the provided time and space (getting sufficient daily sleep, employing good sleep habits, strategic napping and rest breaks, and given service specific guidelines considering use of stimulants when necessary; see also Campbell et al., Chap. 15, this volume).

Mishap Investigations

An important role of aeromedical psychologists in the military is to contribute to aircraft mishap investigations in order to evaluate the presence of human factors in the mishap sequence. Air Force

Instruction (AFI 91–204, 2016) delineates the composition of the mishap investigation team, to include a human factors expert on all Class A mishaps (fatality, loss of \$2,000,000 or more in Department of Defense (DoD) assets, or total destruction of DoD aircraft). A human factors expert can be a psychologist (trained in human factors), physiologist, or flight surgeon. It is important to note that the Air Force specifically defines mishap investigations as separate processes with separate regulations from accident investigations. Mishap investigations are conducted solely for safety purposes to prevent future loss of life and DoD assets. Accident investigations, also known as legal investigations, are conducted to determine liability for legal purposes and to provide a publicly releasable statement on behalf of the Air Force (AFI 51–503, 2000). While a human factors expert may be detailed to an accident investigation, the focus is entirely different.

The DoD Human Factors Analysis and Classification system (HFACS) was adapted as a subset from the original HFACS model developed by Shappell and Wiegmann (2000) to specifically identify military related mishap human factors. The HFACS model is based on research by Reason (1990), who postulated a comprehensive theory of human error called the “Swiss cheese” model. He asserted there are several steps that must occur in a chain of events in which failed or absent defenses line up to form the perfect storm and result in a mishap. In his model, there are four layers of human error: Unsafe Acts of Operators, Preconditions for Unsafe Acts, Unsafe Supervision, and Organizational Influences. An intervention at any level can theoretically prevent the mishap. A common mistake of investigators is to only identify human errors at the Unsafe Acts level, since they are *Active Failures*. Active failures are often the easiest errors to identify as they are the last act/behavior that led to the mishap. Examples include: failure to follow a checklist, procedural error, or a routine/widespread violation. Far more difficult, yet necessary to identify are the *Latent Failures*, which are represented by the latter three levels of the Swiss cheese model. Latent failures are issues

that are lying dormant in an organization for any period of time that increase the likelihood of a mishap. Examples include: unhealthy organizational values/cultures, inaccurate guidance, poor quality equipment, ineffective supervision, and mental health disorders (Shappell & Wiegmann, 2000). A key attribute of this human error framework is that it requires failures at multiple levels for a mishap to occur; it is not the last act in the chain of events, or mishap sequence, alone that causes the mishap.

Aeromedical psychologists play a critical role in identifying the precursors to a mishap. In order to effectively mitigate future mishaps, all failed defenses must be identified and addressed. The more trained the psychologist is in human factors or human error, the more likely they will be able to uncover failed defenses at the higher levels of the model (i.e., organizational influences and unsafe supervision). Psychologists are ideal experts to investigate mishaps because of their training. Knowing how to interview people, understand group processes, uncover issues that might suggest an unhealthy organizational culture, and synthesize large amounts of data while remaining objective are valuable skills an aeromedical psychologist brings to the mishap investigation. Furthermore, the trained aeromedical psychologist can assist the team in staying focused and managing stressors that arise during the time-compressed investigation.

Training Flight Surgeons and Other Aviation Medical Personnel

Aeromedical psychologists from various services have played integral roles in training flight surgeons and other medical personnel who support aviation operations. Medical doctors, physician assistants, and nurse practitioners can attend a 6-week Army Flight Surgeon Primary Course (AFSPC) at the United States Army School of Aviation Medicine (USASAM) at Fort Rucker, AL, though only medical doctors serve as flight surgeons. The AFSPC is focused on providing education on the unique clinical and clerical duties, enhancing understanding of the spectrum

of internal and external factors that contribute to the safe conduct of aviation duties, exposing health care providers to the vast array of terminology, equipment, and practices that occur during flight, and increasing the understanding of patient movement and other unique requirements of aviation. One of these unique requirements is an understanding of how human factors can contribute to an unsafe environment. Given this need, it is imperative that the flight surgeon and the aeromedical psychologist have a good working relationship. The conversation between the two begins during flight surgeon training. The aeromedical psychologist assigned to the USASAM formally and informally interacts with flight surgeon students during their time at the schoolhouse. Following the formal block of instruction, flight surgeon students should be able to describe how symptoms may impact one's ability to fly safely, identify behavioral health diagnoses that are disqualifying, identify "potentially waiverable" and "not waiverable" conditions, and understand the process for referring and consulting with aeromedical psychologists.

While Air Force aeromedical psychologists do not play a formal role in training flight surgeons, Naval flight surgeons receive approximately 3 months of aeromedically focused training (e.g., internal medicine, neurology, optometry, psychiatry) at the Naval Aerospace Medical Institute (NAMI) in Pensacola, FL, before reporting to their first duty station as a flight surgeon, and the bulk of their aeromedical training is actually provided by psychologists and psychiatrists from the aviation psychiatry department at NAMI. Flight surgeons receive about 30 h of didactic lecture covering basic and operational psychiatry, and an additional 9 h of workshops on interview skills training, submission of waiver packages, and alcohol use disorders. At the completion of the 3-month course, flight surgeons should be very familiar with common psychiatric diagnoses, appreciate human factors in aviation, understand how symptoms and behaviors can negatively affect safety, be able to perform a basic psychiatric evaluation, and know when and how to refer a patient for formal psychiatric evaluation.

How to Become an Aeromedical Psychologist

The Army aeromedical psychologist must meet medical qualifications for flight status, be able to function as a member of the aircrew, and successfully complete the Aeromedical Psychology Training Course (APTC). Successful completion means an individual has demonstrated understanding of the aviation regulations and policies, physiological aspects of flying, psychological issues unique to aviation, and the nuances of evaluating psychological issues within the aviation environment/community. The APTC is a 3-week course at the USASAM, Fort Rucker, AL, which is open to all DoD psychologists. The APTC began as a trial in 1992 and became an official numbered course in 1998. Initially, the course was focused on training psychologists to understand the nuanced stressors of the aviation environment, to accurately assess functioning given the aviation context, and to give appropriate recommendations regarding full flying duties (Bowles, 1994). However, the course has expanded its focus to helping providers learn how to integrate into the aviation community, aviation medicine community, and the aircrew team. During the course, students participate in didactics and practical exercises, to include night vision goggle familiarization, medical evacuation hoist operations, hypobaric chamber training, and over-water survival training. After completing training, some psychologists may be slotted in a CAB, but the majority will conduct aeromedical psychological evaluations at the HRPs or as part of an Embedded Behavioral Health Team. The APTC is an Additional Skills Identifier (ASI) producing course, it is not a "wings" producing course. "Wings" can be earned by flight status and meeting the requirements set forth in Army Regulation 600-8-22 (Army Regulation, 2015).

It has only been within the past decade that Navy clinical psychologists have been able to earn their "wings of gold" similar to Naval flight surgeons, aerospace operational physiologists, aerospace optometrists, and aerospace experimental psychologists. Because there is not yet a quorum of aeromedical psychologists (i.e., Navy aerospace clinical psychologists), providers are

winged as aerospace experimental psychologists, completing all their requirements along with additional clinical duties. Briefly, Navy aerospace clinical psychologists undergo 6 months of training, which includes the following: (1) Aviation Preflight Indoctrination (6 weeks)—psychologists train alongside other aeromedical specialists, and student aviators and navigators, completing vigorous coursework and examinations in Aerodynamics, Weather, Engines and Systems, Navigation, Flight Rules and Regulations, Physiology, and Land/Water Survival; (2) flight familiarization training (6 weeks)—ground school and emergency procedures training for fixed and rotary aircraft, with four to five fixed wing and four to five rotary wing flights with instructors; (3) academics (3 months)—this includes (a) core training in psychiatry with flight surgeons and 1 week Naval Safety Center mishap investigation course, (b) strand training with aerospace experimental psychologists, and (c) familiarization with clinical duties of the NAMI psychologist. The aerospace experimental psychology curriculum is quite comprehensive, allowing the aerospace clinical psychologist to develop or hone their skills in industrial/organizational psychology, research, and human factors. The curriculum includes training on the history and fundamentals of aviation psychology, DoD research, aviation personnel selection systems, validation, and legal issues relevant to personnel selection, defense acquisitions, and human performance and safety (e.g., ergonomics, displays and controls). Students also complete a capstone project that demonstrates advanced knowledge of one or more areas of aerospace experimental psychology specialization or helps resolve an area of deficiency in naval aviation research or applied practice. Upon graduation, the newly winged Navy aerospace clinical psychologist's utilization tour is served at NAMI, where they conduct evaluations and consult with flight surgeons and squadron commanders worldwide.

In 1985, a training program was developed to train Air Force psychologists and flight surgeons on how best to collaborate to support flying operations. As a result, the model was standardized and embedded psychologists were placed on fly-

ing orders at most bases. Consequently, an Air Force aviation psychology course was developed and fielded at the US Air Force School of Aerospace Medicine (USAFSAM) at Brooks Air Force Base in San Antonio, TX to open the training to psychologists throughout the Air Force. The course ran parallel with Aerospace Medicine Primary, the requisite course for new flight surgeons. During the predominantly medical portions of the course, psychologists attended psychological assessment and support classes. Simultaneously, Headquarters Air Force (HQAF) approved psychologists for nonrated officer aircrew status and flight pay, and they were authorized to fly at their local bases in support of operations. While HQAF approved the aforementioned changes, they were not codified in official guidance to ensure continuity (Strongin, 2015). Unfortunately, when top-tier support for the training and embedded Air Force psychologist program faded in 1987, so did the aviation psychology course at Brooks Air Force Base and the use of embedded psychologists. When the Air Force aviation psychology program was terminated in 1987, it was transferred over to the Army at Fort Rucker, where it continues to operate.

Presently, the Air Force has two separate paths one can take to become an aeromedical psychologist. The first path is on-the-job training. Once psychologists have fulfilled a tour at the designated assignment, then they will have earned the special experience identifier (SEI) code. There are currently two positions in the Air Force that could result in the SEI, the Aeromedical Consultation Service (ACS) at the USAFSAM, and an embedded position within the Air Force Special Operations Command (AFSOC). At the ACS, the primary role is to evaluate aviators for waiver suitability. It is common for aeromedical psychologists to also become involved in research and academic writing there as well. At AFSOC, the aeromedical psychologist provides command consultation, mishap investigation support, aviator and family support, and prevention and education within the unit.

The second path to becoming an aeromedical psychologist in the Air Force is through the newly developed and instituted fellowship at the

Air Force Safety Center (AFSEC) in Albuquerque, NM. The fellowship is a one-year controlled tour (no deployments) in which the fellow learns aviation psychology topics within the context of Air Force Safety. The primary focus of the fellowship is on understanding human error analysis and how human factors can be utilized in various roles to prevent mishaps and enhance operations. The fellow completes a capstone research project on a topic of their choice to further safety, aerospace medicine, or aviation operations. Additional focus topics include organizational assessment, survey development, mishap investigation techniques, aeromedical waiver process, and an introduction to Headquarters Air Force staff/action officer work. The first fellow completed the fellowship in 2013 and then transitioned into a staff position at AFSEC. Currently, the follow-on assignment at AFSEC is the only position that requires the specialized training the fellowship provides. While the two additional assignments previously mentioned will result in the SEI code, the incumbent is not required to have the training prior to assuming the position.

Beyond the Military

Aeromedical psychology is a growing field beyond the military as well. The Aerospace Medical Association (AsMA) has a robust and active Aerospace Human Factors Association, along with several other subcommittees focused on human performance and systems integration. Notably, a working group of experienced clinical aerospace medicine specialists, psychiatrists, and psychologists from AsMA published recommendations (Aerospace Medical Association ad hoc Working Group on Pilot Mental Health, 2012) shortly after the infamous Jet Blue incident in which the pilot appeared to have a psychotic episode. Briefly, the group suggested extensive psychiatric evaluations were “neither productive nor cost effective” for routine pilot aeromedical assessment. However, they recommended aeromedical examiners spend increased time evaluating personal and occupational stressors, and more common mental health conditions that

impact pilots. They also recommended increasing frequency and quality of training in mental health issues for aeromedical examiners, with attention to matters affecting not only aircrew, but also their families. Finally, they suggested that the larger organizations, that is, both civilian airlines and military squadrons, become more educated on a variety of mental health concerns to improve awareness and intervention.

The group reviewed these recommendations recently, following another commercial aviation tragedy of the German wings flight (Aerospace Medical Association, Pilot Mental Health Working Group Recommendations—Updated, 2015). Though the recommendations are generally the same as those promulgated in 2012, some areas were expanded for greater emphasis. For example, the group indicated that the initial psychiatric evaluation for entering the training and employment pipeline is appropriate, but suggested physicians should be more attentive to potential issues or problems with mood, sleep, and a variety of sources of stress (financial, family, work). Additionally, the group highlighted the need for “safe zones” to increase reporting, and greater granularity on the steps aviators can take before they might be grounded. The new recommendations showcase innovative programs from several commercial airlines that emphasize peer support and increased employee assistance program counselors. The updated guidelines also underscore the need for policy and strategy on substance misuse and abuse. The reader is encouraged to review information from the Human Intervention Motivation Study (HIMS, 2015). HIMS is an occupational substance abuse treatment program, specific to commercial pilots, that coordinates the identification, treatment, and return to work process for affected aviators. (see also Schmid et al., Chap. 9, this volume). It is a joint effort between managers, pilots, healthcare professionals and the Federal Aviation Administration to preserve careers and enhance air safety. Finally, the group indicated a need for “clear and universally accepted guidelines provided to health care providers on when their obligation to report aeromedical concerns to authorities supersedes their responsibility to

patient confidentiality.” The group is attentive to regional/cultural differences, but hopes to foster standardization to enhance safety.

Hot Topics in Aeromedical Psychology: Remotely Piloted Aircraft

Within each airframe community, aviators experience a unique culture that is impacted by the airframe’s history, the unique skill set required to perform the mission, and the mission itself. Remotely Piloted Aircraft (RPA, also known as Unmanned Aerial Vehicles) aviators are no different in this regard. The DoD began utilizing RPAs in the 1960s to conduct intelligence, surveillance, and reconnaissance (ISR) missions. Given its design, it can loiter over location for an extended duration in a way that manned aircraft cannot. After the terrorist attack on American soil on September 11, 2001, the use of RPAs dramatically increased (Otto & Webber, 2013). In 2008, when the defense budget allowed for the purchase of a significant amount of RPAs, the field boomed again. In addition to ISR, RPA capabilities include combat search and rescue, close air support, and air interdiction. RPA pilots, sensor operators, and mission intelligence coordinators support deployed commanders, pilots, and ground crew in their efforts to find, fix, and finish targets (Air Force Fact Sheet, MQ-9, 2015).

Once deployed combat personnel realized the significant benefit of RPA capabilities, there was a widespread hesitancy to conduct missions without RPA support. Leadership valued RPAs for their significant contribution to the fight without the requisite logistical and financial burden of deploying an entire support unit for a manned aircraft operational squadron. Additionally, the risk of incurring battle losses dramatically decreased with RPAs versus manned aircraft, including potential losses to personnel, aircraft, and equipment. Senior leaders have indeed suggested that RPAs are the future for the Air Force. Given the increase in the demand for RPA support overseas, the need to fill the growing manning requirements has become an issue for the military. While

each airframe has its own challenges for industrial/organizational and clinical psychologists, the RPA platform seems to have more than its fair share of unique obstacles.

At the onset, RPA pilots did not have their own dedicated manning pipeline. Rather, they were pulled from other manned aircraft based on the assumption that the majority of the core Knowledge, Skills, Abilities, and Other characteristics (KSAOs) would transfer. In 2009 the Air Force developed an Undergraduate RPA Pilot Training program to train new pilots to fly RPAs. Presently, Naval aviation is grappling with whether to take rated aviators for RPA missions initially, and develop a direct pipeline and training program in the future, because, as mentioned above, the KSOAs may be very different for success. Naval Aerospace Experimental Psychologists (AEPs) are leading the way in this endeavor. This is less of an issue for the Army, with distinct missions in theater.

A second quandary for RPAs centers on the man-machine interface. The pilot is not actually in the aircraft, feeling the response to inputs. When an issue arises in the airframe, the aviator cannot hear, see, smell, or feel it in the way the plane moves—the gauges only tell part of the story. Further, another human factors issue is the actual design of these ground control units (GCUs). As the name suggests, RPAs are piloted by aircrew at remote distances. Specifically, RPA crews physically operate out of small containerized units called GCUs at remote facilities throughout the United States, though they are sometimes located overseas as well. GCUs are physically confining, geographically separated from support facilities, and have no sunlight, to name a few of the physical challenges.

Third, essential personnel typically perform shiftwork for extended duty hours to sustain 24-h operations. Fatigue impacts on aircrew have been researched and chronicled extensively. One study that surveyed RPA operators from three major commands concluded that among the top cited stressors were the long hours, shift work, and the requirement to sustain vigilance over long periods of time (Chappelle, McDonald, Thompson, & Swearingen, 2012). Chappelle et al. (2014)

research on Air Force Predator/Reaper operators sought to determine whether the long work hours (50+ h/week, 6-day work week), rotating shift work every month, uncertain shift schedules (12 h shifts 4 days in a row) and difficulty integrating operational and personal lives resulted in heightened “burnout.” Two of the three variables assessed predicted burnout: high exhaustion (swing or night shift, 51 h/week reported most exhausted) and cynicism.

A fourth concern in this arena is the nonstandard mission set, potentially leading to role confusion. Throughout the history of combat deployments, service members have physically prepared for deployment, departed their home station and country, and set off for an extended tour to some war torn country. They completed their mission with varying levels of contact with their family and friends at home. Then, at the appointed time, they packed up with their friends and colleagues and returned home. Once home, they reintegrated back into their roles as parents, spouses, sons/daughters, etc. With a few exceptions, this has been the “natural” flow of deployment, until the RPA mission arose. In the RPA community, all of these steps happen within one 24-h timeframe. Furthermore, because the nature of their mission set is classified and top secret, operators are not permitted to decompress or process their day with their families. While there are few studies about mental health outcomes in the RPA community, results from extant research are somewhat mixed. RPA pilots are reporting higher levels of general distress than manned aircraft pilots on self-report surveys. However, the concurrent diagnoses and treatment differences between the two groups are not statistically significant (Chappelle et al., 2012).

Finally, there is a concern about reputation among peers. Being assigned to RPA duty has not been celebrated in the same manner as pilots being assigned to manned aircraft. RPA pilots are often erroneously perceived as being video game operators instead of rated aircrew. They experience frequent “ribbing” by their manned aircraft colleagues.

Despite the career field’s inauspicious start and logistical issues, there is a growing phenom-

enon within the career field that is promising. In a recent interview with several RPA pilots (MQ-1 & MQ-9) and sensor operators, an overwhelming sense of pride was evident. One pilot stated that in no other career field could he go from college graduation to fulfilling the Air Force’s mission (fly, fight and win) in less than a year. This particular pilot was offered a manned aircraft training slot and turned it down in order to “make a difference faster” (David, Nic, & anonymous RPA pilots/sensor operators, 2017). There was a consensus among the 12 RPA pilots and sensor operators that there were continued challenges in the career field (namely shift work’s impact on their quality of life), but their individual ability to take the fight to the enemy and support ground forces was a clear positive for them.

When it comes to RPAs, one thing is clear: they are here to stay. In fact, they will continue to grow in their use and prevalence (Hoagland, 2013). All of the United States military services are fielding unmanned systems in rapidly increasing numbers to conduct operations across the range of military operations (e.g., battle space awareness, precision targeting, strike, chemical, biological, radiological and nuclear defense). There are a number of challenges the services will face that aeromedical psychologists are uniquely qualified to address. Medical standards have been outlined, but given the unique stressors, there may be an important role for aeromedical psychologists in terms of the clinical assessment piece. In terms of a larger organizational issues, aeromedical psychologists are involved in efforts to use job analyses to design assessment and selection measures, and they are likely to become involved in the training of those selected and evaluation of such training as well. We expect aeromedical psychologists will also have important input into improving teaming of manned and unmanned systems. Lastly, embedded aeromedical psychologists have the unique capacity to help RPA crews process their battle wins and losses. With the continuing improvement in the cameras used by United States Air Force RPAs, RPA crews watch the disastrous effects their weapons employment has on the enemy in vivid detail. Furthermore, with the

extensive dwell/hover time of RPAs, the crews also watch the emotional aftermath of weapons employment up to the burial of the target by his/her family and friends. Having aeromedical support on site in the unit or the GCU will help these professionals integrate their actions with their individual values and ensure mental resilience.

Conclusion

This chapter highlighted the many ways aeromedical psychologists provide essential services in the areas of assessment, selection, training, performance, safety, and well-being of aviation personnel. As aeromedical psychology may be considered a subspecialty of operational psychology, it is worth noting recent efforts capitalizing on the unique skills and assets aeromedical psychologists bring to the table, especially those functioning in an embedded role. The 160th SOAR (Abn) provides a nice model with its robust team of professionals supporting aviation personnel in an effort to maximize and sustain performance level over the long term. In addition to the aeromedical psychologist, there are additional embedded behavioral health providers, Chaplains, flight surgeons, a dietician, physical therapist, mental performance specialist (who has specialized training in sport psychology), Military and Family Life Counselor (MFLC), and fitness coaches. Night Stalkers are encouraged to seek out these professionals at any time in order to maintain an effective balance between their personal and occupational roles, with the intent of preventing physical or psychological injury that may require more intensive care.

In terms of future work for aeromedical psychologists, the Army will continue to utilize aeromedical psychologist skills at the brigade level, within the 160th SOAR (Abn), and in the instructor position at the APTC in Fort Rucker, AL. The Air Force has three positions for aeromedical psychologists, the Air Force Safety Center, the Aeromedical Consult Service at USAFSAM, and an embedded position with an aviation unit at AFSOC. As awareness of the benefits of embedding aeromedical psychologists

in line units occurs, increased opportunities will likely become available in the Air Force. In just the past few years, requests for embedded operational psychologists have more than tripled. It is hopeful that flying unit commanders will demand manning billets for aeromedical psychologists, as that will drive the development of these positions. The Navy may eventually see the implementation of embedded aeromedical psychologists too. Notably, there has been enormous growth in embedded and operational psychologists throughout the Navy, Marine Corps, and Army. For example, Operational Stress Control and Readiness (OSCAR) psychologists having been serving Marine Corps ground units for over a decade, and more recently, the Marine Corps created new billets to serve logistics units. As we continue to demonstrate positive results in those arenas, we hope to see aeromedical psychologists serving the Marine Air Wings, in addition to the evaluator/instructor position at NAMI. As well, it has been suggested Navy aeromedical psychologists may be quite useful serving in Aviation Medicine clinics to provide easier access for aviation personnel. For all the services, the aeromedical psychologist has become a more integral part of the aviation community.

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Barriers to Care for the Complex Presentation of Post-traumatic Stress Disorder and Other Post-combat Psychological Injuries

3

David S. Riggs and Sybil Mallonee

Since 2001, the United States has deployed more than 2.8 million men and women in support of wars in Afghanistan (Operation Enduring Freedom, Operation Freedom's Sentinel) and Iraq (Operation Iraqi Freedom, Operation New Dawn) (Meadows et al., 2016). For many military personnel who have deployed in support of these wars, service has not constituted a single deployment, but rather has required repeated deployments into combat zones separated by time in garrison and at home. The nature of these wars, characterized by repeated deployments, asymmetrical warfare, changing rules of engagement, and complex endgame/victory metrics likely complicates the psychological challenges inherent in combat.

It is not a new recognition that combat can potentially lead to significant long-standing psychological injuries. Indeed, descriptions of PTSD-like symptoms within the medical literature

can be traced back as far as the American Civil War (Tanielian et al., 2008). Historically, terms such as soldier's heart, shell shock, combat fatigue, and war neurosis have been used to label the psychological after-effects of combat. Since its establishment as a psychiatric diagnosis in 1980, PTSD has served as a focus for much of the research and clinical examination of post-combat psychological injuries. However, it is important to note that a variety of psychological problems may occur subsequent to combat exposure. Psychological problems identified among service members and veterans who have served in Iraq and/or Afghanistan include sleep problems (Selig et al., 2010), depression (Tanielian et al., 2008; Wells et al., 2010), PTSD (Tanielian et al., 2008; Thomas et al., 2010), and substance use problems (Jacobson, Ryan, Hooper, Smith, Amoroso, Boyko, et al., 2008).

In response to the psychological challenges of combat, the US military has taken significant steps to evaluate, mitigate, and treat the psychological injuries associated with combat deployments. These steps include the deployment of mental health providers into theater with troops; regular screening of troops for psychological health complaints; education of troops and leaders regarding the signs, symptoms, and treatment of common psychological health problems; and efforts to reduce stigma associated with seeking care for psychological injuries.

D.S. Riggs (✉)
Uniformed Services University of the Health
Sciences, Department of Medical and Clinical
Psychology, Bethesda, MD, USA

Center for Deployment Psychology,
Bethesda, MD, USA
e-mail: david.riggs@usuhs.edu

S. Mallonee
Uniformed Services University of the Health
Sciences, Department of Medical and Clinical
Psychology, Bethesda, MD, USA

Despite efforts to mitigate the psychological injuries associated with combat, it has become clear that a significant proportion of service members return from these wars with psychological health difficulties. Overall it is estimated that as many as 15–35% of OEF/OIF veterans experience substantial psychological distress and reintegration problems. Rates of individual disorders such as depression (5–15%) and post-traumatic stress disorder (PTSD) (4–25%) are also relatively high (Blakeley & Jansen, 2013; Garber, Zamorksi, & Jetly, 2012; Mayo, MacGregor, Dougherty, & Galarneau, 2013). In addition to diagnosable psychological disorders, returning veterans identify a number of other issues that may have a psychological basis and/or impact on psychological functioning. These include sleep disturbance, chronic pain, relationship difficulties, substance use/abuse, and suicidal thoughts or actions.

In addition to the psychological difficulties identified in returning veterans, a significant number of OEF/OIF veterans have experienced one or more concussions, or mild traumatic brain injuries (mTBI), during their service. Notably, the vast majority of the concussions that occur on the battlefield are the result of exposure to explosive blasts. The long-term sequelae of these concussions are still being identified, but it is clear that many veterans returning having experienced battlefield concussions complain of cognitive and emotional difficulties long after the initial effects of the concussion have subsided.

The rates with which psychological health problems and the sequelae of mTBI are reported among IEF and OIF veterans have contributed to these “invisible wounds of war” being characterized as the signature wounds of these wars (Tanielian et al., 2008). Despite the recognition that psychological injuries are among the most common injuries in veterans of the wars in Iraq and Afghanistan, caring for these wounds has proven challenging.

Beginning early in these wars, the military has had in place strategies for screening troops to identify individuals who may be struggling with psychological injuries and the sequelae of mTBI. Guidelines for the appropriate disposition of indi-

viduals who screen positive were also established early in the wars. In addition, the Department of Defense, working with the Department of Veterans Affairs, has established treatment guidelines for many of the most common psychological injuries identified among these veterans including PTSD, depression, anxiety, and substance abuse. Despite these efforts, it has become clear that a significant number of troops who might benefit from treatment are not receiving it. There are a number of factors that may contribute to the failure to obtain appropriate care, and psychologists or other mental health professionals can play a significant role in mitigating many of them.

Challenges to Getting into Treatment for Post-combat Reactions

Stigma Related to Seeking Psychological Care

It is generally recognized that military personnel experience a sense of stigma when it comes to seeking care for psychological injuries. The stigma around psychological health issues can be complex with service members experiencing (or perceiving) external negative consequences to identified psychological problems, as well as stigma related to their own internalized beliefs about psychological issues. One way that this stigma may manifest is as a reluctance to acknowledge to others, including care providers, the psychological health problems one is experiencing.

A study by Kline et al. (2010) suggests that such reticence does impact reporting. These researchers compared reports of mental health symptoms on anonymous surveys completed by National Guard troops to mental health symptoms reported on a required pre-deployment survey on which respondents could be identified. The researchers found significantly higher levels of mental health symptoms reported in the anonymous survey compared to the identified survey suggesting that the service members were underreporting symptoms when they could be identified (Kline et al., 2010). This hesitation to

acknowledge psychological health problems represents one potential barrier to service members accessing appropriate care for them.

Stigma can be viewed as a “mark” separating someone from other people and instead linking them to an undesirable characteristic (Jones et al., 1984). For service members, the sense of separation from others may be particularly important. Indeed, one of the chief stigma-related concerns expressed by service members has to do with worries that their commanders or unit mates will respond negatively. Military units generally operate as teams with each member depending on and supporting the others in a coordinated fashion. Mission success, and sometimes survival, depends on the team and each of its members functioning at a high level. Being identified as “no longer part of the team” or not being trusted by the members of the team carries significant risk for both the individual and the mission. Concerns about negative reactions from one’s unit mates thus represent another reason why service members may be hesitant to discuss symptoms they are experiencing.

Another aspect of stigma identified by service members is the belief that the presence of psychological health problems or seeking mental health care will negatively impact their military careers. There is a pervasive belief among service members that seeking mental health care will hurt one’s career by impacting his/her ability to get a security clearance, to deploy, and potentially affecting the command’s belief regarding whether the service members can handle the job. The recognition of this component of stigma has led to changes in policy and efforts to educate military leaders in order to reduce the problem. However, there are still situations within the military, particularly in specialty areas, where identified psychological problems can create career difficulties. The fact that service members can identify cases where careers have been damaged by the identification of psychological difficulties creates significant challenges for reducing stigma.

Service members’ concerns that their peers and leaders may perceive them as weak or unreliable because of the psychological injury that they

have received reflects, in part, a more general sense in our culture that persons with psychological health problems are weak or unreliable. It is possible for individuals to internalize these beliefs and attitudes, adding to the stigma that they experience when they have a psychological injury. The extent to which service members perceive the presence of psychological symptoms as evidence that they are weak or broken will increase their reticence to identify the problems. Similarly, beliefs such as “If I cannot take care of myself [because I have a mental health concern] then I cannot take care of my family or fellow troop,” can contribute to stigma. These internalized beliefs and attitudes can lead individuals to resist admitting problems, not only to others, but also to themselves.

Denial/Minimization of Symptoms

Researchers exploring barriers to service members seeking mental health care have found that the minimization or denial of symptoms or the view that they can “handle it on [their] own” can be a problem (Kim, Britt, Klocko, Riviere, & Adler, 2011; Stecker, Fortney, Hamilton, & Ajzen, 2007). Kim et al. (2011), for example, found that 65% of the service members in their study did not seek treatment because of views that they should be able to “handle it on [their] own” or they “did not want to believe [they] had a problem.” Anecdotally, there also appears to be an attitude among military members that mental health issues are not a “big deal” because “we all go through it” from time to time.

Military personnel tend to minimize symptoms/injuries—sometimes to the point of denial. To some degree this reflects fears related to external and internal stigmatization, discussed above, but it is also the result of other aspects of military culture and the particular views of many military members. The generally positive military values of “selfless service” and “mission above all” can contribute to a, sometimes, maladaptive denial of pain and distress and a “suck it up and move on” attitude that can contribute to a reluctance to acknowledge the need for help. Along these same

lines, service members recognize that if they are not able to complete their mission, then someone else will have to. In a deployed environment, this could mean putting someone else's life in danger instead of one's own, an act that goes against the shared values of service members.

Another factor that may contribute to the minimization of symptoms is the belief of service members that others have it worse than they do. Many service members have friends who have been severely physically injured or killed, and so they consider what they are experiencing as "not that bad" in comparison and think they should be able to handle it.

Discomfort with or Alienation from Care Professional

Even when service members overcome stigma and other barriers to acknowledging their psychological health issues, they may find it difficult to seek care. One reason service members may not seek care is that front-line troops may feel that mental health professionals do not share their values or understand the realities of their lives. This can lead to a sense of alienation from or discomfort with health care providers. This may manifest in various ways. For example, Kim et al. (2011) found that a lack of trust of professionals and negative views towards treatment in general were barriers to seeking care for many service members.

Some of this discomfort or distrust may reflect the "clash of cultures" between the military and the mental health culture. The military culture generally values the mission and team over the individual, pushing through pain, being tough, and stoicism in the face of challenge. In contrast, the culture of mental health care is one of talking about thoughts and feelings, valuing the individual, and discussing one's pain and distress. The process of traditional psychotherapy may also increase the service member's sense of vulnerability, particularly if he or she is not sure about what occurs in therapy. Feelings of vulnerability contrast sharply with the service members' training which values strength and resilience. As dis-

cussed above, the sense of vulnerability may be elevated by the perceived risk to one's career resulting from a visit to the mental health clinic.

Over the last several years, there has been a growing recognition that psychologists and other mental health care providers should acknowledge and respect the characteristics of the military culture. This may be of particular importance when the provider is a civilian without much prior experience with the military, but may also be useful for military providers with limited experience in the "front-line" world. Importantly, to better overcome the "clash of cultures," it may also be necessary to educate, or at least introduce, service members to the culture of mental health care.

Challenges Arising Inside the Therapy Office

Unfortunately, even if a service member overcomes all of the barriers described above and makes it in to see a mental health provider, there are issues that can interfere with her ability to receive appropriate care. Many of these issues have to do with the inherent complexity of post-combat reactions. Post-combat reactions are varied and multifaceted. They can impact many aspects of the service member's life differently, and frequently cannot be easily captured under a single diagnosis or label. As a result, both the service members and the providers may face challenges when conceptualizing and communicating about the reactions.

Mischaracterization of Symptoms by Service Member

Due to stigma, efforts to minimize symptoms or a lack of full understanding of their symptoms military personnel may mischaracterize their problems such that providers do not get the complete picture. In some cases, this represents a tendency or ability to give only "part of the story." For example, service members may complain of sleep problems, but neglect to mention the nightmares they are experiencing. Similarly, they may report

concentration problems but not discuss their depressive rumination. In some cases, providers may see service members who are identifying with relationship difficulties or parenting issues (see also Najera et al., Chap. 11, this volume), but who do not report (or recognize) the post-combat symptoms that are contributing to the problems.

One pattern of symptom reporting that has been observed and may contribute to the sense of symptom mischaracterization is the overreporting of physical symptoms (and the underreporting of psychological symptoms). For example, service members will sometimes present complaining of headaches, stomach aches, or fatigue rather than mental health symptoms. Along these same lines, we have noticed a tendency for service members (and some care providers) to attribute long-term post-combat problems to concussions rather than to psychological injuries such as depression or PTSD.

This may reflect somatization processes, but it may also reflect differential attitudes about physical and emotional symptoms. Britt (2000), for example, found that concerns about stigma were higher for psychological problems than for medical conditions. Whether the mischaracterization of symptoms reflects a hesitation to report psychological symptoms or simply a lack of recognition of the psychological symptoms by the service member, it is important that the provider conduct as complete an assessment as possible to fully understand the clinical picture.

Misdiagnosis of Symptoms and/or Mistaken Etiology of Problems by the Provider

For the behavioral health professional, the nature of the psychological reactions and injuries resulting from combat can lead to mistakes in the characterization of the disorder and the etiology of specific symptoms. In the case of PTSD and its symptoms, many of the diagnostic challenges arise from the lack of specificity in the symptoms included in the diagnostic criteria. Additional problems result from the high likelihood that PTSD will be accompanied by one or more additional psychiatric diagnoses (Jakupcak et al.,

2010; Lew et al., 2009; Tanielian et al., 2008). Also, the lack of a strict differentiation between the normative reactions of humans to prolonged or repetitive extreme stressors and the diagnosis of PTSD can lead to a mischaracterization of an individual's reaction to combat stress—sometimes pathologizing normative reactions and other times failing to identify a reaction as pathological rather than normative. Together, these issues may create a tremendously complex diagnostic puzzle for the professional.

In the DSM-5 (American Psychiatric Association, 2013), the 20 symptoms of PTSD are grouped into four categories: intrusion (or re-experiencing), avoidance, negative alterations in thinking and mood, and increased arousal. All of these symptoms are supposed to be tied to the traumatic event. That is, the symptoms should begin after the trauma or be significantly worsened by the traumatic event. However, few of the 20 symptoms directly reference the trauma and even some that do are not unique to PTSD. As a result, a person may present with symptoms that appear to be PTSD symptoms but that arise through very different etiological mechanisms. For example, one of the most common complaints from service members upon return from the combat zone (and also while deployed in the combat zone) is sleep disturbance, one of the cluster of arousal symptoms of PTSD. Disturbed sleep, however, could result from a variety of other illnesses, conditions, or circumstances, many of which would call for different treatment than PTSD (see also Campbell et al., Chap. 15, this volume). Thus, a careful assessment of the etiological factors associated with a particular person's sleep problems is necessary. Like sleep disturbance, many other symptoms of PTSD, including most of those in the negative thinking/mood and increased arousal clusters, overlap with other psychiatric and medical conditions.

The diagnostic picture is further complicated by the interaction of symptoms included within the PTSD construct. For example, disturbed sleep may lead to concentration and memory problems or to increased irritability. A person presenting for care following a combat deployment with sleep and concentration difficulties would meet

the requirement for two symptoms of increased arousal necessary for a PTSD diagnosis. However, it is certainly possible that the problems arise not from a trauma-related process, but rather from the sleep disruption often associated with deployments even in the absence of PTSD. Proper care requires a clear understanding of the etiology of these symptoms.

The issue of correctly diagnosing PTSD may be of particular importance for military personnel who have deployed into combat. The most common injuries arising from the current wars, namely PTSD, mild Traumatic Brain Injury (mTBI), and depression, have many symptoms in common. The problem of overlapping symptoms is made more complicated by the fact that PTSD, mTBI, and depression are not mutually exclusive diagnoses. Indeed, the presence of one of these diagnoses can serve as a risk marker (or perhaps a risk factor) for the other diagnoses. Thus, PTSD is often found comorbid with depression (Jakupcak et al., 2010; Tanielian et al., 2008) and the experience of an mTBI in combat appears to place individuals at risk for PTSD and depression (Hoge et al., 2008). Attending to the interplay of these different diagnoses and etiological processes is important for clinicians who will be treating military personnel with PTSD or other psychiatric injuries during or following deployments.

Why and How May We Address These Issues?

Providing service members and veterans with the appropriate care for PTSD and other combat-related injuries requires that each of the above issues is appropriately addressed. In order to get service members to come forward for treatment, we must reduce the stigma associated with injuries that are classified as psychological or psychiatric disorders. To this end, efforts will be needed to educate troops about these reactions and injuries as well as to increase trust of mental health providers. For their part, providers must understand the complexity and nature of post-combat difficulties and the numerous, potentially interac-

tive, etiological components that can contribute to these problems. In addition, it is important for providers to gain experience in the delivery of interventions that effectively treat the most common combat-related problems. These treatments would include but are not limited to Prolonged Exposure therapy (PE; Foa, Hembree, & Rothbaum, 2007) and Cognitive Processing Therapy (CPT; Resick, Monson, & Chard, 2016) for PTSD as well as cognitive behavioral therapy (CBT) for depression (Beck, 2011; Beck, Rush, Shaw, & Emery, 1979) and sleep problems (Perlis, Jungquist, Smith, & Posner, 2005). The variety of roles and positions held by military psychologists and other mental health providers offer opportunities to contribute to the changes necessary to improve the degree to which military personnel receive the care that they need for PTSD and other combat-related injuries and problems.

What Behavioral Health Professionals Can Do to Reduce Stigma

As discussed above, stigma related to mental health issues is commonly attributed to concerns about the impact of these issues on one's career, or on the relationships between service members and their leaders and unit mates. Additionally, a lack of knowledge about psychiatric illness in general and PTSD in particular contributes to stigma. It is probably also the case that lack of knowledge about mental health professionals and treatments may contribute to stigma about seeking care.

In general, attempts to reduce stigma have focused on large-scale efforts to normalize psychological reactions to combat and educate service members about the signs and symptoms of PTSD and other psychological issues. In addition, changes in requirements to report mental health care on official documents (e.g., applications for security clearance) and education about these changes have also been put forward to help reduce the stigma associated with PTSD and other combat-related psychological health issues.

Clearly, psychologists and mental health providers can and have contributed to education and normalization efforts. However, there are additional things that military psychologists and mental health providers can do to further the effort to reduce stigma. Each of the military services has worked to embed providers with operational units. These positions offer psychologists the opportunity to interact directly with troops and leaders on a regular basis. Mental health professionals with regular contact with troops and commanders are in a position to reinforce the messages in the large-scale education efforts to combat stigma. By repeating these messages regularly and in a more personal way, providers in these positions offer a unique opportunity to directly reduce the stigma of psychological injuries.

All mental health providers, but particularly those embedded with operational units, have additional opportunities to help reduce stigma associated with PTSD and other psychological injuries. As we have described above, a significant portion of the stigma associated with mental health issues in the military is related to the fear that unit members and leaders will ostracize the individual due to the psychological issues he or she is facing. Psychologists working directly with units and unit leadership, whether or not they are embedded, offer a unique opportunity to reduce stigma. The military unit is a close-knit team of individuals with a well-recognized leadership hierarchy. The attitudes and viewpoints of unit members often reflect those of the leadership—more specifically commissioned and senior non-commissioned officers. To the extent that leaders can come to understand the normative nature of many combat-related psychological injuries and support, rather than ostracize, troops who are coping with such injuries, attitudes throughout a unit can be shaped to be more supportive of these individuals.

Another way in which psychologists and other mental health professionals can help to reduce stigma is to reinforce the normative nature of psychological reactions to combat. As discussed above, some of the reticence to acknowledge psychological injuries arises from

the desire of troops to “stay with the team” and of leaders not to lose a valuable member of the unit. The extent to which psychological reactions to combat can be viewed as normative, rather than pathological, may help reduce stigma associated with such reactions. Indeed, there have been substantial attempts over the last decade to educate military personnel as to the normative nature of stress reactions during and after combat. Although these efforts may have helped to reduce stigma associated with such reactions, there are substantial complications arising out of the general absence of clear indicators for when a “normal” reaction to the stress of combat becomes an injury or illness that requires treatment.

Increasing the Understanding and Accurate Characterization of Psychological Injuries

As discussed above, one potential barrier to care for service members and veterans lies in the tendency of military personnel to minimize the psychological challenges that they are facing. There are a number of reasons, some motivated and some not, for why service members might not identify all of the psychological problems that they are experiencing. Some of these are grounded in the stigma discussed above, and others arise from the general tendency of military personnel to place service and the mission above their personal needs. A sense of “selfless service” is reinforced throughout military training. However, confusion also arises due to the lack of clear lines delineating normative responses to the extreme stress of combat from post-traumatic psychological injuries or diagnoses. In the absence of such clear distinctions, individuals are left to determine for themselves whether a particular problem, failure to sleep more than 5 h a night, for example, represents a “normal” disruption arising from extended time in a combat zone or is a symptom of a more severe and “pathological” response. Caught in this conundrum, service members may decide that this is “just the new normal”, particularly if

they can see similar reactions among their friends and unit mates.

Psychologists and mental health professionals may provide education about the nature of psychological reactions to trauma, both normative and pathological, that may help service members to better identify and report the problems that they are having. However, we must acknowledge that the science of psychology has not yet identified clear and clinically useful indicators of when normal reactions to trauma become “diagnosable.” Many of the symptoms of PTSD are commonly reported by individuals during the first few days after a trauma. Educating personnel about normal human reactions to trauma may help to alleviate some of these issues, but clinicians must take care not to “over-pathologize” psychological reactions. We must remember that this population takes pride in coping with and overcoming stress. If we suggest that all reactions require the attention of a clinician, we run the risk of alienating the service members and reducing the likelihood that they will seek treatment when it is needed.

In addition to education about the signs and symptoms of psychological injuries, psychologists and other mental health professionals should consider education about the “meaning” of the psychological injury. Among military personnel, psychological injuries may be seen as a sign of weakness. Such weakness may be seen as threatening to the unit that depends on each of members performing well under stress. Education focused on seeing these injuries as reactions to stress rather than some indication of psychological or emotional weakness may be important to reduce this problem. Similarly, encouraging the recognition that psychological injuries are usually temporary and treatable may encourage service members to identify and report the problems they are facing.

Acknowledging the lack of any clear distinction between the normative reactions to trauma and PTSD opens up another chance for psychologists and other mental health providers to address the combat-related issues of military personnel. Whether embedded with a unit or operating in other settings, providers may offer early interventions that may mitigate the need for more tradi-

tional therapy. These interventions may take the form of education or “coaching” sessions for groups of individuals on topics common to the situation such as “how to manage stress” or “how to improve sleep.” Working with unit commanders, it is possible that these “interventions” could be seen as part of an overall effort to improve the fitness and performance of the unit. This could have the added benefit of encouraging leaders and troops to view the mental health provider as working with the team to achieve goals, rather than working to disrupt it. In this role, the psychologist may take on a role more akin to a sports psychologist or an organizational psychologist working to improve performance rather than a clinical psychologist treating disorders.

As an alternative to the group “interventions” described in the previous paragraph, there may be opportunities for the mental health professional to engage individually with a service member to address issues before they become pathological. Along these same lines, though perhaps a bit further down the line into treatment, the opportunity to offer psychological counseling in settings other than traditional mental health clinics, by locating mental health professionals in primary care clinics for example, may help to identify and intervene even when the individual has not identified or reported all of the issues of importance.

Helping to Reduce the Clash of Troop Culture and Psychological Care Culture

Psychologists and other mental health care providers working with military personnel need to recognize that there may be significant misperceptions about our profession and more specifically about what happens in therapy. In general, the lack of information about what happens in therapy leaves open a myriad of possibilities in the minds of service members. A casual review of representations of psychotherapy in the popular media might leave one with the impression that clinical psychologists are typically ineffectual and frequently unethical. It is not very surprising

then that service members may be somewhat reticent to seek out therapy.

Psychologists must keep the perception of psychotherapy in mind and consider ways to address any misperceptions that might exist. Education about what mental health providers can do to further the mission of the unit or individual can be valuable. Similarly, education about the skill sets of psychologists and what happens when one enters into therapy may also be helpful in reducing anxiety among those who might benefit from psychological treatment. At the same time, mental health professionals must keep in mind that in the absence of information, we may also hold misperceptions about service members. It is important for providers to learn about the military culture, to include aspects that impact directly or indirectly on mental health care efforts.

Even in the absence of formal education about psychology and psychotherapy, regular informal interactions with service members could prove valuable in reducing the sense of the unknown that exists between service members and mental health professionals. Indeed, such interactions between mental health professionals and military personnel may prove beneficial in a number of ways. In addition to reducing the mysterious nature of psychology and psychotherapy, such interactions may provide opportunities for additional education about psychological reactions to combat as described above. Above and beyond the potential for education, though, such interactions offer the chance for informal assessment and counseling.

We have heard from numerous psychologists and other mental health professionals who report that while deployed as part of or alongside operational units they were able to interact informally with troops. Through these interactions, they were able to evaluate any changes in behavior that might have occurred, offer informal advice or counseling, and encourage individuals into treatment if necessary. Although embedding psychologists and other providers in specific units creates more opportunities for these interactions, it is important that the embedded psychologist take advantage of them. For mental health care providers housed in clinics, it is necessary to visit units periodically to interact with leaders and troops. At

this time, the logistics of such visits are not clear, but it may be worth developing policies and procedures to allow them. Such visits would allow providers to identify changes in behavior that might warrant attention or treatment, catch issue of psychological adjustment early allowing for quick and brief interventions, and possibly offer informal advice or counseling to encourage positive change without “formal therapy.”

Addressing Misdiagnoses and Mistaken Etiological Factors

The approaches discussed above highlight the potential roles that psychologists and other mental health professionals might play in improving the chances that service members receive care when it is needed. Equally important for ensuring that service members receive the proper care, clinicians must become familiar with the variety of possible post-combat psychological problems, the multiple etiological factors that can contribute to these problems, and the challenge of complex clinical presentations.

As mentioned above, PTSD is only one of several psychological disorders that can arise in the wake of combat including depression, anxiety, and the sequelae of traumatic brain injuries. In addition, there are a number of psychological, and psychologically related, issues that can create problems following combat but do not rise to the level of a psychiatric diagnosis. It is important that clinicians ensure that they are familiar with the problems that are likely to occur in the aftermath of combat and the variety of factors that can drive such problems.

When faced with a client who is presenting for treatment, clinicians must balance the desire to intervene with the recognition that problems arising from different etiological factors may require different interventions. The value of a careful and complete evaluation cannot be overemphasized. Clinicians must endeavor to explore multiple etiological factors and determine the degree to which each is (or is not) operating in a given case. Further, it is important to recognize that the evaluation process is ongoing, continuing beyond the

initiation of intervention, in order to confirm that treatment is alleviating the identified problems. This may be particularly important in the case of PTSD, which has symptoms in common with a number of other diagnoses and often occurs coincident with one or more disorders.

Treatment in the Context of Complex Clinical Presentations

The potential complexity of the clinical presentation following combat can be challenging to clinicians. It is important for clinicians to work to understand the various etiological factors as well as the interplay of different aspects of each case. At a minimum, it is necessary to hypothesize a link between presumed etiological factors and identified clinical goals. However, we find that it is also useful to postulate relations among the potential clinical outcomes. For example, we might propose that disturbed sleep contributes to increased irritability. This allows us to develop, and test, hypothesized changes resulting from enacted interventions. In the above example, we would predict that if we can intervene to improve sleep, the client should also become less irritable.

With complicated cases, we find it useful to diagram the various hypothesized relationships among etiological factors and symptoms. Although not strictly necessary, we find it helpful as a tool for keeping all of the clinical aspects of a case in order. Regardless of how a clinician approaches the problem, it is important that their understanding of the interrelations of the clinical problems serves as a guide to interventions that are used. Given the likelihood that multiple factors can be contributing to the presentation, there is a good chance that multiple interventions will be required. When and how to introduce these interventions should also be guided by the clinician's understanding of the interaction of the various symptoms (or problems) identified. The impact of different interventions on the various symptoms can be used to refine the clinician's working model of the case. Therefore, it is important to evaluate the symptoms repeatedly over the course of treatment.

Finally, the effective treatment of post-combat psychological injuries depends on the clinician being able to deliver treatments that actually work. Many of the most common combat-related psychological injuries including depression, PTSD, anxiety, and sleep problems have treatments that have been found effective (Beck, 2011; Foa et al., 2007; Perlis et al., 2005; Resick et al., 2016). The DoD and VA regularly update clinical practice guidelines to provide guidance to clinicians as how best to treat these problems. It is imperative that clinicians obtain training in the appropriate delivery of these treatments.

The Way Forward

The importance of psychological injuries in the context of modern warfare is difficult to exaggerate. Such injuries can have a negative impact on the readiness of service members to perform their duties as well as on their ability to effectively return home and reintegrate with families and civilian communities (Tanielian et al., 2008). Mitigating these potential problems will require a multifaceted approach that combines efforts at prevention, early identification and treatment, and rehabilitation and support for those individuals who struggle with these injuries long after their combat experiences.

Although prevention efforts already underway will continue and develop with time, it is unlikely that we will ever be able to prevent the psychological injuries associated with war. Therefore, the development, dissemination, and delivery of effective treatments for PTSD, depression, and other combat-related psychological injuries is imperative. Existing treatments, while highly effective for some, have not been found universally successful. Work will undoubtedly continue to increase the effectiveness of these existing treatments and to develop new approaches to treating these problems.

It is important for treatment developers and researchers to take into consideration some of the challenges faced by clinicians working to identify and treat the psychological injuries of service members as they work to develop and

improve treatments. The reluctance of service members to identify psychological injuries and engage in psychological treatment can make diagnosis and intervention more challenging. Similarly, the presence of multiple possible injuries, their overlapping symptom profiles, and comorbid presentation can complicate the clinical decision-making process. Future research would benefit from active engagement with the psychologists and therapists that are working to deliver combat-related care to service members. Such interactions may lead to innovative approaches to treatment and treatment delivery that could benefit, not only service members, but also other populations with complex clinical presentations who face notable barriers to treatment.

Summary

The goal of providing appropriate clinical care to service members and veterans who have experienced psychological injuries including PTSD as a result of combat is complicated by a number of factors. There are several barriers to service members seeking care including stigma, minimization of symptoms, and mistrust (or misunderstanding) of mental health professionals. Equally important, there are factors that complicate the delivery of appropriate care even after the service member has engaged with a clinician. Many of these factors reflect the complexity of post-combat reactions and the interplay of the various symptoms that may be present. A careful, systematic approach to assessment, case conceptualization, and treatment delivery can help assure that appropriate treatment is delivered to those who need it.

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Military Deployment Psychology: Psychologists in the Forward Environment

4

Jeffrey Ian Bass, Chad E. Morrow, David J. Loomis,
Wayne C. Boucher, and Joseph H. Afanador

Military psychologists from all services play a significant role in providing behavioral health care throughout the deployment cycle. They offer a broad range of preventive, consultative, and clinical services throughout all phases of deployed operations including mobilization and pre-deployment, deployment and sustainment, and the redeployment and post-deployment phases of military operations. These operations include offensive, defensive, and stabilizing activities in addition to humanitarian and peacekeeping missions. The purpose of this chapter is to provide a brief overview of the unique capabilities of American military psychologists who are engaged in forward deployed military operations at the forefront of combat and peacekeeping operations. While this chapter is focused on the practices of uniformed

psychologists assigned to the United States Army, Navy, and Air Force, many of the recommendations and strategies described may be applicable to foreign and international forces. Table 4.1 describes service-specific behavioral health capabilities used throughout the deployment cycle. These capabilities and resources will be discussed in greater detail throughout the chapter. Additionally, the Glossary (Appendix A) lists all acronyms described in this chapter.

Embedded Mental Health Assets: A Brief History

Active duty mental health providers were deployed to combat zones for the first time during the Korean War (Jones, 2013). In 1951, Colonel Albert J. Glass (US Army psychiatrist), realizing the shortage of psychiatrists, decided to utilize psychologists to their maximum potential, which included moving psychologists forward in combat alongside regimental/battalion surgeons and chaplains. Colonel Glass made a point of immersing psychiatrists and psychologists into the front line realities of combat, so that they could understand the needs of the Army as a whole and not overidentify with individual patients (Shephard, 2001). With this change, the psychologists and psychiatrists overcame their anxiety and guilt in making decisions as they became convinced that it was in the best interest of the service members

J.I. Bass (✉)
United States Army Recruiting Command
(USAREC), Recruiting and Retention School (RRS),
Fort Knox, KY, USA
e-mail: jeffrey.i.bass.mil@mail.mil

C.E. Morrow
USAF, Whispering Pines, NC, USA

D.J. Loomis
US Navy, Naval Medical Center San Diego,
San Diego, CA, USA

W.C. Boucher
US Navy, Rancho Santa Margarita, CA, USA

J.H. Afanador
Brooke Army Medical Center of Behavioral
Medicine, San Antonio, TX, USA

Table 4.1 Behavioral health deployment capabilities across US service branches

	Branch	Mobilization/ Pre-deployment	Deployment/Sustainment	Redeployment/ Post-deployment
Preventive, consultative, and clinical services	USA	DBH, BCT, SOF	BCT, COSC, CSH, SOF	DBH, BCT, SOF
	USN/USMC	OSCAR, DBH	OSCAR, CSH	OSCAR, DBH
	USAF	MHC, ST	COSC, ST	MHC, ST

Key: *BCT* Brigade Combat Team psychologist, *DBH* Department of Behavioral Health, *COSC* combat and operational stress control, *CSH* Combat Support Hospital, *MHC* Mental Health Clinic, *OSCAR* Operational Stress Control and Readiness, *SOF* Special Operations Forces Operational psychologist, *ST* Special Tactics Embedded psychologist, *USA* United States Army, *USAF* United States Air Force, *USMC* United States Marine Corps, *USN* United States Navy

to rejoin their combat unit. Colonel Glass and his colleagues concluded that rejoining the unit was the most effective way for a soldier to regain confidence and mastery over the combat situation. Military psychologists, general medical officers, and chaplains were all trained by Colonel Glass in his basic principles of combat stress management—proximity, immediacy, expectancy, and simplicity (PIES) for combat operations. Despite its marginal success and mixed response during the Vietnam War, this approach took root over the following two decades and became a deeply ingrained doctrine in all branches of the military (Shephard, 2001).

Navy and Marine Operational Stress Control and Readiness (OSCAR)

The US Navy, as the institutional and historical proponent for behavioral healthcare for sailors and marines, provided medical support to the Marine Forces in a somewhat haphazard manner during the Persian Gulf War (PGW); the medical doctrine supplied by the US Marine Corps did not incorporate the basic principles of combat psychiatry and did not mandate the mental health provisions necessary for treating a significant flow of combat stress casualties (Ragan, in Martin, Sparacino & Belenky, 1996). Lieutenant Commander Ragan was the lone psychiatrist assigned to the Second Medical Battalion Combat Stress Team, which was comprised of four psychologists and four mental health technicians. LCDR Ragan was a last minute individual augmentee (pulled from the Naval Medical Center Bethesda) who arrived in Al Jabail, Saudi Arabia on December 24, 1990, just

21 days before Operation Desert Storm began. The inadequacy of the Fleet Marine Force Manual in addressing combat and operational stress control (COSC) and the staffing of the Combat Stress Teams (responsible for the mental health care of over 40,000 marines and sailors) were key findings of the after action reviews. LCDR Ragan's experience in Al Jabail, while only marginally successful, was pivotal in focusing Navy medicine on the development of more effective combat stress support for the USMC.

In response to some of the lessons learned from the PGW, the Second Marine Division developed and fielded the Operational Stress Control and Readiness (OSCAR) program, in which psychologist, psychiatrists, and psychiatric technicians were organically assigned to marine operational units. Military personnel directly assigned to units as part of the organization's specific manning and staffing requirements are typically identified as organic (i.e., natural, internal) assets. From 1999 to 2003, the OSCAR program remained in the "concept phase," but as Operation Iraqi Freedom (OIF) morphed into OIF-2, it became clear that sustainment was going to require more support from Navy Medicine. Thus, in 2004, the Navy and Marine Corps dusted off the OSCAR pilot program and began to experiment with embedding mental health assets within Marine Ground Combat Element (GCE) units (Nash, 2006). Since 2004, the OSCAR program's mental health personnel have been continually assigned to GCE units. In 2008, assigning a permanent mental health program (OSCAR) to marine infantry divisions and regiments became a top priority for the Marine Corps Combat Development Command and the Chief of Naval Personnel. In 2009, the

Assistant Commandant of the Marine Corps directed the extension of OSCAR capabilities down to the infantry battalion and company levels by providing special OSCAR team training to existing medical and religious ministry personnel as well as to selected marines and line corpsman. The OSCAR program, while a major innovation in the management of COSC is actually nothing new. It is merely a more integrated COSC system that builds on the lessons learned through trial and error in many wars; it is the legacy of Colonel Glass.

OSCAR's Mission: To Conserve the Fighting Strength

Combat and operational stress accounts for up to half of battle casualties, significantly contributing to the loss of fighting forces and negatively impacting military readiness (Department of the Army, 2009). Replacement personnel are hard to come by, especially those with highly specialized Military Occupational Specialty (MOS) training; thus, preventing and managing stress-related injuries in theater provides a timely and cost-effective way to conserve combat power. Consequently, it has become increasingly evident that there is a need to place mental health assets closer to the front lines in order to mitigate psychological problems and combat stress-related injuries among deployed marines and sailors. In addition, research points to the importance of having subject matter experts within ground combat elements to build resilience and develop the optimum performance of our warriors (Figley & Nash, 2007).

In ancient times, the shaman/medicine man would positively frame a warrior's experience; among Native Americans, the tribal chief would award an eagle feather to a young warrior in recognition of valor (Keeley, 1996). This tradition is carried on in modern militaries through chaplains and their secular equivalents, mental health professionals, who help these modern warriors cope with grief related to combat losses, validate their understandable reactions in combat and reframe their acts as heroic, as opposed to cowardly or

inadequate as often viewed by the combatants (Tedeschi & McNally 2011). As long as there have been wars, there have been efforts made to mitigate the psychological costs, and the OSCAR program is merely an effort to apply science to this age-old problem. Operational risk management (ORM) is a key command function essentially unchanged since the beginning of war, but the exercise of command involves many things: (1) the gathering of information on the state of one's own forces, as well as on the enemy and on such external factors as the weather, terrain, health, and morale, (2) decisions must be made, detailed planning must follow, orders must be drafted and transmitted, their arrival and proper understanding by the recipients verified, (3) execution must be monitored by means of a feedback system, at which point the process repeats itself (Van Creveld, 1985). As one can imagine, a commander's time is very limited, and while the responsibility of ORM falls clearly to him (COSC is merely one aspect of ORM), the OSCAR provider plays a key role as a special staff officer providing the commander with the critical information necessary for him to make sound decisions about the fitness and/or deployability of his marines. The OSCAR provider effectively functions as the command's COSC officer; it is his or her job to assist their commander by providing prompt evaluations in forward areas and in garrison, providing clear dispositional recommendations to the commanding officer.

Future Challenges: Where Do We Go from Here?

To be effective, the OSCAR providers cannot retreat to a clinical setting, surrounded by medical and mental health colleagues; they must learn to be comfortable in the world of a US marine warfighter. Similarly, US marine leaders must learn to communicate with mental health professionals and consider their guidance, without losing the primary identity as a warrior. Only through mastering such challenges can we bridge the gulf that exists between warfighters and the mental health sciences (MCRP 6-11C/NTTP 1-15M, 2010).

Because of manpower shortages, absence of formal doctrine, lack of a formalized OSCAR provider training cycle, and special staff officers' lack of understanding of their roles, the OSCAR program, has not always lived up to its ideal. OSCAR mental health providers have not consistently been embedded down to the level of regiments. Full implementation of OSCAR, as the Marine Corps' model for integration of mental health services into military operations, will take time and further investments in terms of organizational restructuring. Furthermore, the elimination of the obsolete Division Psychiatry paradigm, which historically provided mental health treatment and consultation services from non-embedded psychiatric professionals, would be a good start. This change would streamline and eliminate redundant billets for an already critically undermanned specialty (i.e., psychiatry) and would firmly establish the Division OSCAR as a special staff officer who sets COSC policy and advises the Division General. Clarification of special staff function at the General's level is needed to determine who can serve as the "Division OSCAR": psychiatrist vs. psychiatric nurse practitioner vs. psychologist vs. licensed psychiatric social worker (currently only psychiatrists can serve as the Division OSCAR). While the Marine Corps' OSCAR program is an innovation designed to improve combat/operational stress control, there is no equivalent within the Air Combat Elements (ACE). Currently, Combat Stress Teams (CSTs) function like OSCAR for the ACE, but this support is only for the duration of a deployment. These teams are made up of individual augmentees, pulled from military treatment facilities and assigned to a combat support company attached to a Marine Logistics Group. If OSCAR providers (embedded assets) were added to the Army Tables of Organization (T/O) of the ACE, this would eliminate the need for CSTs (attached assets) and build on the OSCAR mentor/extender training already being implemented across the USMC. In July 2015, a Deliberate Universal Needs Statement (DUNS) recommending OSCAR for the USMC combat service support element (i.e., the Logistics Combat Element (LCE)) was submitted; it was

approved and validated by the Navy's Bureau of Medicine and Surgery and had been implemented in the summer of 2016. It would seem that OSCAR for the ACE would be the next logical step in the evolution of the OSCAR program.

While a Deliberate Universal Needs Statement (DUNS) recommending OSCAR for the Logistics Combat Element (LCE) was submitted in July 2015 (Hussey S., 2015, Personal Communication), unbeknownst to the Marine Logistics Groups (MLGs), a push to provide a more operationally ready medical force was already being made by the Navy's Bureau of Medicine and Surgery (BUMED), assigning Active Duty Navy Psychologists and Psychiatrists to LCE and; it was approved and validated in 2015. At this point, the officers have been assigned to each of the three MLGs and will report in Oct 2016, to be utilized as OSCAR providers (Swanson, M., 2016, Personal Communication). Training for the OSCAR providers is still not in place, nor has the decision been made regarding who is responsible (Naval Center for Combat and Operational Stress Control, Fleet Materiel Support Office, Naval Operational Medicine Institute for the curriculum or the provision of the training). A draft Marine Corps Order (MCO) is also needed to establish a working doctrinal foundation. An Operational Readiness Group is needed to refine an MCO into a final product ready for the Commandant's signature. Establishment of the Equipment (E) part of the T/O & E is still needed to determine what kind of equipment sets are required vs. desired: Does the Navy go with the Army psychology field kit or develop their own?

The OSCAR program assists in the "prevention, early identification, and optimal management of adverse combat/operational stress reactions" as well as routine psychological difficulties (Nash, 2006). The embedding of OSCAR assets throughout the Marine Corps (GCE, LCE, and ACE) has the potential to reduce stigma by providing timely, expeditionary care in theater as well as increase access to behavioral health in garrison. Ironically, it is the USMC that has more effectively executed the vision of Army psychiatrist COL Glass; however, his legacy lives on in the Corps. The integrated COSC system, of the

OSCAR program, with its embedded team member, advanced team members, and providers, has the potential to more effectively identify marines and sailors at risk. Organically provided proactive interventions are likely to decrease stigma, increase utilization, mitigate the damage inherent in war, and more effectively accomplish the mission of maintaining the fighting strength of the United States Marine Corps.

Navy Sea Duty Psychologists

An aircraft carrier has about 3000 personnel that are assigned to the ship. When an aircraft carrier deploys, an additional 1800 personnel embark as part of the Carrier Air Wing. The Carrier Air Wing is composed of approximately eight squadrons of fixed and rotary wing pilots and aviation support personnel. An aircraft carrier deploys as part of a Carrier Strike Group, which includes a destroyer and three cruisers. These smaller ships have independent duty corpsmen to provide basic medical care and rely on the aircraft carrier medical department or nearest shore command for support.

Beginning in 1997, psychologists have been assigned to aircraft carriers to provide mental health services as part of the ship's organic medical department (Wood, Koffman, & Arita, 2003). The primary role for the psychologist on an aircraft carrier is force preservation through direct patient care. As the only mental health provider, he/she is solely responsible for all outpatient and inpatient mental health care and also runs the substance abuse rehabilitation program. The psychologist has one behavioral health technician and one or two substance abuse counselors to assist him/her in running the mental health division.

Pre-deployment and Post-deployment Activities

Prior to deployment, the ship, its crew, and attached air wing must go through sea trials and certifications to demonstrate operational readiness. Sea trials are short underway periods that range from 4 to over 30 days in length. Each air-

craft carrier has a homeport that is near a large military treatment facility. While in port, the ship serves as the office for the psychologist and sailors are expected to get their mental health care on the ship. The military treatment facility mental health clinics can provide specialized and longer-term treatment, as well as initiate Limited Duty as necessary, to sailors while in homeport.

In the months prior to deployment, it is common for mental health referrals to increase. Pre-deployment sea trials are packed with training evaluations, which make for long and arduous workdays. A combination of operational stress and personal stress can push many sailors to their limits. It is important for the psychologist to maintain a good balance of empathy and compassion with clinical scrutiny to assess which sailors are not suitable for sea duty. Once deployed, resources are limited and must be conserved for sailors who will be able to do their job and complete the mission. The primary clinical issues during post-deployment are centered on reunion, reintegration, and substance abuse. After completing a deployment, carriers often move into a phase called planned incremental availability during which time the ship undergoes repair, maintenance, and pre-deployment work-ups.

Deployment Outpatient Care

Outpatient care is carried out much like any military outpatient mental health clinic. Sailors can self-refer for assessment and treatment or may be referred by their medical provider, a chaplain, or someone in their chain of command. The psychologist can expect to see 30–35 patients per week, typically working 6 days a week. Office hours are flexible so the psychologist can organize her/his schedule as needed to accommodate the needs of the ship. The behavioral health technician can assist in triaging and scheduling patients, as well as conducting initial interviews and psycho-educational intervention. Short-term therapies are most appropriate for this environment; however, group therapy is a useful therapeutic adjunct because it can extend the patient pool while allowing a sole provider to manage a large caseload. An inherent

risk of this modality is the lack of confidentiality because the group members work, live, and eat together in a relatively enclosed environment; therefore, interaction outside of the group setting is almost guaranteed.

Urgent Care

The psychologist is not only the outpatient provider, but is also on call 24/7 for urgent or emergent mental health assessments. The most common urgent assessment is for suicidal ideation, but may include bizarre or psychotic behavior, mania, or even severe panic attacks. When a sailor presents to medical for a safety assessment, he or she may be initially screened by the medical duty crew, but the psychologist is expected to respond to complete the assessment and disposition for the patient. Irrespective of service (e.g., Army, Navy, Air Force), all active suicidal behaviors must be reported to the Commanding Officer as a risk management strategy to protect the individual service member, as well as for the Commander's and organization's situational awareness to determine duty administrative actions.

Assessing for suicide risk is often a complex task. Within the military, there is frequently a high level of non-therapeutic motivators (e.g., avoidance of deployments or other military duties) associated with suicidal thoughts, so the assessment must include identifying variables that may have a direct impact on the experience of suicidal thoughts. Interventions may include having the sailor moved out of a work-center or division, temporarily reducing their workload or responsibilities, generating support and encouragement from their chain of command, and at times, initiating administrative separation from the Navy.

Inpatient Care

Inpatient care on the ship is limited and is largely used for managing patients that are suicidal or gravely disabled due to psychotic or manic symptoms. The sailor's department must provide a non-medical assistant to conduct a one-on-one

watch while the sailor is kept on the medical ward. Treatment options are limited largely to medication and bibliotherapy as the psychologist has an outpatient clinic to run as well. Ideally, a sailor can be returned to work within a couple of days; at times, however, the sailor must be medically evacuated from the ship to the nearest hospital with an inpatient psychiatric ward.

Boundary Issues

Dual relationships are unavoidable when a psychologist is embedded in an active military unit, which is especially true on an aircraft carrier (Johnson, Ralph, & Johnson, 2005). While sometimes described as a "city on the water," the space utilized on the carrier for non-work activity is relatively small considering the number of personnel. Maintaining good professional boundaries is a daily activity. It is not uncommon for the psychologist to see a patient in a passageway, hangar bay, gym, or wardroom (where officer's meals are served). The Navy psychologists must strive to preserve an appropriate professional distance, while at the same time, regularly interacting with personnel around the ship.

Air Force Special Tactics Psychological Applications: Deployment Cycle

The goal of embedding a psychologist in any organization is to optimize operational performance; increase, maintain, or reinforce resiliency; and ultimately provide a complete continuum of psychological/behavioral care for the unit members (e.g., operators and support staff) and their respective families. To achieve this end state, the embedded psychologist should utilize various mechanisms on various levels to meet the commander's intent and operator/support staff need. Engagement with the consumer can occur in the following areas/roles: performance enhancement, performance consultation, performance impairment, and performance termination. In Special Tactics (ST), the embedded psychologist's primary role is to support the war

fighter and the staff that supports them. Since most of ST personnel are selected and/or complete a rigorous 2-year training pipeline, most of the work that the embedded ST psychologist engages in is performance enhancement or performance consultation. It is under these areas/roles, that the operators/support staff and the embedded psychologist prepare for and/or address any deployment related issues. In ST, the deployment is broken into 15-month cycles. The operator/support personnel are either deployed or training away from home for 11.5 months out of that 15-month cycle. In other words, the units and their personnel are constantly preparing for deployment with very little time for reconstitution.

The overarching goal of the embedded psychologist is to be present as much as possible to constantly ensure all personnel are operationally and psychologically ready for deployment and/or reconstituting from deployment. In addition to this constant presence, the embedded psychologist has some specific deployment-related tasks that revolve around the following time-frames: 90 days pre-deployment, deployment, mid-RIP deployment, post-deployment, and 90 days post-deployment.

90 Days Pre-deployment

During this time frame, the embedded psychologist has two core tasks. First, he/she will provide psychological education during the Special Tactics Squadron (STS) Academic Week. The training will consist of several topics including, but not limited to, adrenaline management, energy management/tactical napping, mind tactics (e.g., awareness of thoughts), effects of lethal action, and purpose. Adrenaline management, for example, helps the warfighter learn advanced physiological strategies to control heart rate, blood pressure, nervousness, and tension. Similarly, mind tactic exercises help the operator minimize internal and external stimuli to improve focus. Collectively, these exercises bolster the operator's self-management skills and ability to achieve mission success in operational and non-operational contexts. Typically, the embedded psychologist briefs the entire STS as a group and

follows up with individual consultations upon request. Second, the embedded psychologist will conduct a face-to-face consultation with every member deployed to address any questions, provide any skills training, and update their internal tracking system. These consultations range from 15 to 45 min, and are conducted for both operators and support.

The ST internal tracking system is used by the embedded psychologists, physical therapists, emergency medicine physicians, and chaplains. The psychological, medical, and musculoskeletal health of the force is captured/illustrated in a color-coded format that was developed by Special Tactics leadership, and is used during each stage of deployment to ensure personnel are healthy and ready to deploy. A stick figure is used for this tracking system with the color red representing minor musculoskeletal issues and blue representing minor psychological issues, while yellow represents both musculoskeletal and psychological issues. Simply put, it is a non-verbal color-coded picture that is easy to read by all levels of leadership. It has been highly effective in obtaining resiliency resources in ST.

Deployment

As the ST forces deploy overseas to any area of operations (AO), the embedded psychologist (as well as the rest of the Human Performance Team which consists of a physical therapist, physician, chaplain, strength and conditioning coach, licensed clinical social worker, and physician assistant) deploys forward with the unit. In the AO, the psychologist will increase cohesion and relationships with the unit personnel, provide any last minute consultations, and address any issues (e.g., caffeine use vs. modafinil) that occur before the forces depart to join their teams. The embedded psychologist will typically spend 30 days in-theater ensuring the force is postured well for the next 6 months and that leadership is aware of any in-theater assets (e.g., TBI clinic). Occasionally, when down-range, unit members will experience a casualty (e.g., wounded in combat) and the embedded psychologist will travel to meet the unit member to ensure

they are psychologically prepared to return to duty (RTD). The last specified tasks for the embedded psychologist during the deployment cycle is to ensure all unit members have a current neurocognitive assessment (NCAT), which is re-administered if any unit member experiences any head trauma (e.g., IED), and to ensure that his or her psychological opinion is shared with the decision makers who determine if the unit member should RTD.

Mid-RIP (Relief or Replacements in Place) Deployment

Given the nature of the ST mission set, it is common for anywhere between 10 and 20 personnel to forward deploy as replacements. The unit personnel that are chosen to deploy mid-rotation will receive the same psychological training/consultations as the main body (e.g., psychological skills training via mass briefing and individual face-to-face consultations). Once the replacements are completed, the returning unit members will return to base and complete their post-deployment activities with the psychologist, which will be discussed in the next section.

Post-deployment

Roughly 30 days prior to the completion of the unit's combat rotation, the embedded psychologist, along with the rest of the Human Performance Team, will again forward deploy to the AORs. As the unit members return to the Special Tactics Operations Center (STOC), each person will complete a psychological debrief which includes, but is not limited to, normalization of sleep adjustment, hyperarousal, hypervigilance, communication, and other learned behaviors that require adjustment upon return to the states and their families. The embedded psychologist will also assess/review areas that have historically created adjustment difficulties after a deployment (e.g., loss of a team member, poor leadership, relationship problems, etc.). After each member completes his or her psychological (and physical and medical) debriefs, the Human Performance

Team will update the internal tracking mechanism (e.g., Stickman chart) to capture/illustrate the health of the force post-deployment.

90 Days Post-deployment

After the unit members return from deployment, take their compensatory time off (CTO) and leave, and begin training again, all unit members complete a 90-day post-deployment debrief with the embedded psychologist (and other members of the Human Performance Team). Each unit member who deployed (for either a half or full-rotation) will meet with the embedded psychologist to review their reintegration, teach any needed skills (e.g., adrenaline management), and ensure that both they and their family are psychologically healthy. Upon completion of the debriefing, the unit's Human Performance Team will meet again and update the internal tracking mechanism for the last time for this deployment rotation.

At this point, the internal tracking mechanism for the unit will capture/illustrate the holistic health of the force (e.g., psychological, physical, medical, and spiritual) from 90 days pre-deployment all the way through 90 days post-deployment allowing the Human Performance Team and the command to track the short- and long-term effects of a constant deployment cycle while ensuring their personnel are receiving holistic care. Simply put, the embedded psychologist's (and other Human Performance Team members) job is to ensure as many unit members as possible are green, meaning healthy to deploy and complete the ST mission.

In addition to working with the active duty military members before, during, and after a deployment, the embedded psychologist (and Human Performance Team) also provides specific services for the families during the deployment. First, during pre-deployment, all spouses are briefed on the normal psychological expectations for them and their spouses related to deployment. Second, during mid-deployment, all spouses are briefed on common reactions involving reintegration and how to best handle them. Third, post-deployment, the spouses and unit members are offered a family

retreat off-station that primarily focuses on senior leaders reviewing lessons learned from their relationships in an attempt to decrease any future relationship problems in the unit. Throughout an ST deployment, the embedded psychologist (and Human Performance Team) ensure that both the unit member and his or her family are healthy.

Army Deployment Psychology

To soldiers and their families, a deployment consists of military duty Outside of the Continental United States (OCONUS). In the Army, a psychologist will either deploy as an organic asset to a unit or as an individual augmentee. Currently, deployable units with over 3500 soldiers will usually have a psychologist assigned to it. However, for those units without a psychologist, one can be assigned through the Professional Filler System (PROFIS). A PROFIS psychologist, who is usually assigned to a hospital, is only on loan for the duration of the deployment with the expectation that they will return to their original duties upon completion of the mission.

Similar to a garrison (non-deployed) environment, a deployed psychologist can support numerous and diverse missions, which can be broken down into two main categories: a medical mission or an operational mission. Most Army psychologists who deploy will support the medical mission, usually while assigned to a brigade. The medical mission is typically clinical in nature characterized by the provision of varied cognitive behavioral prevention and treatment modalities. The operational mission, on the other hand, may focus more on a performance enhancement and organizational consultation model and less on a traditional clinical service delivery model. Although there are a variety of brigades that psychologists can support, such as a Brigade Combat Team (BCT) (e.g., Infantry, Armor, or Stryker), a Support Brigade (e.g., Combat Aviation), or a Functional Brigade (e.g., Medical Brigade), an Army psychologist will be expected to provide some sort of clinical or administrative service. If assigned to a unit such as a Combat Support Hospital (CSH), a psychologist can expect to work in a setting with the capabilities

of a modern hospital. A CSH is a fully functional hospital that can support a variety of medical services including surgery, pharmacy, X-ray, and even a working blood bank. Psychologists in this setting will have the benefit of being surrounded by medical professionals, including other behavioral health providers. Psychologists assigned to a CSH will be expected to provide therapy, psychological testing, and consultation to commanders, much like a garrison setting.

However, if deployed with a BCT or Combat Operational Stress Control (COSC) Detachment, there is a possibility that the psychologist will be the only behavioral health provider for hundreds of miles. Depending on the mission or location of the unit, the psychologist may also be expected to live in an austere environment. For obvious reasons, unlike a traditional hospital setting, patients are not always able to travel in order to receive therapy. Therefore, psychologists should be prepared to travel to, and stay in austere environments for an undetermined amount of time, in order to provide behavioral health treatment to a service member(s) in need.

Even while deployed, psychologists will still have to treat the same issues they would in the United States. Regardless of the location, service members will still experience anxiety, fear, and depression, and request services for martial, financial, and legal problems, as well as substance abuse and grief therapy. Occasionally, Army psychologists will themselves experience similar stressors due to the multitude of roles, responsibilities, and demands placed on them during deployed operations. Whether officially or unofficially, psychologists will also be in a position to provide guidance (e.g., supportive counseling) to commanders, as well as assist medical providers who experience compassion fatigue due to repeated exposure of treating service members who experience injury/death while in combat.

Operational Mission

When a psychologist supports an operational mission, they are not deploying as a healthcare provider. Instead, the psychologist serves as a consultant

and expert in human behavior. Operational psychologists supporting personnel recovery missions provide related non-clinical consultative services. The personnel recovery mission involves recovering isolated individual(s) who were held captive by a hostile organization. Although the specifics are outside the scope of this chapter, psychologists involved with this mission are expected to assist the recovered person(s) through the reintegration process. Psychologists involved in this mission are also expected to advise commanders on how to balance the need of the recovered individual(s) with the need to gather information on the hostile organization. The personnel recovery consultation mission is substantively different from traditional behavioral healthcare because there is no provision of diagnostic assessment, treatment planning, and the formulation and maintenance of a patient–therapist relationship.

Brigade Combat Team Psychologist

Army psychologists have played an integral role in wartime service for the better part of the twentieth century. During World War I, Army psychologists were primarily engaged in the mental health screening of recruits, intelligence testing, and the assessment and selection of “men for tasks requiring special aptitude” (Yerkes, 1918, p. 92). The role of Army psychologists evolved dramatically during World War II to include their participation in performance enhancement, training and leadership development, personality testing, and assignment to military hospitals (Uhlener, 1967). In the Korean and Vietnam Wars, Army psychologists began treating soldiers in forward deployed environments by their integration with mobile psychiatric detachments. The development of COSC teams in 1994 ensured that Army psychologists would have a doctrinal base for providing forward deployed psychological services (Jones, 1995). The Department of the Army Field Manual (FM) 8-51 specified the organization and tactical operation of division mental health sections and combat stress control units (Moore & Reger, 2007). As part of the Division Mental Health activity, combat stress

control units, composed of several behavioral health officers including an Army psychologist, could conduct prevention and treatment services in forward deployed environments. The role of Army psychologists expanded in the early 2000s through the creation of the Brigade Combat Team (BCT). Army psychologists were assigned as organic BCT psychologists to support the restructured Army BCT organization. This streamlined military organization emphasized modularity, scalability, and rapid mobility (Bailey Williams, Komora, Salmon, & Fenton, 1929; Warner et al., 2007a, 2007b).

The purpose of this section is to provide a brief overview of the “best practices” employed by BCT psychologists during multiple stages of the deployment cycle including the mobilization/pre-deployment, active deployment/sustainment, and redeployment/post-deployment phases. The tactics, techniques, and procedures (TTPs) discussed in this section offer a snapshot of the diverse practices of a BCT psychologist. These TTPs have yet to be empirically validated; however, anecdotal accounts from a wide range of Light Infantry (Airborne) and Stryker Brigade command teams and soldiers alike have reported substantial benefit from these practices. Additionally, this section provides TTPs that are consistent with the principles of the CARE (consultation, availability, resiliency/prevention training, and early intervention) framework outlined by Warner, Appenzeller, Breitbach, Mobbs, and Lange (2010) in their discussion of effective battlefield mental health care.

Army BCT psychologists are military Behavioral Health Officers (BHO) that provide broad-based clinical care to soldiers within their organic units. They provide consultation and advisement to military commanders regarding behavioral health issues and behavioral health trends among individual soldiers and units (e.g., battalion and company level elements) (Bryan, 2013). BCT psychologists live, train, and fight alongside those who they provide care to. They practice the foundational military mental health principle of *forward psychiatry* using the clinical intervention concepts of proximity, immediacy, expectancy, and simplicity (PIES) and brevity, immediacy, contact, expectancy, proximity, and

simplicity (BICEPS) previously discussed in this chapter (Department of the Army, 1994; US Department of the Army, 2006). These elements of deployment psychology suggest that preventative and restorative psychological services should be offered to soldiers as simply, quickly, and as close to their units as possible. This doctrine also recommends setting the expectation among aggrieved soldiers that combat-related stressors and concomitant combat stress reactions are normative and easily ameliorated with appropriate care. These foundational deployment psychology concepts are outlined in the US Army COSC Field Manuals (FM) 8-51 and 4-02.51 (Jones & Wessely, 2003). While there is no formal doctrine or field manual prescribing day-to-day practices of BCT psychologists in particular, organic psychologists generally follow this doctrine for all but the most serious clinical cases during deployment operations.

Mobilization/Pre-deployment

One of the primary goals of a BCT psychologist during the mobilization/pre-deployment stage of a deployment is to develop strong relationships with their command teams. A simple, yet effective strategy for developing critical command team relationships is to learn the names, roles, and responsibilities of all members of their leadership. BCT psychologists should meet individually with primary staff members in the brigade, battalions, and companies including all company commanders, platoon leaders, executive officers, sergeant majors, first sergeants, and platoon sergeants. BCT psychologists should establish formal introductory meetings with each of these individuals as early as possible to succinctly describe their military mental health mission (e.g., conserve fighting strength), capabilities, and limitations. They should also use this time to obtain adequate information and intelligence regarding the special needs and requests of their consumers (e.g., command teams, soldiers, and units). From the outset of the mobilization/pre-deployment stage, BCT psychologists should also develop strong collegial and consultative

relationships with special and support staff such as the brigade's and battalion's chaplains, surgeons, physician's assistants, medics, staff judge advocate, and other specialty staff officers (e.g., staff personnel). The purpose for developing and maintaining these relationships early on in the mobilization/pre-deployment phase is multifold. Firstly, it establishes the BCT psychologist's position as a vital and interested member of the organization; secondly, it provides a medium to assess the overall tone and tenor of the organization for which the BCT psychologist supports; and thirdly, it opens the door to expediently and effectively identify soldiers and units most in need of behavioral health intervention.

Another helpful strategy to implement during the mobilization/pre-deployment stage of a deployment is to accurately assess which soldiers are unlikely to meet the primary mission of successfully performing their military occupational specialty throughout the deployment cycle (Wilcox & Rank, 2013). BCT psychologists should assist all command teams in identifying who should not participate in a military deployment due to psychiatric deployment limiting conditions or due to the increased likelihood of marked behavioral health degradation while deployed. These soldiers should be recommended for rehabilitative treatment in garrison or administrative discharge from the Army in accordance with all applicable fitness for duty and administrative separation regulations. Soldiers should be recommended for deployment if they can be treated effectively while deployed and can simultaneously accomplish their combat missions throughout the duration of the deployment. BCT psychologists should encourage command teams to deploy with as healthy a force as possible due to the likelihood that combat stressors will magnify current behavioral health difficulties in a deployed setting. However, BCT psychologists must always keep in mind that appropriate triaging and treatment planning of deployment eligible soldiers must be informed by sharp clinical judgment, appropriate consultation, and adherence to applicable military regulations.

Another critical function of the mobilizing/pre-deploying BCT psychologist is to educate

command teams on the varied prevention, consultation, and clinical capabilities that he/she can provide throughout the deployment cycle. BCT psychologists should formally schedule brief, yet practical, company-level Officer Professional Development (OPD), and Non-Commissioned Officer (NCO) trainings during the mobilization/pre-deployment phase to describe the following capabilities: (1) Command consultation regarding behavioral health trends and strategies for improving the behavioral health functioning of individuals and units; (2) the nature and practice of supportive counseling and cognitive behavioral therapy interventions; (3) utilization of psycho-educational groups to address combat and deployment related stressors and associated mitigation techniques; (4) the implementation of traumatic event management (TEM) following potentially traumatizing events; (5) utilization of a Unit Behavioral Health Needs Assessment (UBHNA) that provides a description of unit behavioral health trends and attitudes; and (6) the function of COSC teams.

Mobilizing/pre-deploying BCT psychologists should also provide concise and pragmatic trainings on the regulations guiding common administrative and clinical behavioral health practices. Ideally, this should be done at the platoon level to allow for positive group interchange. However, if this is not possible due to scheduling and logistic limitations, BCT psychologists should inform command teams and company-level elements of the primary behavioral regulations guiding their practice. They should describe the regulation that prevents behavioral healthcare assets from disclosing the provision of routine behavioral healthcare (Command Notification Requirements to Dispel Stigma in Providing Mental Health Care to Service Members, DoDI 6490.08). BCT psychologists should also describe the psychological conditions and treatment parameters that preclude deployment through a discussion of the Department of Defense Instruction on Deployment-Limiting Medical Conditions for Service Members (DoDI 6490.07). Furthermore, BCT psychologists should provide trainings on the policy, purposes, and procedures of command-directed mental health evaluations outlined in Mental Health Evaluations of Members of

the Military Services (DoDI 6490.04) and administrative separations outlined in Administrative Separations and Standards of Medical Fitness (AR 40–501). Command-directed evaluations are generally recommended on an emergent or non-emergent basis for a variety of concerns, including fitness for duty, occupational requirements, safety issues, significant changes in performance, or behavior changes that may be attributable to possible mental status changes (DoDI 6490.4). Administrative separation mental health evaluations are typically conducted to rule out severe psychopathology to preclude or expedite administrative discharge.

Another helpful service that BCT psychologists can provide during the mobilization/pre-deployment stage is to conduct stress inoculation trainings for soldiers and their families on the difficulties inherent in deployments. These trainings should be conducted at the platoon level to provide a more intimate and interactive forum. Such trainings can be facilitated with other “caregiving” staff including chaplains, physician assistants, or other behavioral health assets. Additional trainings can include teaching service members how to cope with spiritual crises or crises of meaning, managing long-distance relationships, identifying and coping with common reactions to combat, and general stress management. The Walter Reed Army Institute of Research (WRAIR) Land Combat Study brochure (2006), entitled “10 Tough Facts about Combat: What Leaders Can Do to Mitigate Risk and Build Resilience”, may serve as a useful reference during related mobilization/pre-deployment trainings.

Deployment/Sustainment

Upon arriving in theater, BCT psychologists should reiterate their availability and earnestness to conduct the full gamut of preventive, consultative, and restorative clinical behavioral health services. BCT psychologists should inform all leadership, support staff, organic and attached units within their area of operations (AO) that they are able and ready to care for their personnel wherever they are located.

Restating one's accessibility in an enthusiastic and pointed fashion will instill confidence in commanders and soldiers alike that their behavioral health needs will be supported in a timely and diligent fashion.

During this phase of the deployment, the BCT psychologist should engage the Division Mental Health leadership, local COSC team, and/or any collocated behavioral health assets (e.g., psychiatrists, psychologists, psychiatric nurses, social workers, enlisted mental health technicians, etc.) as soon as possible to formulate a coordination plan to address the behavioral health needs of service members within their catchment area. Generally, this area will include the Forward Operating Base (FOB) where the BCT psychologist is housed and where his/her organic behavioral health clinic is located—typically adjacent to the Medical Company that is responsible for all medical area support—and any outlying Combat Outposts (COPs) or smaller battle posts within the Brigade AO. Once the BCT psychologist has successfully collaborated with any existing COSC or other behavioral health assets, he/she should request that they share behavioral health operations. Some units prefer to have their soldiers receive behavioral health services exclusively from their own BCT psychologist or “someone who wears the unit patch,” as in the case of a BCT Behavioral Health Officer (e.g., Licensed Clinical Social Worker) that may be assigned as the Brigade Behavioral Health Officer in place of the BCT psychologist. However, most command teams are happy to have any behavioral health asset address the needs of their soldiers regardless of whether they are organic to the unit or not, as in the case of a COSC team. Ultimately, it behooves the BCT psychologist to actively engage and cooperate with all behavioral health assets within their AO to help serve the greatest number of soldiers possible. This collaborative strategy can dramatically mitigate availability and accessibility issues that often appear during the deployment/sustainment phase of operations. BCT psychologists must guard against being territorial and possessive about the type and quality of care provided to soldiers organic to their brigade, particularly when offered by other behavioral health providers. Clearly, there is no guarantee that other behavioral

health providers will follow relevant Army regulations, ethical guidelines, and standards of care that embedded BCT psychologists faithfully abide by. However, continuous collaboration and consultation are they mainstays for ensuring appropriate care for one's soldiers irrespective of the pedigree of the healthcare provider.

The next most relevant action during the deployment/sustainment phase of a deployment is for the BCT psychologist to engage in continuous and predictable battlefield circulation. Battlefield circulation consists of traveling throughout a unit's AO on a regular basis to provide comprehensive behavioral health services to as many soldiers and units as possible. Battlefield circulation operations include providing command consultation regarding the behavioral health functioning of individual soldiers and units; crisis intervention and management of potentially traumatizing events following serious accidents, deaths, and other combat-related experiences; the provision of individual and group therapy; completion of command-directed behavioral health evaluations, administrative evaluations, and specialty school evaluations; and conducting a variety of briefs and small group trainings on topics pertaining to resiliency, psychological first-aid, and performance enhancement. Although there is a dearth of research on the efficacy of small group interventions, some limited data suggests a small, but positive effect size among deployed combat veterans (Bliese, Adler, & Castro, 2011 and Russell et al., 2014).

Battlefield circulation generally consists of short multi-day visits to varied COPs and FOBs. The duration of these visits and the types of interventions applied depend heavily on the nature of the visit (i.e., emergent vs. non-emergent) and the behavioral needs of individual soldiers and units at those particular sites. BCT psychologists rely on battlefield circulation trips as a means to build rapport with soldiers, learn about their unique jobs and experiences, and to effectively assess, treat, and/or impact relevant individual and organizational needs. Battlefield circulation can also be applied to brigade, battalion, and company-level units collocated on the BCT psychologist's primary base.

While conducting battlefield circulation, it is useful to discuss the overall tone and tenor of

units with the chain of command (COC), in addition to any relevant behavioral health trends, and health, morale, and welfare issues identified. It is also useful to have a discussion with the COC, medical leadership, and/or the chaplain on-site regarding soldiers who they deem to be at “high-risk” for psychological difficulty. These discussions generally result in a request for behavioral health evaluation and/or treatment during the battlefield circulation visit. Assuming that a BCT psychologist has appropriate consent to assess and/or treat identified soldiers at that time, he can and should do so accordingly. This prompt service delivery is consistent with applicable deployment psychology doctrine and will reinforce the BCT psychologist’s standing as an accessible, responsive, and caring professional. The BCT psychologist can provide the COC with his/her opinion of a soldier’s current fitness for duty and prognosis for recovery or rehabilitation, while offering the least restrictive amount of clinical information necessary. Such information usually includes details regarding the service member’s childhood, trauma history, medical history, family history, and unique lifestyle practices that may or may not impact his current behavioral functioning. The BCT psychologist can also provide the COC with appropriate feedback, insight, advice, and guidance on how to improve the overall behavioral health functioning of units and soldiers following related assessments (Bartone & Kreuger, 2013). It is also during battlefield circulation that BCT psychologists should reiterate to soldiers and Command Teams that their overarching goal is to treat soldiers “in place” and keep soldiers “in the fight,” per military mental health doctrine. BCT psychologists should consistently dispel the myths that they are facile conduits for soldier redeployment due to behavioral health difficulties and that they have the power or will to degrade unit functioning by “plucking” soldiers from the ranks for psychological problems. These distortions of the roles and responsibilities of BCT psychologists add to the stigma against obtaining behavioral health care and prevent BCT psychologists from providing timely and appropriate psychological care to soldiers in need. Furthermore, while most BCT psycholo-

gists can effectively treat and manage the majority of behavioral health concerns during short or multiple battlefield circulation visits, some cases will require a higher level of treatment.

Soldiers should be sent to a higher level of care through medical evacuation (MEDEVAC) channels when they experience clinical symptomatology that cannot or should not be treated in a deployed setting. These conditions may include refractory post-traumatic stress disorder, major depression, psychotic spectrum disorders, or imminent suicidal/homicidal thoughts and behaviors, to name a few. These individuals will generally be transferred to larger medical facilities outside of a deployed setting where they can receive more intensive and comprehensive treatment services. It is unlikely that these individuals will return to a deployed setting based on the magnitude of their difficulties and the extensive treatment required. Other soldiers, who experience less severe clinical symptomatology, may be referred to a COSC restoration team for a short course of recuperative treatment. This intervention is particularly useful when the BCT psychologist assesses that the service member requires psychological support and stability above and beyond battlefield circulation visits, but falls short of emergent psychiatric hospitalization. However, the BCT psychologist should keep in mind that most behavioral health concerns appear to be effectively addressed by brief, solution-focused, cognitive behavioral interventions during battlefield circulation visits. Follow-up sessions can and should be conducted during subsequent visits or as necessary. Soldiers can also be transported back to the BCT psychologist’s primary base for more comprehensive services such as psychiatric medication evaluations, occupational therapy, or the like if those resources are available. It is preferable to travel with those behavioral health assets during battlefield circulation; however, this depends on the willingness of the behavioral health provider, logistic concerns, and command and control restrictions.

BCT psychologists should schedule regular visits to all outlying posts, COPs and FOBs along a circuit. For instance, in a 15 COP catchment area, the BCT psychologist should attempt to

travel to at least two COPs per week to maintain continuity of care and provide consistent support to warfighting elements. However, it may be difficult to maintain this battlefield circulation schedule due to other pressing concerns including responding to emergent behavioral health crises (e.g., suicide attempts, serious accidents, or catastrophic combat events) and the facilitation of traumatic event management (TEM) operations, which functions as a group psychological debriefing activity. Additionally, BCT psychologists have a tendency to maintain high caseloads at their base clinics, which may also negatively impact their ability to treat service members at outlying posts. This can hopefully be mitigated through collaboration with other behavioral health assets during the deployment/sustainment stage of deployment operations—arguably the most important phase of deployment psychology operations—by sharing FOB and COP operations.

Overall, there is little empirical evidence supporting the effectiveness of battlefield circulation with respect to reduced redeployment and post-deployment behavioral health difficulties. However, numerous positive anecdotal comments from combat leaders and soldiers, high return-to-duty rates, and markedly low behavioral health MEDEVAC rates support the value in conducting preventative, consultative, and clinical behavioral services during battlefield circulation.

Another critical but sometimes overlooked “best practice” during deployment/sustainment operations includes the utilization of enlisted behavioral health technicians. Behavioral health technicians should be incorporated into most facets of preventative and clinical operations including facilitation of psycho-educational groups, administration of supportive therapy, and co-facilitation of TEMs. Behavioral health technicians who are well trained and highly motivated can augment many basic clinical duties of the BCT psychologist and can serve as invaluable resources toward reducing behavioral difficulties among individual soldiers and units. Furthermore, deployed BCT psychologists should engage in regular discussions with the BCT commander, BCT surgeon, and BCT chaplain to discuss ways

to minimize behavioral health degradation while optimizing performance, with the central goal of being successful upon completion of the warfighting mission. These meetings should occur on at least a monthly basis during the deployment/sustainment phase and progress through successive phases of the deployment cycle.

Another helpful process to implement during the deployment/sustainment phase would be to conduct monthly interdisciplinary case conferences or training briefs with other behavioral health assets in theater. BCT psychologists can host 2-h in-person, phone, or video-conferences to discuss deployment psychology best practices, TTPs, and to offer consultation on anonymized cases. This process can sharpen the clinical skills of behavioral health providers, improve the quality of healthcare and delivery, and bolster the relationship among the small cohort of forward deployed behavioral health assets.

Redeployment and Post-deployment

BCT psychologists can assist in the successful redeployment of units while currently deployed. They should consider conducting platoon or company-level psycho-educational trainings while in theater on common difficulties experienced upon redeployment including varied family, marital, and parenting stressors. BCT psychologists along with their assigned behavioral health technicians can conduct platoon or company-level trainings on common cognitive, affective, and behavioral experiences (e.g., sleep disruption, irritability, hypervigilance, withdrawal, etc.) that occur following a deployment, whether combat was experienced or not. BCT psychologists can select units who they deem to be in most need of these trainings and/or make such trainings mandatory through the brigade or battalion operations orders. BCT psychologists should also consider providing formal presentations prior to redeploying on the common post-deployment social experiences that soldiers report months after they settle into their old routines 90–180 days after returning to garrison (i.e., post-deployment).

BCT psychologists can ensure that individuals who were treated in a deployed setting obtain appropriate follow-up care upon returning to garrison. BCT psychologists can provide a secured patient roster to dedicated providers, for follow-up behavioral health treatment, in addition to creating their own clinical schedule. They can also ensure that soldiers who reported positive findings on mandatory post-deployment assessment and post-deployment reassessment mental health screeners be seen as soon as possible following their return to garrison. Typically, the brunt of redeployment/post-deployment behavioral health services are provided by installation and garrison behavioral health assets because the organic BCT psychologist requires some modicum of redeployment/post-deployment decompression.

Future Directions in Military Deployment Psychology

While the practice of deployment psychology has evolved considerably since its inception, the TTPs associated with forwardly deployed military psychologists in particular are lacking. In an effort to bridge this knowledge gap, a comprehensive description of future directions and recommendations for change is offered utilizing the Department of Defense (DoD) DOTMLPF framing construct (Joint Publication 1-02). DOTMLPF is an acronym for a military conceptual framework used to identify gaps and solutions in the following domains: doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF).

Military psychologists experience increased performance and effectiveness by following sound doctrinal guidance regarding embedded operations throughout the deployment cycle. The DoD can enhance the efficacy and utility of deployed military psychologists by developing doctrine that highlights the short-term and long-term goals of military psychologists throughout deployment phases (e.g., pre-deployment, deployment, and redeployment/post-deployment). Military psychologists would also benefit from the development of field manuals on the day-to-day practices

of military psychologists during diverse deployment operations (e.g., combat, counterinsurgency, humanitarian, and peace-keeping). While the COSC field manuals offer a foundation for related practices, adjunct field manuals should be developed for embedded and organic military psychologists in particular.

From an organizational standpoint, embedded military psychologists are special staff officers in this role that have a direct consultation link to their brigade or service component commander much like the US Army Brigade Chaplains and Brigade Surgeons. This relationship legitimizes the critical and expansive role that military psychologists play in their units, in addition to streamlining the process for offering commanders timely feedback on the behavioral health trends and needs of their personnel. Additionally, from an organizational standpoint, it is appropriate to embed military psychologists at the battalion level, similar to battalion physician's assistants and battalion chaplains, while maintaining a brigade psychologist for advanced consultation, guidance, and operational mission command. Although this organizational structure has never been implemented due to the dearth of available psychologists throughout the military in both the generating and operational forces, at the very least, a pilot project should be initiated to ascertain the utility and effectiveness of task-organizing military psychologists at more tactical levels such as battalion-sized elements.

Military psychologists can achieve enhanced functional and foundational competency by participating in regularly scheduled inter-service training activities both while in garrison and during annual Combat Training Center rotations. Traditional military-based Clinical Psychology Internship and Residency programs should embed trainees in combat units whenever possible to enhance their experiential learning of deployment psychology principles in addition to hosting deployment-centric field and schoolhouse inter-service trainings. Both garrison and deployment simulation training exercises should maintain the highest degree of realism as a stress inoculation and assessment tool for the military psychologist's deployment related competence. These

training exercises should incorporate sister-service behavioral health assets, National Guard and Reserve components, and behavioral health coalition partners whenever possible. Training programs should also provide empirically validated clinical practices that can be implemented throughout the deployment cycle in addition to providing updated and novel practices for self or remote care. Furthermore, military psychologists would benefit from obtaining advanced training on clinical video-teleconferencing, social media, smartphone, and Internet-based behavioral health resources, in addition to non-military, civilian-based behavioral healthcare outlets (see also Campise et al., Chap. 26, this volume).

Military psychologists would also profit from receiving training on disaster mental health, disaster relief, and humanitarian crisis care, in addition to common deployment related concerns, including combat stress reactions, clinical syndromes, suicide, fratricide, mass casualties, etc. Such training programs would provide military psychologists with advanced competency in addressing behavioral health difficulties endemic to the current operational environment including refugee crises, pandemics, international terrorism, and genocide, to name a few. Furthermore, with respect to future training recommendations, military psychologists would benefit from receiving dedicated slots for advanced professional military education and consideration for the School for Advanced Military Sciences (SAMS). These academic opportunities would broaden military psychologist's understanding of operational art and military strategy. This advanced knowledge would allow military psychologists to play a larger role in influencing strategic decisions throughout varied military operations, in addition to providing greater opportunities for military psychologists to develop systemic strategies for improving military mental health throughout all services.

With respect to materiel, DoD acquisition channels should develop and test field-expedient psychological assessment, clinical note taking, and cognitive behavioral (e.g., *en vivo* exposure) treatment tools. These may include rugged handheld portable devices that have pre-loaded psychological tests and dictation ready note-taking

capabilities, in addition to imaginal exposure treatment protocols. Embedded military psychologists should also have increased interchange with departments responsible for developing emerging technologies such as Defense Advanced Research Projects Agency (DARPA) and the Walter Reed Army Institute of Research (WRAIR). Embedded military psychologists may have insights and experiences that can augment the expertise of military experimental psychologists.

From a leadership standpoint, junior military psychologists should be assigned individual "lifetime mentors" that can provide consistent personal and professional guidance through deployment and throughout their military careers. These mentors can conduct informal and formal counseling sessions throughout a military psychologist's enlistment and deployment cycles. Military psychologists should also receive advanced training in leadership models in order to provide command teams with the most reliable and valid tools necessary to maximize their leadership abilities. A leadership curriculum emphasizing military ethics, leadership development, and leadership enhancement should be instituted adjunctively to professional military education programs.

Another consideration for advancing the field of military psychology relates to reviewing current personnel and manning designations. The DoD should conduct a thorough assessment of the current non-deployment and deployment manning requirements for military psychologists outlined in the Table of Distribution Allowance (TDA) and Modification Table of Organization and Equipment (MTOE) documents with the intent of determining whether *more* embedded military psychologists are needed throughout the armed services. This analysis is particularly relevant considering the stressors inherent in achieving the strategic objectives of maintaining a global expeditionary force that responds to multiple hybrid threats within an increasingly resource-restricted environment. Projected force decrements and massive budget cuts may create an increased need for the varied clinical and performance enhancement capabilities offered by military psychologists.

Additionally, with respect to improving facilities associated with military psychologists,

consideration should be given to developing an inter-service training facility that hosts quarterly or bi-yearly deployment psychology-specific training exercises. This facility can be housed within preexisting training centers such as the Army Medical Department Center and School (AMEDC&S), US Army Health Readiness Center of Excellence (HRCoE) or within other training environments such as Uniformed Services University of the Health Sciences (USU).

Conclusion

The US experience might serve as a useful model or guide for military psychologists in other nations. American military psychologists have played a critical role in addressing a wide-range of behavioral health issues and operational needs throughout almost 100 years of military service. The more recent presence of military psychologists in forwardly deployed combat, support, and peacekeeping missions has been instrumental in minimizing psychiatric casualties, optimizing individual and unit performance, and preserving American combat strength. While most NATO countries have uniformed psychologists in at least one branch of their armed services (Army, Navy, Air Force), the United States assigns military psychologists throughout their entire force (Precious, 2015). This inclusive distribution of uniformed psychologists evinces their value as members of a comprehensive fighting force and substantiates their well-established efficacy in supporting varied military operations. Uniformed mental health professionals from some foreign armed services, on the other hand, have described their leadership as being uncertain or unaware of the diverse capabilities that psychologists provide and having strained acceptance for the field of psychology in general (Adler and Bartone, 1999). While there is still much room for growth in the American military system, military psychologists throughout all services are increasingly sought out and recognized by commanders for their advanced knowledge of human behavior and effectiveness in preserving fighting strength. Moreover, military psychologists are increasingly

considered indispensable adjuncts to common warfighting functions (e.g., movement and maneuver, intelligence, fires, sustainment, protection) because of their commitment to military values, adherence to advanced ethical standards and practices (American Psychological Association [APA], Ethics Code, 2010), and their consistent demonstration of exemplary leadership in both clinical and military functions. It is hoped that this chapter provided a thoughtful description of the unique history, capabilities, and functions of American deployed military psychologists and serves as a helpful guide and model for uniformed psychologists in other nations.

Glossary

ACE	Air Combat Elements
AO	Area of Operations
BCT	Brigade Combat Team
BHO	Behavioral Health Officers
COC	Chain-of-Command
COP	Combat Outposts
CSH	Combat Support Hospital
CST	Combat Stress Team
COSC	Combat and Operational Stress Control
DoD	Department of Defense
FOB	Forward Operating Base
LCE	Load Carrying Equipment
LCSW	Licensed Psychiatric Social Worker
MCO	Marine Corps Order
MOS	Military Occupational Specialty
MTF	Military Treatment Facilities
OIF	Operation Iraqi Freedom
ORM	Operational Risk Management
OSCAR	Operational Stress Control and Readiness
PIES	Proximity, Immediacy, Expectancy and Simplicity
PGW	Persian Gulf War
PROFIS	Professional Filler System
RIP	Relief/Replacements in Place
RTD	Return to Duty
ST	Special Tactics
STS	Special Tactics Squadron
TEM	Traumatic Event Management
TOE	Table of Organization and Equipment

TTP Tactics, Techniques, and Procedures
USMC US Marine Corp
WRAIR Walter Reed Army Institute of Research

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Training and Practice in Military Specialty Psychology

5

Jessica Parker, Joseph H. Afanador,
Jeffrey L. Goodie, Steven J. Porter,
Genelle I. Weits, and Daniel G. Cassidy

The military has established a number of the first American Psychological Association (APA) approved internship and fellowship sites. In 1958, the first military internship was accredited at the Walter Reed Army Medical Center. The US Navy's internship program at National Naval Medical Center was next with APA accreditation in 1964. This was followed by the US Air Force's program at Wilford Hall accreditation in 1971. As the field of clinical psychology began to grow and expand, specific specialties begin to form. The APA began to offer accreditation for postdoctoral specialties or fellowships as they are referenced in the military community. The first APA-accredited

military neuropsychology fellowship was in 1992 at the Walter Reed Army Medical Center. Following this, the Air Force established the first military clinical health fellowship accredited in 2001 at Wilford Hall Medical Center. More recently, the Army established the only, to date, APA-accredited forensic psychology fellowship in the country at the Walter Reed National Military Medical Center in 2012.

The majority of active duty psychologists complete a predoctoral internship at a military treatment facility, participating in the military's health care training program. The training is centered on a generalist psychology training model at an American Psychological Association (APA) accredited site. The Air Force currently trains approximately 22 psychologists at Malcolm Grow Medical Center, Wilford Hall Ambulatory Surgical Center, and Wright Patterson Medical Center. The Army trains approximately 28 psychologists each year at Brooke Army Medical Center (BAMC), Dwight D. Eisenhower Army Medical Center (DDEAMC), Madigan Army Medical Center (MAMC), Tripler Army Medical Center (TAMC), and Womack Army Medical Center (WAMC). The Navy annually trains approximately 17 psychologists at the Naval Medical Center Portsmouth, Naval Medical Center San Diego, and Walter Reed National Military Medical Center (WRNMMC).

The generalist training received by most active duty psychologists at the service-specific predoctoral internship sites highlight topics

J. Parker (✉)
AMEDD Center and School, U.S. Army Health
Readiness Center of Excellence,
Fort Sam Houston, San Antonio, TX, USA
e-mail: jessica.r.parker12.mil@mail.mil

J.H. Afanador
San Antonio Military Medical Center,
San Antonio, TX, USA

J.L. Goodie
F. Edward Hebert School of Medicine-“America's
Medical School”, Uniformed Services University,
Bethesda, MD, USA

S.J. Porter
United States Naval Academy, Annapolis, MD, USA

G.I. Weits
Naval Medical Center, San Diego, CA, USA

D.G. Cassidy
Wilford Hall Ambulatory Surgical Center,
San Antonio, TX, USA

specific to working in a military setting and addresses many of the behavioral health demands found in today's Air Force, Army, and Navy. However, given the complexity of today's military operations and the diverse populations served by military medicine, the Air Force, Army, and Navy are committed to providing specialty psychology services with worldwide deployable capabilities. These necessary specialty practice areas include clinical health psychology (CHP), neuropsychology, and forensic psychology. Opportunities to train within these specialty practice areas are available to military psychologists across services, both within the military medical system and at civilian institutions. Child psychology, another clinical specialty practice area in the military, is not reviewed in this chapter. In what follows, we provide a review of these military specialty practice areas, to include specific approaches to specialty training, clinical practice settings for specialty trained psychologists, and contributions/future directions for each area of specialization.

Clinical Health Psychology

Training

The skills associated with CHP training are valued by all of the services, although the Air Force and Army most heavily emphasize these skills. Most military clinical psychologists will incorporate the practice and concepts of CHP into their clinical work within general behavioral health clinics and/or primary care settings, but they would not be considered clinical health psychologists. However, each year the services provide specialized CHP training to several service members at APA-accredited predoctoral internships and six service members through one of three APA-accredited postdoctoral fellowship programs. The individuals graduating from the fellowship programs, or those who obtain their board certification in CHP, are considered the clinical health psychologists of the services. Following the Council of Clinical Health Psychology Training Program's (CCHPTP) guidance, as described by Larkin and Klonoff (2014), most

internships in the military offer less than 50% of supervised practice time in CHP and therefore offer three levels of training CCHPTP would label "emphasis" ($\geq 30\%$ to $<50\%$ of supervised practice), "experience" ($> 20\%$ to $<30\%$ of supervised practice), or "exposure" (10% to 20% of supervised practice) to CHP.

Each of the Air Force's APA-accredited internship training sites offer intensive training in CHP for one quarter to one third of the training year. Although each site is unique in its approach to structuring the CHP training experience, all sites expose residents to a broad range of CHP-related clinical concerns, including health behavior change (e.g., tobacco cessation, weight management), chronic health conditions (e.g., chronic pain management, diabetes education), and in the application of CHP-related skills and tools (e.g., biofeedback, relaxation). Residents learn evidence-based assessment and treatment strategies to target a broad spectrum of CHP-related problems. In addition to internship training, the Air Force offers an APA-accredited postdoctoral fellowship in CHP at Wilford Hall Ambulatory Surgical Center. Fellows spend 2 years providing care in an outpatient CHP setting, rotating through specialty clinics (e.g., diabetes education program, pain management, sleep clinic), and conducting research. Graduates of the fellowship program commonly earn their board certification in CHP from the American Board of Professional Psychology (ABPP).

Army interns complete 1 year of an APA-accredited internship and often complete a second year of residency training, which allows for more in-depth training in a variety of areas, including CHP. Each of the Army's five internship sites offers CHP as a clinical rotation; however, whether it is a required rotation, the length of the rotation, and the experiences, vary. At DDEAMC, all interns participate in a 3-month rotation in CHP. Similarly, at MAMC, all interns participate in a 2-month CHP rotation. Interns at MAMC may also participate in an additional elective CHP rotation. At BAMC, a 3-month CHP rotation and at TAMC a 4-month CHP rotation is optional. At WAMC, CHP experiences are combined with experiences serving in an integrated primary care setting. Depending on the location of training, interns are exposed to biopsy-

chosocial assessment and treatment experiences for chronic pain and sleep problems, as well as learning skills such as mindfulness-based stress reduction. The Army is unique in that it offers two APA-accredited Fellowships in CHP—one at BAMC and one at TAMC. Like the Air Force, both fellowships are 2 years and offer a breadth of experiences in CHP (e.g., interdisciplinary pain management, health lifestyle programs [e.g., smoking cessation, healthy weight], oncology, cardiothoracic, and/or bariatric surgery). One of the primary goals of these fellowships is that graduates will earn their ABPP in CHP. Military fellows at TAMC may also pursue a Master's in clinical psychopharmacology and may pursue prescribing privileges consistent with state requirements that allow psychologists to prescribe.

In the Navy, CHP training is a required rotation only at Naval Medical Center, San Diego. While WRNMMC and Naval Medical Center, Portsmouth (NMCP), have rotations as consultants to primary care providers as Internal Behavioral Health Consultants (IBHC), these are not considered CHP. IBHCs offer brief (20–30 min) assessments and interventions specifically geared to increase motivation for behavior change and improved health. Patients are usually seen for no more than four appointments, thus rapid dispositional skills are targeted. At NMCP, half of the rotation is based in an orthopedic service, utilizing pain management tools for acute and chronic injuries in group and individual settings.

At Naval Medical Center, San Diego, CHP experiences are at the level of “exposure” with one rotation dedicated to these issues. Skills taught are similar to other military services, including learning theories and techniques for serving outpatients presenting with chronic pain, medical conditions, and somatic symptoms. The main objectives for teaching CHP to these Navy interns are to ensure they have practice and knowledge regarding the management of patients with medical complaints and to have effective tools to offer patients in an operational setting. Training focuses on the biopsychosocial assessment to view the patient in occupational, social, and personal contexts. A thorough understanding of the interconnections of mind and body are discussed with repeated practice of how to describe this relationship to patients,

including the physiology and research. Using the patients' experiences as a way to incorporate mind–body education within sessions is encouraged and practiced. Interns participate in meetings with multidisciplinary representatives (e.g., anesthesiologists, physiatrists, physical therapists, surgeons, primary care providers, chaplains, and case managers) to discuss the behavioral health aspects of the patients while gaining the perspectives of other providers. Viewing the patient within multiple cultural contexts is an important part of the rotation, especially when attempting to teach management strategies that are counter to the mainstream belief that one must avoid painful issues and outward emotional expression.

The Navy offers an APA-accredited fellowship in clinical psychology at NMCP. Although this fellowship is not specific to CHP, fellows spend time focusing on some CHP relevant topics (e.g., chronic pain). There are currently just under 2% of active duty Navy officers trained as Clinical Health Psychologists.

Practice

As described by Peterson, Hryshko-Mullen, and McGeary (2012), clinical health psychologists throughout the military provide clinical care across a broad range of clinical concerns including tobacco cessation, weight management, chronic pain management, insomnia and nightmares, and are involved in integrated primary care settings. The Air Force has created jobs that can only be filled by CHP fellowship trained psychologists. These positions often involve Air Force-level policy development, training at the graduate or internship level, or providing care and program development at large medical treatment facilities. Graduates of the fellowship have gone on to manage policies for the Department of Defense and direct internship training programs. Some have specifically served in the following capacities: Biomedical Science Corps Director, Director of Training at the Wilford Hall and Malcolm Grow predoctoral internship training programs, the Psychology Consultant to the Air Force Surgeon General, and the consultant to the Army Surgeon General.

Across the services, CHP aspires to broaden the dissemination of programs and intervention technologies that originate within the specialty. For example, integrating behavioral health providers into primary care is now a core element of every uniformed psychologist's standard toolbox. Being successful as an integrated behavioral health provider within primary care requires CHP skills, and many clinical health psychologists have been instrumental in leading the efforts of this integration. CHP in the military is thus best represented, not by the specific interventions and programs with which it is most commonly associated nor by the individuals who are classified as clinical health psychologists, but by the manner in which the specialty continues to leverage the biopsychosocial model to anticipate and meet the needs of the DoD, the Military Health System, and its ten million beneficiaries.

Contributions to the Field

Military clinical health psychologists have made significant contributions and have helped shape the CHP field. One third of all APA-accredited postdoctoral fellowships in CHP are in military settings. The CHP community's commitment to tobacco control has fueled a 15-year interval of innovation in policy and clinical intervention that continues to this day. Beginning in the late 1990s, Air Force clinical health psychologists brought the population health perspective to suicide prevention (Knox et al., 2010). Graduates and faculty of the CHP fellowship programs have led multimillion dollar research grants and consortiums (e.g., STRONG STAR [<http://delta.uthscsa.edu/strong-star/>]), contributed hundreds of peer-reviewed manuscripts to the scientific literature, and written books that have helped to shape the fields of integrated primary care and CHP (e.g., Andrasik, Goodie, & Peterson, 2015; Gatchel & Oordt, 2003; James & O'Donohue, 2010; Hunter, Goodie, Oordt, & Dobmeyer, 2009). These individuals have also served as leaders of ABPP's CHP specialty board, gone on to serve in leadership and faculty roles at civilian universities, and helped shape policy throughout the DoD and the Nation.

Neuropsychology

Training

Across APA-accredited Air Force, Army, and Navy internship sites, active duty psychologists are trained in cognitive assessment methods, with most receiving training through a formal, core neuropsychology rotation. The use of standardized neuropsychological measures is employed across training sites and branches of service to teach interns how to conduct brief cognitive screenings. This instructional method is both appropriate for a general clinician and practical for use as an independent practitioner working in a high-operational tempo environment. At the conclusion of their internship, military psychologists are prepared to assess those with combat-related and other occupational injuries, as well as make return to duty and necessary specialty referral recommendations. Depending on the nature and severity of the injury sustained and associated deficits, referral to a neuropsychologist for further evaluation may be warranted. Active duty neuropsychologists are available to military clinical psychologists for referral and consultation purposes in garrison and theater environments (see also Green et al., Chap. 10, this volume).

To be credentialed to practice as a neuropsychologist in the military medical system, psychologists must first complete an APA-accredited fellowship in neuropsychology. Opportunities for advanced training in neuropsychology are available to military clinical psychologists in both the civilian and military communities. The Army has two APA-accredited neuropsychology fellowship programs that train both Army and—within the past couple of years—Air Force psychologists. Walter Reed National Military Medical Center (formerly known as Walter Reed Army Medical Center when the program first received its accreditation in 1992 by APA) was the first accredited clinical neuropsychology program in the country (Kennedy, Boake & Moore, 2010). Brooke Army Medical Center is home to the Army's other neuropsychology fellowship training site. The training conducted at these two sites includes, but is not limited to, work with neurodegenerative disorders,

stroke and cerebrovascular disease, and traumatic brain injury with adult and older adult populations (see “Brooke Army Medical Center,” 2013, and “Walter Reed National Medical Center,” 2014). Army psychologists interested in pursuing a neuropsychology fellowship do so within the military education system, training at one of the aforementioned sites. At the time of this writing, there are 12 neuropsychologists (approximately 4.8% of total number of active duty Army clinical psychologists) serving on active duty in the Army.

The Navy psychologist selected for advanced training in neuropsychology attends a 2-year postdoctoral program via a full-time Duty Under Instruction (DUINS) placement. The selected psychologist is afforded the opportunity to attend an accredited neuropsychology postdoctoral fellowship at a civilian university/medical school of his/her choice (Kennedy et al., 2010). The Navy currently has two preferred training sites, which have tailored their fellowship programs to meet the training needs of Navy psychologists (Kennedy, 2013): the University of Virginia and the University of California San Diego. These two esteemed postdoctoral programs provide training with special emphasis on concussion and central nervous system disorders most often seen in active and retired service members. At the time of this writing, there are nine (4%) active duty neuropsychologists in the US Navy.

Until recently, Air Force psychologists have primarily participated in 2-year postdoctoral neuropsychology fellowships at civilian institutions (Kennedy et al., 2010). In 2014, Brooke Army Medical Center became an official postdoctoral neuropsychology training site for Air Force psychologists.

Practice

Fellowship-trained military neuropsychologists practice in a variety of settings. Based on the demands and mission requirements of the various branches, slight differences are expected. Overall, the demand for neuropsychologists in the military has increased significantly in the past 10 years in response to traumatic brain injuries, the signature

injury of recent wars, sustained in Afghanistan and Iraq. From a neurocognitive perspective, military neuropsychologists serve as specialty consultants to neurologists, primary care physicians, and other behavioral health providers in determining service members’ fitness for duty.

Army neuropsychologists provide clinical services to active duty, retirees, and family members, with a variety of presenting concerns. They are also involved in specialty evaluations, to include those associated with aeromedical psychology. They may serve as the chief of a neuropsychology clinic, work as consultants on teams to formulate clinical practice guidelines, shape assessment-based policies in the behavioral health community, and be appointed as the Psychology Consultant to the Surgeon General. Army neuropsychologists’ expertise have been utilized as the in-theater consultant to medical and other behavioral health providers on matters involving TBI, general cognitive assessment, and return-to-duty decision making. Because of the growing demand for neuropsychological services, Army neuropsychologists are more likely to be assigned to major medical treatment facilities to utilize their skill set.

Navy neuropsychologists are assigned to provide clinical services in highly varied settings. They are called upon in-theater to assess acutely concussed warfighters, perform serial neurocognitive testing to track concussion recovery, and provide in-depth neuropsychological assessments on members who sustain multiple concussions. In garrison, they provide services to members who are injured and those returning from war, those sustaining head injuries, or have developed other central nervous system disorders, as well as evaluation for entry into the military given a neurological history or for special duties such as aviation. The increased use of neuropsychologists has resulted in a greater integration into military treatment facilities (MTF). There are currently five (5) coded billets for neuropsychologists and two (2) additional MTFs are considering neuropsychology-specific billets for the near future.

Following postdoctoral specialty training in neuropsychology, Air Force psychologists complete a utilization tour at one of the three Air Force clinical psychology residency sites or at one of three USAF

major medical treatment facilities (located at Elmendorf AFB, Travis AFB, and Keesler AFB). Air Force neuropsychologists, in a garrison setting, conduct routine neuropsychological evaluations and provide psychotherapy services, usually while serving as the Neuropsychology Service Chief. In-theater, a USAF neuropsychologist is usually assigned to the in-country major medical facility to conduct assessments for those sustaining head injuries and making return-to-duty decisions.

Contributions to the Field

Prior to Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), the practice of military neuropsychology mirrored its civilian counterpart by providing neuropsychological services within the MTFs and branch medical clinics. The primary role of military neuropsychology was to serve as a consultative service within the treatment facilities, provide assessment, diagnosis, and treatment planning for patients with central nervous system (CNS) disorders and those recovered from acute brain injury. With the advent of war in the Middle East and the introduction of the improvised explosive device (IED), the military was faced with treating acute concussive blast injuries/TBIs on the frontlines. To meet the demands of treating service members with these injuries, the military neuropsychologist broke from the traditional office-based provision of services and became a key provider of forward-deployed concussed patients. By fulfilling this critical role, the military neuropsychologist demonstrated to the field the relevance of neuropsychology in a forward-deployed setting and the importance of the neuropsychologist as an acute care provider in concussion management.

With the increased incidence of concussive blast injury/TBI and the limited amount of research on this unique etiology of concussion (blast wave), military neuropsychology has been instrumental in increasing publications of peer-reviewed scientific manuscripts and literature. The support of governmental and private agencies, such as the Defense and Veterans Brain Injury Center (DVBIC), Defense Centers of Excellence (DCoE), and National Intrepid Center

of Excellence (NICoE), has produced an abundance of research and development in concussion assessment management, treatment, and recovery tracking. Military neuropsychology has also spearheaded the development of computerized neuropsychological instruments that can be used on the frontlines to objectively assess and track acute neurocognitive change following concussion. Among these computerized neurocognitive assessment tools (NCAT) are the Automated Neuropsychology Assessment Metric (ANAM) and the Defense Automated Neurobehavioral Assessment (DANA). Through research and innovative design, military neuropsychology has played and continues to play a key role in shaping and developing concussion management policy within the civilian sector and throughout the DoD.

Forensic Psychology

In the pre- and postdoctoral training environments, forensic training is limited to conducting Rule for Court Martial (RCM) 706 evaluations, also known as sanity boards. A sanity board is an inquiry into the mental capacity or mental responsibility of the accused (i.e., the defendant). The sanity board is meant to determine whether or not the accused was insane at the time of the charged offense(s) and if the accused is currently competent to stand trial. The procedure for conducting a sanity board comes from Rule for Court Martial (RCM) 706, which is written in the Manual for Court Martial (U.S. Department of Defense, 2012). Across the services, there is little focus on forensic psychology in the internship and residency environments, except when a 706 evaluation is presented in the clinic. If a sanity board opportunity arises, there is no guarantee that a trained forensic psychologist will be providing supervision on the case.

The forensic psychology fellowship at WRNMMC's Center for Forensic Behavioral Sciences (CFBS) began in 2007. Currently, it is only available to Army psychologists. However, the other branches of service have shown interest in attending the program. At present, this is the only military postdoctoral forensic psychology program, the only 2-year postdoctoral forensic psychology in the USA, and the only APA-

accredited postdoctoral forensic psychology program in the USA. Whereas the internships and residencies' sole forensic emphasis is on sanity board evaluations, the fellowship's scope is much broader. The fellowship stresses learning forensic principles, the military justice system, and the specific practices, relevant laws and standards that guide working in the field of forensic psychology. To this point, forensic fellows attend the 4-week military criminal law course, with their military attorney counterparts, at The Judge Advocate General's (JAG) Legal Center and School located in Charlottesville, VA.

The fellowship also focuses on treatment planning in a forensic hospital, using specialized forensic assessment instruments, consultation with attorneys, conducting recidivism risk assessments (physical violence risk, sexual violence risk, and spousal violence risk), conducting psychological autopsies (death analysis/review), sentencing/mitigation evaluations, and providing testimony in court on a variety of topics. In addition to the usual experiences in criminal proceedings, the fellowship also has rotations that provide support to organizations involved in law enforcement and intelligence gathering. This provides opportunities to gain experience in providing consultation to ongoing investigations of various crimes, criminal profiling, and personnel assessment for high-risk and sensitive security positions.

Practice

Until recently, the practice of forensic psychology has generally been unregulated in the military. As previously discussed, the majority of military-trained psychologists will have little to no experience in the field of forensics, to include conducting 706 (Sanity Board) evaluations. Furthermore, there is no guarantee that a civilian provider working in a military setting has ever been exposed to forensic psychology. However, the current practice is that any licensed psychologist in the military medical system will be credentialed to conduct 706 evaluations. The reality is that there is a shortage of forensic specialists in the military. To put this in perspective, of the 248 active duty clinical psychologists in the Army at

the time of this writing, only seven (2.8%) are trained in forensic psychology.

The Army has taken the lead in regulating the practice of forensics in the military. The Army has created guidelines for who can be credentialed as a forensic specialist. These guidelines are outlined in memorandum ODCS G-1, DAPE-PRP-CSB (U.S. Department of the Army, 2012). Active duty psychologists who meet these criteria are recognized as being an expert in forensic behavioral sciences which is signified by having the N5 additional skill identifier (ASI) annotated in their personnel file. In addition to being credentialed to conduct 706 evaluations, those with the N5 ASI are credentialed to provide more advanced forensic services. These include recidivism evaluations, expert testimony, and evaluations for sentencing. Furthermore, OTSG/MEDCOM Policy Memo 13-017 mandated the creation of Regional Forensic Consultant positions (U.S. Department of the Army, 2013). At this time, only the Army has created specific guidance, assigned an ASI, and created Regional Forensic Consultants.

Regional Forensic Consultant positions were created to manage the increase in forensic service requests and to determine whether a sanity board should be completed by a generalist or requires a forensic specialist. The forensic consultants are also used to host forensic training workshops, review 706 evaluations with unusual findings, consult with clinicians and attorneys, act as quality assurance for 706 evaluations, and collect forensic services usage data. Regional consultants and other forensic specialists are usually assigned to cases involving serious crimes, requiring expert testimony, or are high profile.

Contributions to the Field

By creating the first APA-accredited forensic fellowship, other forensic programs will be encouraged to apply for APA accreditation. This should have the effect of improving the knowledge, standard, and regulation of the field of forensic psychology across the country. Furthermore, by creating regional consultants, the quality of forensic evaluations and the knowledge base of clinical psychologists should improve across the

military. All of these developments are designed to ensure that military medicine is giving the best possible support to the military justice system.

Since 2007, the military has only produced six Army forensic psychologists. Although the Army has created policies, skill identifiers, and regional consultants, there are no true forensic psychology billets. The regional forensic consultant role is considered an additional duty. The next step in improving the field of military forensic psychology is to create forensic psychology assignments across the services.

Conclusion

The military has and continues to lead the way in advancing the field of clinical health psychology, neuropsychology, and forensic psychology. Within a 15-year span, military psychology established the first APA-accredited neuropsychology and forensic psychology training programs. In addition, one-third of all APA-accredited clinical health psychology programs are within the military system. By developing training programs that meet the high standard of APA accreditation, the bar has been raised in the overall training and practice of psychology throughout the country.

Furthermore, practitioners in these specialty areas have directly influenced medical and treatment policies within the DoD which has had a positive impact on the services provided to our servicemen and women, retirees, and family members. The knowledge acquired through specialty military psychology's developments in garrison and battlefield medicine, such as methods used to assess acute concussions, has also contributed to advances in the civilian sector. This can be seen in the substantive research, abundance of publications, and innovations in technology in the fields of clinical health psychology and neuropsychology.

As the medical systems of the Army, Air Force, and Navy become more integrated, it is expected that the standards and practice of psychology will grow exponentially. Increased contact among the services affords the opportunity to share best practices and collaborate on future missions that require the expertise of a specialty psychology

skill set. Accordingly, the military has led the way and will continue to be on the cutting edge of the behavioral sciences for years to come.

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Suicide Prevention in the United States Military

6

Marjan Ghahramanlou-Holloway,
Margaret M. Baer, Laura L. Neely, Viktor Koltko,
and Matthew K. Nielsen

Standardized Suicide Surveillance Across the Department of Defense

Suicide remains a significant public health problem within the Department of Defense (DoD). Since 2012, suicide has been the leading cause of death among military personnel; prior to 2012 (i.e., in 2009–2012), suicide was the second leading cause of death (AFHSC, 2014). Since 1998,

suicide has consistently been among the top three leading causes of death (AFHSC, 2014). Given the significance of military suicide, in January 2008, the DoD developed and launched a standardized suicide surveillance system, the annual DoD Suicide Event Reports (DoDSER; <http://t2health.dcoe.mil/programs/dodser>). Collaborations across the DoD's Suicide Prevention and Risk Reduction Committee (SPARRC), the Suicide Prevention Program Managers across all branches of service, and the National Center for Telehealth and Technology (T2) have contributed to the development of the DoDSER immensely (for additional

The opinions expressed here are those of the presenters and do not necessarily reflect the views of the Uniformed Services University of the Health Sciences or the Department of Defense

M. Ghahramanlou-Holloway (✉)
Department of Medical and Clinical Psychology;
Department of Psychiatry, F. Edward Hebert School
of Medicine, Uniformed Services University of the
Health Sciences,
4301 Jones Bridge Road, Room B3046, Bethesda,
MA, USA
e-mail: marjan.holloway@usuhs.edu

M.M. Baer
Laboratory for the Treatment of Suicide-Related
Ideation and Behavior; Department of Medical and
Clinical Psychology, Uniformed Services University
of the Health Sciences,
11103 Bucknell Dr, Silver Spring, MD 20902, USA
e-mail: margaret.baer.ctr@usuhs.edu

L.L. Neely
Defense Suicide Prevention Office,
4800 Mark Center Drive, Alexandria, VA 22350-
4000, USA
e-mail: laura.l.neely2.civ@mail.mil

V. Koltko
Laboratory for the Treatment of Suicide-Related
Ideation and Behavior; Department of Medical and
Clinical Psychology, Uniformed Services University
of the Health Sciences,
2421 Churchill Rd, Silver Spring, MD 20902, USA
e-mail: viktor.koltko@usuhs.edu

M.K. Nielsen
Mental Health Flight Commander, Mike O'Callaghan
Federal Medical Center,
4700 Blvd N, Nellis AFB, Las Vegas, NV 89191,
USA
e-mail: matthew.nielsen.1@us.af.mil

historical information, please refer to Ireland, Ghahramanlou-Holloway, & Brown, 2013).

According to the DoDSER for calendar year 2014 (Pruitt et al., 2016), the unadjusted military suicide rate was 19.9 per 100,000 for the active Duty component, 21.9 per 100,000 for the Reserves, and 19.4 per 100,000 for the National Guard. A breakdown of the unadjusted suicide rates for the four services has been reported as 23.8 (Army), 18.5 (Air Force), 17.9 (Marine Corps), and 16.3 (Navy) per 100,000 (Pruitt et al., 2016). While these reported suicide rates remain significantly higher than that of the United States (U.S.) civilian population in 2014 (13.4 per 100,000), they are more comparable to that of the male population (21.1 per 100,000; Drapeau & McIntosh, 2015). These rates are unadjusted for age. However, statistical adjustments are needed and often made to allow for accurate comparisons, given the military's disproportionately male population (Braswell & Kushner, 2012). Also, notably that active duty suicide deaths (28.1% of active duty deaths) surpassed combat deaths (18.6%) in 2012 according to the Medical Surveillance Monthly Report (United States Armed Forces, 2014), although the decline of military engagement in Iraq and Afghanistan may provide a partial explanation (Belasco, 2014). As military personnel transition to civilian life, they continue to be at risk for suicide. Veterans account for 20 percent of suicide deaths within the U.S., with an estimated 22 suicides each day in 2010 (Kang et al., 2015).

Service members who died of suicide and/or attempted suicide in 2013 were predominantly male, Caucasian, less than 30 years of age, enlisted, and educated through high school or less (Pruitt et al., 2016). Firearms (92.2% of which were not military-issued) and hanging were the two most common methods for suicide deaths, while drug and/or alcohol overdose was the most common method for suicide attempts. Relationship failure served as the most common stressor documented for both suicides and suicide attempts. Deployment history was observed in a majority of suicides, and in approximately 40% of the documented suicide attempts.

Deployment history and its relationship to suicide is described in greater detail below.

Since January 1, 2010, the DoD has started collecting data on suicide attempts for all services (Pruitt et al., 2016). For calendar year 2014, a total of 1,126 suicide attempts were documented in the DoDSER for a total of 1,096 service members (1067 with one attempt; 29 with two or more attempts). This suicide attempt data must be interpreted with a great deal of caution as the DoDSER system is still in its infancy in terms of providing reliable estimates of suicide attempts across the Armed Forces. The figure above is very likely an underestimate of suicide attempts. Additionally, a recently published Data Quality Assessment Report on the DoDSER has identified a number of areas in need of improvement (DoD Inspector General, 2014). For instance, this report notes that the technical information on the DoDSER forms present challenges for non-technical DoDSER submitters and that forms are often submitted before information is thoroughly and accurately consolidated. This may lead to incomplete or inaccurate DoDSER entries. Regardless of ongoing challenges with the DoDSER, the DoD maintains the most comprehensive military suicide surveillance system in the world and has made great strides in the field to improve the quality of data.

Military-Specific Risk and Protective Factors

Providing a detailed description of risk and protective factors for suicide among military personnel is beyond the scope of this chapter. Readers are encouraged to refer to two published reviews on military suicide risk and protective factors (Martin, Ghahramanlou-Holloway, Lou, & Tucciarone, 2009; Nock et al., 2013). In the following sections, we provide a brief summary of epidemiologic research methodology that serves as the basis for the scientific identification of suicide risk and protective factors and mention notable military-specific risk and protective factors for suicide. We further review recent findings from the Army Study to Assess Risk and

Resilience in Service Members (STARRS; see <http://starrs-ls.org/#/>). Army STARRS is a multicomponent assessment of suicide behaviors within the United States Army that draws on information from approximately 1.6 million soldiers serving on active duty between 2004–2009 and involves analysis of both retrospective and prospective data (Kessler et al., 2013; Ursano et al., 2014).

Epidemiologic Studies on Military Suicide

In seeking to reduce the number of suicides in the military, a sizeable body of research is dedicated to identifying risk factors associated with suicide. This work is frequently performed by identifying individuals who have died by suicide and then retroactively classifying characteristics that differentiate them from those who have not died by suicide. Research utilizing epidemiological samples benefits from very large sample sizes and the ability to detect relatively minor changes in risk, but it may lack rich data about individuals. Research of suicide risk factors, according to Nock et al. (2013), can have at least three positive effects: (1) creating a “profile” of suicide risk factors informs targeted prevention and treatment efforts; (2) identifying modifiable risk factors can form the basis for the treatment of individuals recognized to be at heightened risk; and (3) understanding the factors associated with increased suicide risk guides the advancement of knowledge about pathways toward suicide. Moreover, an enhanced understanding of protective factors can shape primary, secondary, and tertiary suicide prevention efforts.

Risk and Protective Factors for Military Suicide

Before discussing the factors associated with suicide risk, a note on suicide risk research methodologies and terminology is required. Risk and protective factors are typically identified via well-designed longitudinal studies. Cross-

sectional studies may also be used but are limited in the conclusions they can make about risk and protective factors, as they generally present only preliminary data on risk indicators. Given these limits, terms such as risk “indicators” and/or “correlates” may be more accurate in describing the factors associated with suicide risk identified in these cross-sectional and/or retrospective review studies. However, to keep the language consistent in this section, we have used the terms “risk” and “protective” factors regardless of the type of study involved.

Recent research has identified highly salient risk factors for suicide decedents across different branches of service. These factors include a demotion within the last two years, early military separation, dishonorable discharge, relationship problems, and access to means (e.g., firearms; Gallaway, Black, Ritchie, & Bell, 2011; Nock et al., 2013; Reger et al., 2015; Schoenbaum et al., 2014). Select military occupations, such as infantrymen and combat engineers, have higher rates of suicide death (Kessler et al., 2015). As in civilian populations, medical problems such as physical pain, injury, or sleep problems, as well as increased rates of both Axis I and Axis II disorders significantly elevate suicide risk (Denneson et al., 2010; Bishop, Pigeon, & Possemato, 2013; Black, Gallaway, Bell, & Ritchie, 2011).

Evidence of deployment status or combat exposure as risk factors has been contradictory and inconclusive. In an Army sample, deployment status has been predictive of suicide, with those never deployed having lower rates of suicide than those currently or previously deployed (Schoenbaum et al., 2014). Increased suicide risk was also found for deployed female, but not male, soldiers (Street et al., 2015). However, recent research found no correlation between deployment status and suicide risk (LeardMann et al., 2013; Reger et al., 2015). Two cross-sectional studies identifying a relationship between combat exposure and suicide ideation found the relationship was mediated by depression and post-traumatic stress disorder (PTSD) (Maugen et al., 2011; Mansfield, Bender, Hourani, & Larson, 2011). Research utilizing

smaller samples (e.g., Bryan, Hernandez, Allison, & Clemans, 2013; Griffith, 2012a) have also found no direct connection between deployment and suicidality, but they have hypothesized that both deployment history and exposure to combat may indirectly affect suicide rates via the development of depression and/or PTSD.

An examination of U.S. Army suicide deaths between 2004 and 2009 indicates that junior enlisted rank, male gender, caucasian, lower level of education, recent demotion, and less time in service are Army suicide risk factors (Schoenbaum et al., 2014). While rates of suicide over this period rose across all deployment categories (i.e., never deployed, previously deployed, or currently deployed), deployment status played a role within several other predictors. For instance, younger age was predictive of suicide among those currently or previously deployed. Men had a greater rate of suicide overall, but women had a disproportionately large increase in risk for suicide during deployments. If deployed, unmarried soldiers without dependents had a significantly higher risk for suicide than those who were married or had dependents.

The findings mentioned above, which represent deaths by suicide *after* joining the military, can be compared with a retrospective examination of suicide behavior *prior* to joining the military. In an Army STARRS study of new recruits (Ursano et al., 2015), increased suicide risk was associated with being female or a race other than non-Hispanic white, non-Hispanic black, or Hispanic. While individuals from such demographics were at greater risk of pre-enlistment suicide behavior, male sex and non-Hispanic white race predicted higher rates of suicide post-enlistment (Schoenbaum et al., 2014). In terms of non-demographic factors, pre-enlistment mental health disorders have been shown to be correlated with around a third of post-enlistment suicide attempts (Kessler et al., 2014). Suicidal behavior prior to military service is also a significant risk factor for future suicidality. Of those who attempt suicide during or after military service, 50% have a prior history of suicidal ideation, and 25% have attempted suicide in the past (Bryan, Bryan, Ray-Sannerud, Etienne, & Morrow, 2013). Pre-

military experiences of abuse appear to contribute to suicidal behavior as well. Service members endorsing childhood abuse were 3–8 times more likely to report suicidal behavior during their time in service (Griffith, 2014), while veterans indicating pre-military physical or sexual abuse were more likely to express suicidal ideation (Lemaire & Graham, 2011). Considering that 30% of female and 6% of male service members experienced sexual assault prior to joining the military (Defense Manpower Data Center, 2012), the connection between sexual abuse and suicidality warrants further study.

Within the population of psychiatrically hospitalized Army service members, Kessler et al. (2014) have identified the 5% of patients with the highest predicted risk of suicide. Together, this 5% of inpatients accounted for 52.9% of the suicide deaths among those recently released from inpatient care, or about 6% of the total Army suicide deaths during that time period. One year after hospital discharge, this group had a suicide rate of 3824.1 suicides per 100,000 person-years, compared to the overall U.S. Army's rate of 18.5 suicides per 100,000 person-years during the same time period. Patient characteristics associated with higher risk of suicide included male gender, enlisted at an older age, prior criminal offenses, and prior suicidal behaviors.

In terms of protective factors for the military, social support appears to mitigate risk. For instance, social support post-deployment is associated with a decrease in PTSD symptoms, negative moods, and suicidality (Griffith, 2012b). Satisfaction with social support among married Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) veterans was found to be protective of suicide risk for those with and without PTSD (Jakupcak et al., 2011). Social support within the military unit is also protective (Skopp, Luxton, Bush, & Sirotin, 2011). Soldiers with prior combat exposure and higher levels of unit cohesion (compared with lower unit cohesion) have shown lower levels of suicide ideation (Mitchell, Gallaway, Millikan, & Bell, 2012).

Training and preparation also appear to be protective of suicide ideation among OEF/OIF

veterans (Lemaire & Graham, 2011). A sense of purpose, accessibility to friends/family, and perceived control are protective in terms of suicide ideation (Pietrzak et al., 2010). Religious involvement and attendance as well as personal coping serve as long-term protective factors against suicide (Allen, Cross, & Swanner, 2005; Langhinrichsen-Rohling, Snarr, Slep, Heyman, & Foran, 2011; Mihaljevic et al., 2011). Satisfaction with intimate relationships, spouse's preparedness for deployment, good workplace relationships, support from leadership, and work-group cohesion are additionally protective (Langhinrichsen-Rohling et al., 2011). Finally, resilience is a proven protective factor for suicide ideation among soldiers with combat history and is a targeted goal of suicide prevention strategies (Mansfield et al., 2011; Department of the Army Headquarters, 2015).

Evidence-Informed Psychosocial Interventions for Military Suicide

This section will provide an overview of several evidence-informed (i.e., guided and supported by research) clinical interventions for suicide prevention. All are currently in use and/or under empirical investigation within the military population. For further information, readers are encouraged to refer to Conner and Simons' (2015) review of randomized controlled trials that target suicide ideation or behavior among U.S. military service members and veterans. The Military Operational Medicine Research Program (MOMRP) has taken the initiative to provide funding support for many of the investigations involving these promising interventions.

Brief Cognitive Behavioral Therapy (Delivered to Outpatients)

Brief Cognitive Behavioral Therapy (BCBT) has been adapted by Rudd (2012) from an intervention known as cognitive behavior therapy for suicide prevention, originally developed at the University of Pennsylvania by Aaron T. Beck,

Gregory Brown, and colleagues (Brown et al., 2005). BCBT is modified to meet the needs of suicidal service members seeking outpatient mental health services and includes twelve 60 to 90 min individual outpatient psychotherapy sessions (weekly or biweekly). BCBT consists of three phases, delivered sequentially. The first phase is conducted over five sessions and consists of several goals: (1) identifying factors that contribute to and maintain suicidal behaviors; (2) developing a cognitive conceptualization and a crisis response plan; and (3) teaching emotion regulation skills. The second phase is also conducted over five sessions, wherein the therapist targets suicide-related cognitions, such as core beliefs or assumptions, which may perpetuate the suicidal crises. Finally, in phase three, the therapist guides the patient in a relapse prevention task over two sessions. Findings of a recently published randomized controlled trial (RCT) indicate that BCBT is effective in reducing the likelihood of subsequent suicide attempts by 60% (Rudd et al., 2015).

Post-Admission Cognitive Therapy (Delivered to Inpatients)

A second brief cognitive behavioral protocol, known as Post-Admission Cognitive Therapy (PACT) has been adapted for the inpatient setting from the effective outpatient model by Brown, Beck, and colleagues (Brown et al., 2005; Ghahramanlou-Holloway, Cox, & Greene, 2012; Ghahramanlou-Holloway, Neely, & Tucker, 2014; Neely et al., 2013). PACT aims to prevent subsequent suicide attempts among military personnel and their beneficiaries hospitalized following a suicide-related event. PACT consists of six 60–90 min face-to-face individual cognitive behavioral therapy sessions (with up to two possible booster sessions) over the course of approximately three days during an inpatient psychiatric hospitalization. Once the patient is discharged from the hospital, up to four 30–60 min telephone PACT booster sessions during the three months post hospital discharge are delivered by the same clinician.

The PACT intervention is conceptualized in four phases. In the early phase, the clinician engages the patient in treatment, generates a written safety plan, and develops a cognitive conceptualization based on the patient's suicide narrative. In the middle phase, the clinician teaches a variety of cognitive behavioral strategies for reducing the recurrence of suicide-related behaviors (e.g., coping skills, problem-solving, and/or emotion regulation). In the final phase, the clinician continues to work collaboratively with the patient to solidify a safety plan to be implemented following discharge from the hospital, teaches relapse prevention strategies, and helps promote self-care and linkage to outpatient care. The aftercare phase of treatment (up to four telephone booster sessions during the three months post discharge) aims to solidify the patient's emerging cognitive behavioral skills and to enhance motivation and behavioral intention to engage in recommended aftercare treatments.

PACT addresses a critical suicide prevention research gap within the DoD (particularly in light of the new Army STARRS findings in relation to prior suicidality and psychiatric hospitalization serving as risk factors for service members) and aims to ultimately provide a much needed evidence-based psychotherapeutic intervention. The PACT intervention may be implemented as the standard of care for those military personnel and beneficiaries who have been admitted to inpatient settings for suicide related events. The intervention is currently being evaluated in a multi-site RCT at the Walter Reed National Military Medical Center (WRNMMC) and Fort Belvoir Community Hospital (FBCH).

Caring Letters Project

The Caring Letters Project (CLP) is an intervention that consists of sending brief letters and emails that convey caring to high-risk patients after they have been discharged from a military psychiatric hospital (Luxton et al., 2012). The letters and emails are individualized and provide information on mental health resources and national hotlines, such as the National Suicide

Prevention Lifeline. The letters are sent within one week of discharge and then at regular monthly intervals, for a period of two years. CLP is an email-based version of the 1976 University of California, San Francisco study that showed significant reductions in suicide rates among civilian patients who received brief caring letters from staff they met during treatment (Motto & Bostrom, 2001). This CLP email intervention is currently being tested on 4,730 active duty military, veterans, National Guard, or Reservists recruited from inpatient psychiatry units (Luxton et al., 2014). The intervention aims to reduce suicide mortality rates. In the years to come, CLP could be included in the standard of care post discharge.

Content from a sample letter, adapted from the CLP project led by Dr. David Luxton at the National Center for Telehealth and Technology (T2), is provided here for clinicians who are interested in using this model. A typical letter would contain the following: (1) It has been a month since your stay at (*insert site location*), and we are wishing you well; (2) We remember that you said that you enjoyed... (*If available, insert personalized content such as hobbies/other activities learned about patient prior to hospital discharge and acknowledgment of communications from a reply*). We want you to know that we are thinking of you; (3) If you wish to contact us, we would be pleased to hear from you; (4) Please note that the following resources are always available to you (*at a minimum, provide listing of resources that include Military OneSource, Suicide Prevention Lifeline, Defense Centers of Excellence Outreach Center, DoD/VA Suicide Outreach*).

Collaborative Assessment and Management of Suicidality

The Collaborative Assessment and Management of Suicidality (CAMS) approach is a structured clinical therapeutic framework that emphasizes therapeutic alliance by moving away from the traditional stance of the clinician being the expert on the patient and his or her needs and moving

toward a more collaborative relationship between provider and patient (Jobes, 2006). The goal of CAMS is to understand the function of suicidal-ity in getting one's needs met. CAMS utilizes the "Suicide Status Form" (SSF), as a tool to be used for clinical assessment, treatment planning, and tracking patient progress. The SSF consists of both qualitative and quantitative measures. When the SSF is being administered, clinician and patient sit side-by-side which encourages collaboration. They work together to explore factors such as the patient's psychological pain, stress, self-hate, and hopelessness. They use this information to understand what underlies and/or increases the patient's risk for suicide. This allows them to then target the issues at the root of the suicidality.

CAMS lasts a minimum of four sessions, consisting of an initial session, two tracking sessions, and an outcome session. Treatment begins when a patient reports current suicidal thoughts. The length of treatment is determined by the time that it takes for suicidal ideation to alleviate. In every session, sections of the SSF are completed, which includes the completion of the "core assessment" items. Tracking sessions focus on refining a crisis response plan and treating "suicide drivers." Each tracking session ends with a revision of the collaborative treatment plan. Once the risk of suicide is resolved, the SSF Outcome Forms are completed and CAMS is terminated. Several studies, including one RCT, have shown empirical support for CAMS (Jobes, Lento, & Brazaitis, 2012). Currently, there is a study underway with an active duty Air Force sample, utilizing CAMS in outpatient clinics.

Crisis Response Plan

A Crisis Response Plan (CRP) is a tool used to provide specific instructions in the event of a suicidal crisis (Rudd, Mandrusiak, & Joiner, 2006). The clinician guides the patient to specifically define what a suicide crisis entails and the goal is to build crisis management skills. The plan is typically written on a small piece of paper that is easily carried by the individual, such as an index

card or business card. The first few steps of the CRP involve actions that the patient can take on his or her own. This promotes autonomy and empowerment. The remaining few steps involve others in the patient's life, and might include calling a friend, for example. The clinician and patient also role-play using the CRP before implementation. As the patient's crisis management skills improve and treatment progresses, the CRP can be modified as needed. The CRP is currently being evaluated among active duty service members reporting current suicidal ideation with intent to die and/or a recent suicide attempt at Fort Carson in Colorado Springs, Colorado (University of Utah, 2016). The intervention aims to reduce subsequent occurrences of suicide deaths, self-injurious behaviors, and inpatient psychiatric hospitalizations. The CRP could be used as the standard of care in healthcare settings where the patient's time is brief, such as emergency departments (EDs).

Safety Planning Intervention with Family

The Safety Planning Intervention (SPI) is a brief intervention (20–45 min) used in acute care settings with military personnel and their family members to decrease suicide risk (Stanley & Brown, 2012). This single session intervention can be used in EDs, crisis hotline centers, and/or inpatient psychiatric hospital units. The SPI is a plan that consists of coping strategies and supports for suicidal crises. The strategies are prioritized, individualized, and collaboratively developed. The SPI consists of the following elements: (1) warning signs of suicidal crises; (2) internal coping strategies; (3) social contacts that can provide distraction; (4) close social contacts that can provide help to resolve the suicidal crisis; (5) mental health resources; and (6) restricting lethal means.

Safety Planning for Military (SAFE MIL) is an RCT that is evaluating the SPI intervention at a major military hospital, Walter Reed National Military Medical Center (WRNMMC; Ghahramanlou-Holloway et al., 2014). A

concurrent quasi-experimental design, titled Safety Planning for Veterans (SAFE VET) is also underway, evaluating the SPI in several Veterans' Affairs EDs (Currier et al., 2015; Knox et al., 2012). The implementation of the two studies allows a comparison between military and veteran study samples and will further address the needs of these unique populations.

Case Example: Air Force Guide for Suicide Risk Assessment, Management, and Treatment

A comprehensive coverage of the various suicide prevention programmatic efforts across all branches of service is beyond the scope of this chapter. Each branch of service has clearly taken the problem of suicide seriously and has designed and implemented a number of programmatic and culturally-sensitive strategies for prevention, intervention, and postvention. To provide an illustrative example of the noted endeavors, in this section, we describe the *Air Force Guide for Suicide Risk Assessment, Management, and Treatment* (hereafter referred to as the *AF Guide for Suicide Risk*) (United States Air Force (USAF) Medical Operations Agency, 2014). This is a clinical and empirically-driven resource that is mandated for use by mental health providers across the Air Force in providing quality care to service members and family members at risk for suicide (United States Air Force Medical Operations Agency, 2014).

The *AF Guide for Suicide Risk* provides empirically-based guidance and policy on how to assess, manage, and treat suicide risk within specialty outpatient mental health clinics. Air Force policy, as mandated by Air Force Instruction (AFI) 90-505 in 2006, requires that mental health providers be trained annually on this guide in order to enhance mental health provider and technician suicide risk competency across the Air Force Medical Service. The *AF Guide for Suicide Risk* does not define suicide risk standard of care, but it does provide a solid foundation upon which mental health providers can base their clinical practices.

The *AF Guide for Suicide Risk* highlights a few suicide prevention policies that make a significant impact on the Air Force population. First, it requires universal screening for suicide risk at every mental health related individual or group encounter. Patients are administered the Patient Health Questionnaire-9 (PHQ-9) before every clinical appointment (Spitzer et al., 1994). When a patient responds positively to PH-Q item #9, indicating the presence of suicidal ideation, the mental health provider is mandated to use the Suicide Status Form/Suicide Tracking Form for a more comprehensive suicide risk assessment, unless it is not clinically indicated, at which point, the provider must document why this action was not taken (Jobes, 2006). The USAF also requires mental health providers to use standardized documentation templates that include a thorough suicide risk assessment of warning signs, risk factors, protective factors, suicide risk level determination, and treatment disposition. Universal suicide risk screening and mandatory documentation templates assist providers in identifying patients at risk and in taking the appropriate steps to ensure safety.

Once a patient is identified as being at risk for suicide, a mental health provider will determine what additional resources may be needed to assist suicide prevention efforts. One of these resources is to place the patient on the High Interest Log (HIL). The HIL is a list of patients who are at higher risk to harm themselves or others or require a high level of care. These patients require weekly follow up with their mental health provider until the patient has had a minimum of four consecutive weeks of risk stability. Additionally, providers from the mental health clinic meet once per week to present each HIL case and to consult about treatment planning and disposition. These HIL procedures allow a team approach to managing and treating complex and difficult cases and to ensure that patients are not lost to follow up or transition of care.

When active duty patients are placed on the HIL, AF policy dictates that there must be a Treatment Team Meeting (TTM) with the mental health care team, the patient's commander or representative, the patient, and any other health

care team member or person critical to the overall suicide prevention plan for the patient. The TTM is designed to create a supportive environment where team members can share collateral information about risk factors and create a multidisciplinary/multi-environmental crisis response plan to help ensure safety for the patient while he or she is engaged in mental health treatment. Once suicide risk has dissipated and the patient is no longer on the HIL, another TTMSuicide, US military:air force guide: is convened to once again show support to the patient and discuss plans for moving forward. The AF has received feedback that TTMs are highly valued by commanders, patients, and mental health staff.

The suicide risk literature highlights the need for community-based approaches to suicide prevention (Langhinrichsen-Rohling et al., 2011; Mitchell et al., 2012). Oftentimes, a coworker or friend will be the first to learn of someone at risk for suicide. As a result, the AF requires all personnel to complete annual face-to-face suicide prevention training. This training educates personnel on suicide warning signs and risk factors as well as appropriate actions they should take when they come across someone at risk for suicide. This face-to-face training is taught with the aid of video vignettes and is set up to encourage small group discussions. This training highlights the essential need for everyone to recognize that suicide prevention is a community responsibility.

Future Considerations

Documents, such as the *AF Guide for Suicide Risk*, attempt to disseminate the best known information about suicide to clinicians and researchers, but much remains to be known. The field of suicidology is vibrant grounds for research, and there are many promising avenues of study currently under investigation. Although a complete list of research and treatment gaps is beyond the scope of this chapter, several of the most salient are discussed briefly with recommendations for additional reading.

Stigma has been identified as a significant barrier preventing service members from seeking needed mental health care (Hoge et al., 2004; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). For a thorough review of military stigma toward mental health care, the reader is referred to a recent report by RAND Corporation (Acosta et al., 2014). Previous research found that between 28.6% and 48.9% of lower enlisted Army personnel and 19.7–33.3% of lower enlisted Marines have reported stigma as a barrier affecting help-seeking behavior (Joint Mental Health Advisory Team 7, 2011). An anonymous survey identified up to 65% of a mixed Army and Marine Corps sample who expressed concern that they might be stigmatized if they were to seek mental health care (Hoge et al., 2004). However, the RAND report's micro simulation model identified that eliminating stigma would not significantly increase the probability of a service member initiating treatment. Report panel experts interpret these results as indicating that simply changing attitudes or providing more education does not, by itself, create behavioral change. Instead, prevention programs are most successful when such changes are clearly stated, modeled, and engaged in. Recommendations stemming from this report aim to improve stigma reduction interventions, target relevant policies, and develop research and evaluation approaches. Most important recommendations as ranked by expert panelists include: promoting interventions that increase treatment seeking, encouraging peer support programs, creating alternate methods of treatment delivery (e.g., telehealth options), developing evaluations for programs that address stigma, designing longitudinal research to examine stigma, and creating a task force to reconcile a military command's need for knowledge with a service member's need for privacy relating to mental health care.

A great deal of work has been conducted identifying factors associated with increased risk for suicide (see, for example, Kessler et al., 2014), much of it studying risk factors at the population level. Most risk factors have little clinical utility, however, and some have argued that attempting to prevent suicides by identifying risk factors (or

combinations of risk factors) will not lead to a change in suicide rates (Large, Sharma, Cannon, Ryan, & Nielssen, 2011). Future risk factor research may transition from examining distal factors for suicide to more proximal factors, such as relevant suicide-related “drivers” (Jobes, Comtois, Brenner, & Gutierrez, 2011). Drivers consist of “idiosyncratic internal experiences, behaviors, and external situations” that a suicidal individual identifies as the core of his or her suicidality (Tucker, Crowley, Davidson, & Gutierrez, 2015). As research further delineates the concept of drivers, it can be used to examine their utility and treatment feasibility for decreasing suicidal ideation or attempts. An RCT with military personnel is currently utilizing the exploration of drivers as an element of intervention for suicide-related behavior (D. Jobes, personal communication, 2015).

Attempts to understand the drivers for suicide risk within individuals may be accompanied by efforts to strengthen protective factors. Social support, for example, is a demonstrated protective factor against suicidal ideation (Lemaire & Graham, 2011; Robert H Pietrzak et al., 2010). Social support might be strengthened by interventions targeting family members and unit members or strengthening post-deployment support. Such interventions have been developed for other mental health issues, including PTSD (e.g., Tsai, Harpaz-Rotem, Pietrzak, & Southwick, 2012). A report by the Defense Centers of Excellence discussing military peer programs identified five elements of successful peer-based programs: (1) conduct adequate planning and preparation, including identifying needs specific to the treatment population; (2) clearly articulate policies such as role boundaries and confidentiality; (3) conduct systematic screening with defined selection criteria for peer supporters; (4) leverage benefits from “peer” status; and (5) provide ongoing structured training (Money et al., 2011). The authors specifically highlight the potential impact of peer support programs in suicide prevention, as peers may be a suicidal individual’s first point of contact. Other programs can also be developed for the family of

the military service member. For example, REACH (Reaching Out to Educate and Assist Caring, Healthy Families Program) targets coping strategies, minimizes interpersonal stress, builds communication at home, and educates family about relevant mental health disorders (Sherman, Fischer, Sorocco, and McFarlane, 2009).

Another area of future advancement in care involves facilitating communication between the health systems that serve current and former service members. Those who die by suicide are likely to have interactions with a health care system in the year preceding death, and it is essential that treatment facilities, treatment providers, and health systems work together to assure that needed care is not interrupted due to failures in communication (Ahmedani et al., 2014; Denneson et al., 2010; Hom, Stanley, & Joiner, 2015). Ensuring ease of communication may shorten waits for mental health care and facilitate effective treatment as active duty service members transition to VA treatment. Although DoD and VA systems are becoming more interoperable, more remains to be done (Panangala & Jansen, 2013). While the integration of DoD and VA healthcare information technology systems is a politicized issue beyond the scope of this chapter, it is hoped that eventual progress in this regard will ensure that providers will receive timely information to deliver the highest quality care.

Future research may also examine international military suicide prevention efforts that may be of value to the U.S. Piscitelli (2011) identified several areas in which U.S. policy may draw from other nations, including: (1) increasing social support within military settings; (2) making prevention programs more consistent across all military branches (see also Sollinger, 2011), which has led to more efficient implementation and evaluation in other militaries; (3) providing the same level of care to reservists as active duty members; and (4) altering deployment such that only those with more experience are deployed, or shortening deployment length. Current research efforts on this front include the NATO Research Task Group 218, chaired by this chapter’s lead

author. The Task Group's report on international military suicide, *Military Suicide Prevention: Report Prepared for NATO Leadership*, is currently in preparation.

Conclusions

As is the case with any public health problem, we recognize that much remains to be done. The DoD Task Force on the Prevention of Suicide by Members of the Armed Forces disseminated its final report, *The Challenge and the Promise: Strengthening the Force, Preventing Suicide and Saving Lives*, in August 2010 (Department of Defense, Task Force on the Prevention of Suicide, 2010). This report contained 49 findings and 76 associated recommendations to address the problem of military suicide in four primary focus areas: (1) Organization and leadership; (2) wellness enhancement and training; (3) access to, and delivery of quality care; and (4) surveillance, investigations, and research. In response to the report and due to a need for a centralized oversight authority, in November 2011, the Defense Suicide Prevention Office was established as part of DoD's Office of the Under Secretary of Defense for Personnel and Readiness (DSPO; <http://www.dspo.mil/>). DSPO's mission is to "serve as the DoD oversight authority for the strategic development, implementation, centralization, standardization, communication, and evaluation of DoD suicide and risk reduction programs, policies, and surveillance activities to reduce the impact of suicide on Service members and their families" (Defense Suicide Prevention Office, 2013, p. 2).

As noted earlier in this chapter, the DoD has continually paid close attention to the public health problem of military suicide, particularly over the past decade. The formation of DSPO has been an instrumental step in the right direction. Epidemiologic and treatment development research on military suicide have certainly flourished in recent years. Clinically, more and more providers in various disciplines including primary care, psychiatric nursing, social work, psychiatry, and psychology are increasing their

foundation of knowledge in military suicide prevention and enhancing their skills in the delivery of evidence-informed practices. We have certainly come a long way. However, the battle against suicide is not one that can be easily won. Providers, other helping professionals (e.g., chaplains), researchers, and policy makers across the DoD are encouraged (1) to participate in continuing education activities (such as those offered by the Center for Deployment Psychology (<http://deploymentpsych.org/>) and the Defense Centers of Excellence (<http://www.dcoe.mil/>) in order to maintain and/or improve their knowledge about military suicide, (2) to engage in more collaboration and networking to enhance overall communication and multidisciplinary solutions, and (3) to lessen the gap between research and translation—i.e., the delivery of promising interventions to suicidal service members and their families. It is our hope that these actions will further advance suicide prevention efforts in the United States Military.

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Psychological Adjustment After Military Operations: The Utility of Postdeployment Decompression for Supporting Health Readjustment

Erik De Soir

This chapter provides a literature review of post-deployment stressors and their effects and explores the potential mitigating value of adding a transition period between the operational environment and the “homefront”. The organized transition period between the end of a military operation and the homecoming, is currently known as Third Location Decompression (TLD), which is under study by the Belgian Defence department as a means of providing better psychosocial support to troops returning from difficult, dangerous, and potentially traumatic operation theatres.

The TLD, referred to in Belgium and France as “Sas d’Adaptation” (Adaptation Lock), has been developed by several NATO countries and can be an important preventive tool to foster post operational stress management and adjustment in returning soldiers and their spouses or partners. These programs usually combine postmis-

sion debriefing, psychosocial adjustment, mental and physical relaxation, sense giving, and mental health psychoeducation in a safe and comfortable location. There remains some disagreement regarding inclusion criteria—i.e., who needs a TLD—and whether or not civilian facilities should be used. With the exception of a few studies on perceived utility, up to now there is little empirical evidence regarding the benefits of TLD on postmission health and its usefulness regarding trauma screening and prevention (De Soir, 2011). This chapter will focus on the key features of various TLD programs with troops that have been deployed in different theaters in Afghanistan. The ingredients of what seems to be the ideal TLD program will be discussed in the light of the perceived benefits obtained in other NATO countries.

We begin by reviewing research regarding the antecedents, correlates, and outcomes of post-mission adjustment during and after military (peacekeeping or war) operations. Traumatic stress and posttraumatic stress disorder (PTSD) play a prominent role in scientific research about readjustment and readaptation of troops after long-term deployment. Next, we discuss the implementation of Third Location Decompression programs in several NATO countries including Belgium and assess the evidence for their effectiveness in facilitating healthy adjustment and homecoming.

Portions of this chapter were drawn from E. De Soir (2011) NATO Technical Report “The Belgian end of mission transition period: Lessons learned from third location decompression after operational deployment,” Defense Technical Information Center Accession Number ADA582836.

E. De Soir (✉)
Royal Higher Institute of Defence,
Bruxelles, Belgium
e-mail: erik.desoir@mil.be

Psychological Adjustment During Deployment

PTSD-Related Adjustment

Of the various mental health problems that soldiers may experience during and after deployment, PTSD has probably received the most attention. Many studies have attempted to ascertain prevalence rates for PTSD in soldiers. For example, a recent review of 49 different studies in Canada, the United Kingdom, and the United States found PTSD prevalence rates of 11.3–14.4% among military personnel returning from the Iraq war (Hines, Sundin, Rona, Wessely, & Fear, 2014). The same study found somewhat lower rates in personnel returning from the Afghanistan war, 4.6–9.6%. In earlier research, PTSD rates varied from a very low 0.5% (Lundin & Otto, 1992) up to a high of 25.8% (Seedat, le Roux, & Stein, 2003) and were certainly lower than the 15.2% of PTSD found in a sample of Vietnam veterans (Kulka, Schlenger, Fairbank, & Cranston, 1990). Ramchand, Schell, Osilla, Burns, and Caldarone (2010) report how different ways of defining or measuring PTSD can result in very different prevalence estimates.

First of all, it is important to take a look at the antecedents of PTSD in military cohorts. Many studies have been done that examine PTSD and other psychological reactions among military personnel involved in peacekeeping operations. Importantly, several sociodemographic variables seem to play a significant role in the prediction of PTSD. Risk of developing PTSD is higher for younger peacekeepers (Bolton, Litz, Britt, Adler, & Roemer, 2001; Kettner, 1972; Hotpof et al., 2003), women (Hotpof et al., 2003; Litz, Orsillo, Friedman, Ehlich, & Batres, 1997), servicemen of lower rank (Bolton et al., 2001; Hotpof et al., 2003), those with lower income (Kettner, 1972), those unemployed before enrolment (Ballone et al., 2000), divorced (Kettner, 1972), unmarried (Bolton et al., 2001), having a large family (Ballone et al., 2000), reporting a lack of athletic activities (Ballone et al., 2000), and those with less education (Bolton et al., 2001; Hotpof et al., 2003; Kettner, 1972; Litz, Orsillo et al., 1997).

Contrary to some of these findings, older studies found that men were more prone to develop PTSD (Lundin & Otto, 1989), or found no differences between men and women (Lundin & Otto, 1992). Interestingly, Britt, Adler, and Bartone (2001) found that women reported more benefits as a result of deployment than did male soldiers.

Research on stress during peacekeeping missions has found that some personality variables predispose servicemen to develop stress-related problems, including PTSD. Soldiers having parents with a psychiatric history (Kettner, 1972), or having themselves a psychiatric history (Ward, 1997) were more prone to develop PTSD. Servicemen expressing hostility, paranoid ideation or psychoticism were also more at risk for PTSD (Bolton et al., 2001). Looking at medical units deployed during the Persian Gulf War, Bartone (1999) found that soldiers low in personality hardiness reported more stress related PTSD symptoms.

In addition to personality, situational variables seem to play a considerable role in the prediction of PTSD. Factors associated with PTSD include being a victim of war-zone violence (Litz, 1996), having been deployed previously in a peacekeeping operation (Hotpof et al., 2003), having participated in a mission of 6 months or longer (Ballone et al., 2000), being deployed on “combat duty” (Hotpof et al., 2003; Litz, Orsillo et al., 1997), being exposed to potentially traumatic events (Bolton et al., 2001; Hotpof et al., 2003), and personal discomforts during the mission (Litz, Orsillo et al., 1997). Other associated factors are witnessing serious injury or illness (Bolton et al., 2001) witnessing violence or the aftermath of violence (Litz, 1996), witnessing atrocities against civilians without the opportunity to help (Litz, Orsillo et al., 1997; Weisæth, Mehlum, & Mortensen, 1996), witnessing the effects of starvation (Litz, 1996), and being fired upon without permission to return fire (Weisæth et al., 1996). Litz (1996) found that the interaction between exposure to war-zone stress (e.g., going on a dangerous patrol) and frustration with the peace enforcement mission (e.g., restrictive rules of engagement) was the best predictor of PTSD severity. A measure reflecting events,

circumstances or contexts experienced as fulfilling, pleasing, or uplifting for military personnel was associated with fewer PTSD symptoms (Litz, Orsillo et al., 1997). Interestingly, Hotpof et al. (2003) found no evidence for previous deployment as a predisposing or a protective factor. Contrary to earlier research, the study of Litz, Orsillo et al. (1997) found no relationship between PTSD and the need to restrain the use of force when faced with life-threatening circumstances. It seems therefore that soldiers who experienced greater frustration tended to also benefit psychologically from their humanitarian role. In contrast, exposure to traditional combat was negatively related to positive aspects of peacekeeping, suggesting that more intensive levels of stress or threat to life may attenuate the potential rewards or gratification that would otherwise result from humanitarian duties associated with modern peacekeeping.

Beyond PTSD: Other Psychological Adjustment Problems During Deployment

In addition to PTSD, researchers have noted a number of physical and mental health problems experienced by troops engaged in peacekeeping operations. Buma, van Ameijden, and Huyboom (1999) reported interesting results about morbidity surveillance among 2283 Dutch peacekeepers in Cambodia. Findings indicated that the medical services were consulted by 1356 personnel (59.4%). The three main problems were all physical: tropical disorders (24.8%), musculoskeletal disorders and injuries (23.9%), and dermatological disorders (22.7%). Eight percent of the servicemen consulted for neurological and psychiatric disorders reasons. Contrary to these findings, in an older study, Lønnum, Kluge, and Malm (1982) found that the majority of repatriations in UNIFIL (United Nations Interim Force in Lebanon) operation between 1978 and 1980 (31.3%) were due to neuropsychiatric disorders, including headaches, anxiety, depression, and insomnia. Interestingly, Croft, Hoad, and Dales (1999) found that 6% of the 4400 hospitaliza-

tions of British troops deployed to Bosnia were due to psychiatric disease. Finally, Brundage, Kohlhase, and Gambel (2002) found that military personnel having been hospitalized for mental health reasons before deployment were at higher risk than those who were not hospitalized to be again hospitalized during the mission and after the end of the operation. At least, these three studies indicate that mental health is an important issue for military personnel and that it deserves attention.

Indeed, psychological problems were reported quite frequently by military personnel in the early peacekeeping operations in the nineties (Baggaley, Piper, Cumming, & Murphy, 1999; Weisaeth & Sund, 1982). Although Lundin and Otto (1992) found a low incidence of depression, sleep disorders, nightmares, and muscular tension among peacekeepers, Ward (1997) reported that a substantial proportion of young veterans reported persisting problems with anger, irritability, intrusive thoughts, exaggerated startle response, and bodily aches and pains. Orsillo, Roemer, Litz, Ehlich, and Friedman (1998) found that more than one-third of Somalia peacekeepers reported significant symptomatology on the dimensions of hostility, psychoticism, depression, and paranoid ideation. Women were more at risk for depression and anxiety (Lundin & Otto, 1989), and were more likely to have a higher score on scales of interpersonal sensitivity and psychoticism.

Several researchers have included control groups to better identify specific problems peacekeepers are confronted with. Compared to controls, veteran peacekeepers expressed higher levels of somatization (somatization) lower scores on a measure of general health (Ward, 1997). Moreover, peacekeepers report higher levels of fatigue (Hotpof et al., 2003). In comparison with soldiers stationed in Italy, more stress was reported by Italian peacekeepers in Bosnia, and they also showed more insomnia, a tendency for solitude, neurovegetative symptoms, and reevaluation of traumatic events (Ballone et al., 2000). Hotpof et al. (2003) found in a study of peacekeepers deployed in Bosnia between 1992 and 1996 that four symptoms (irritability and outbursts of

anger, avoiding doing things, night sweats, and unintended weight gain) were significantly more common in the Bosnia group than in the control group.

Interestingly, peacekeepers on missions in Somalia and Haiti saw their roles changed at the end of the mission, and at that time reported overall good mental health, even if maladjustments were noted in terms of misconduct and nonadaptive or abusive behaviors (e.g., fighting, disciplinary problems, and recklessness; Hall, Cipriano, & Bicknell, 1997).

Moderators of the Relation Between Stressors and Adjustment

Two hypothesized buffers of stress have been frequently studied: social support and coping strategies. Regarding social support, Carlström, Lundin, and Otto (1990) found that two-thirds of soldiers had someone to talk about their problems with during the mission. Other studies found a substantial number had a tendency to isolate from others (Ballone et al., 2000; Ward, 1997) or felt isolated (Bartone et al., 1998). Looking at military medical personnel on a humanitarian mission, Britt and Adler (1999) found that respondents were less likely to use adaptive coping strategies, and reported drinking more alcohol to deal with problems. In a similar vein, Hotpof et al. (2003) showed that peacekeepers deployed in Bosnia between 1992 and 1996 consumed significantly more alcohol than a control group. The association with alcohol decreased after controlling for demographic variables but was still present. Studies have also shown that cigarette smoking increases during peacekeeping deployments (Britt & Adler, 1999).

Asmundson, Stein, and McCreary (2002) investigated how PTSD symptoms may influence health status of deployed peacekeepers and non-deployed military personnel. Results for deployed personnel show that PTSD symptoms influence directly health status, controlling for the effects of depression and alcohol use. PTSD symptoms also had an indirect influence on health through alcohol. Britt and Bliese (2003) found evidence

that engagement in work can serve as a buffer of negative effects associated with lack of sleep.

Another relevant study examined special operations soldiers deployed to Iraq and Afghanistan, and found that 15% ($N = 201$) screened positive for alcohol misuse following their return home (Skipper, Forsten, Kim, Wilk, & Hoge, 2014). When looking at the different types of combat exposure experienced by this group, results showed that alcohol abuse was higher for soldiers who reported greater exposure to atrocities, threats to self, and fighting. A more recent study looking at U.S. soldiers returning from a war-zone deployment to Afghanistan also found that combat exposure was related to increased risk for alcohol abuse in the early homecoming period (Bartone et al., 2015). Interestingly, this study also found that soldiers who were high in psychological hardiness were at lower risk for stress-related alcohol problems.

Family Problems of Deployed Troops

Several studies have found that peacekeepers often long for home (Carlström et al., 1990). Orsillo et al. (1998) found that participants reported quite a bit of distress regarding general frustrations associated with separation from family and friends. Once deployed, servicemen were generally eager to contact their families to confirm and verify that all was well at home and to let their families know that they had arrived safely (Bartone, Adler, & Vaitkus, 1998). Bell, Schumm, Knott, and Ender (1999) found that the most popular means of communication was the telephone. Interestingly, these authors found that stress of peacekeeping deployment was significantly predicted by having had problems of communication, in turn predicted by time to contact, mobilization readiness, and the unit returning earlier. The quality of the current communication means have increased dramatically with the appearance of smartphones and the quasi-permanent availability of social media. The disadvantage of this evolution is that soldiers on deployment carry a greater burden of accumulated small home front problems on their

shoulders. Before, contact with the homefront was only made on periodically calculated moments or in crisis situations.

Soldiers preparing to deploy often underestimate the stressors they will likely encounter during operations. For example, Britt and Adler (1999) found the following stressors were experienced more than expected: trouble communicating, feeling far away from things that are familiar, travel restrictions, isolation. When soldiers reported a large amount of family-related stress, those who were more engaged in their jobs showed lower levels of psychological distress than those who were disengaged (Britt & Bliese, 2003). In a study assessing the changes in marital satisfaction over time for soldiers who had deployed overseas on a peacekeeping mission, Schumm, Bell, and Gade (2000) found that among those who remained married, marital quality did not appear to change. This suggests that if separation reduced marital satisfaction moderately, it did not reduce soldiers' basic confidence in the intrinsic quality of the marriage. The authors also found that marital instability was not uncommon among deployed soldiers over a 2-year period, although it appeared to be highest for those who said that their marriage was in trouble a few months before deployment.

Organizational Stressors

Social and organizational factors can also influence stress and vulnerability for deployed soldiers. Ballone, Valentino, Occhiolini, Di Mascio, Cannone, and Schioppa (2000) conducted a study about the factors influencing the psychological stress level of Italian peacekeepers in Bosnia. Compared to a group of soldiers stationed in Italy, a higher proportion of peacekeepers had lower socioeconomic status. Also, more peacekeepers enrolled for economic reasons and were unemployed before the mission. The major factors associated with stress for this group of peacekeepers were: a mission lasting for 6 months or more, unemployment before enrolment, having a large family, and lack of physical activity.

Moreover, witnessing atrocities against civilians without the opportunity to help, and being subject to (close fire) incidents without the permission to return fire seemed to represent severe trauma for peacekeepers in comparison with traditional combat soldiers (Weisæth et al., 1996). The lack of a clear return date (Hall et al., 1997; Ritchie, Anderson, & Ruck, 1994), restricted local travel (Hall et al., 1997), changing rules of engagement (Ritchie et al., 1994), a lost sense of the mission (Hall et al., 1997), lack of meaningful activities in which to engage (Bartone et al., 1998), poor communication with home (Hall et al., 1997), boredom (Bartone et al., 1998; Ritchie et al., 1994), and determining work unit and section relationships are considered as stressors by peacekeepers. Indeed, Bartone et al. (1998) showed that virtually every work team in the U.S. peacekeeping unit they studied was composed of military personnel who had not worked together previously.

Nevertheless, most of the peacekeepers considered their jobs to be relevant and important to maintain peace. In their study of 35 medical personnel on a six-week humanitarian mission to Kazakhstan, Britt and Adler (1999) found that soldiers believed they were gaining valuable professional experience that would be relevant to other missions including combat. On the other hand, if peacekeepers felt they were engaged in a lot of irrelevant activities, they expressed concern that their job skills were degrading through inactivity (Britt & Adler, 1999).

Positive Aspects of Deployment

In addition to negative effects of peacekeeping deployments, a number of researchers have found some positive effects. Litz, Orsillo et al. (1997) found that participants reported positive aspects of their mission activities, although traditional military duties were seen as more rewarding than humanitarian duties. Men were more exposed than women to traditional war zone stressors, and women were more affected by both peacekeeping-related stressors and low-magnitude stressors. Still, women reported feeling more positive about

their humanitarian duties. This suggests that the subject of postmission satisfaction and posttraumatic growth are important topics for psychosocial support activities.

Litz, King, King, Orsillo, and Friedman (1997) reported that exposure to traditional combat and negative aspects of peacekeeping appeared to influence PTSD severity. The most compelling results relate to the feature of peacekeeping that is particularly difficult to reconcile for combat-trained military personnel: the need to restrain the use of force when faced with possibly life-threatening circumstances. However, the restraint variable was not linked to PTSD, directly or indirectly. Positive aspects of peacekeeping were strongly negatively related to PTSD. It seems that soldiers who experienced greater frustration tended to also benefit psychologically from their humanitarian role. In contrast, exposure to traditional combat was negatively related to positive aspects of peacekeeping, suggesting that intensive levels of stress or threat to life may attenuate the potential rewards or gratification that would otherwise result from humanitarian duties associated with modern peacekeeping. At any rate, these feelings and frustrations need to be ventilated before the homecoming in order to avoid the cumulative effect of such emotions, which can lead to acting out and disturbed readjustment on the homefront.

Britt et al. (2001) studied the role of engagement in meaningful work and hardiness as possible variables playing a role when peacekeepers derive benefits from stressful events. They found that there was a strong link between personality hardiness (commitment, challenge, and control), and the tendency to perceive meaning in the deployment (soldier engagement, job importance, and peacekeeper identity). Interestingly, the location influenced both the contextual experiences and the perceived benefits peacekeepers felt. That is, servicemen who deployed to relatively safe areas in Hungary reported fewer experiences and perceived benefits than soldiers deployed to the more dangerous Bosnia and Croatia. Results also showed that contextual experiences mediated the link between the loca-

tion and the perceived benefits felt by peacekeepers. Last, it appeared that women reported more benefits as a result of deployment than male soldiers.

If adjustment during deployment influences postdeployment adjustment, it is important to carefully track its evolution during the deployment and shortly before the homecoming. Weisaeth et al. (1996) studied stress among Swedish peacekeepers who served in South Lebanon. A considerable proportion of soldiers increased their consumption of alcohol during the service term (roughly 45%). Other problems included unemployment, higher divorce rate, deterioration of financial status, and legal problems. However, positive outcomes were also reported by peacekeepers. Specifically, they believed that their stress-tolerance and self-reliance had improved. In another relevant study, MacDonald, Chamberlain, Long, Pereira-Laird, and Mirfin (1998) examined mental, physical health, and stressors reported by 277 New Zealand peacekeepers. Results showed that at predeployment, well-being was relatively low, decreased further during deployment period, increased postdeployment, and decreased again at follow-up. Psychological distress was quite high at predeployment, was relatively low during the deployment period and immediately after the deployment, and it increased sharply at follow-up. The mean level of depression increased steadily from pre-deployment through mid-deployment, increased at postdeployment, and increased further at follow-up. Results demonstrate that the periods that most affected the mental health of the personnel were predeployment (preparation and anticipation of the deployment) and follow-up (adjustment to an altered routine).

Postdeployment Adjustment

PTSD-Related Issues

A number of studies have identified higher levels of PTSD in the period after soldiers return home from peacekeeping duties. Melhum and Weisæth (2002) investigated the predictors of PTSD

reactions in Norwegian U.N. peacekeepers 7 years after service. About half of the veterans reported that their alcohol consumption increased during their stay in Lebanon. The main reasons given for this increase were that alcohol was cheap, easily accessible or both. Significantly more members of the repatriated veterans reported tension, anxiety, and stress as reasons for the increased use of alcohol. Just 10 percent of the subjects were found to have PTSD. Finally, PTSD symptoms were related to both stressful life events, and the perceived lack of meaningfulness in the military mission. Moreover, the more comfortable the respondent was with U.N. service, the fewer PTSD symptoms reported. Increased alcohol consumption in the aftermath of the service was likewise linked to more PTSD symptoms.

Han and Kim (2001) examined psychiatric symptoms reported by international peacekeeping personnel in the Western Sahara Desert. Stressors included exposure to the hot, sandy environment and homesickness. Only 5% of respondents complained about anxiety, and most of them had no trouble sleeping but 8.4% complained of general fatigue. Sleep difficulties were associated with thoughts about family, work responsibilities, and noise (air conditioner, generator, TV, etc.). Interestingly, none of the respondents showed signs of clinically significant psychopathic or depressive problems. Furthermore, no significant discrepancies in symptoms or stress levels were noted in terms of team site, age, mission duration, or number of missions. MacDonald, Chamberlain, Long, Pereira-Laird and Mirfin (1998) report only three cases of PTSD (1%) in a sample of 277 New Zealand Defence Force peacekeepers.

Mental Health Issues

Two studies deal specifically with this issue. In the first study, Weisaeth et al. (1996) studied stress among Swedish peacekeepers who served in South Lebanon. A considerable proportion of soldiers increased their consumption of alcohol during the service term (roughly 45%). Other

problems included unemployment, higher divorce rate, deterioration of financial status, and legal prosecution. However, positive outcomes were also reported by peacekeepers. Specifically, they believed that their stress-tolerance and self-reliance had been improved.

Greenberg et al. (2003) investigated the issue of self-disclosure among a sample of 1002 peacekeepers after return from deployment. They found that 44% of servicemen wanted to talk about their experience with someone, and approximately two-thirds did. Results indicate that women talked more than men, and those who disclosed reported lower scores on the GHQ-12 (Goldberg, 1972), and on a measure of PTSD symptomatology (PCL-M, Davidson et al., 1997). Peacekeepers speaking with their spouse/partner were more likely to be married, male, and older. Women were more likely to have spoken to other family members, and older personnel were more likely to speak with military friends/peers (deployed or not) or the chain of command. Speaking with more persons was associated with lower scores of both GHQ-12 and PCL-M. Interestingly, those who spoke to medical services had higher scores on both PCL-M and GHQ-12 than those who did not.

Readjustment Problems: Conclusion

As should be clear by now, existing literature on peacekeeping, peace enforcing, and combat operations shows that military personnel returning from operational deployments may experience a range of stress-related adjustment and mental health problems. PTSD-related issues, as a function of the type of exposure and the characteristics of the mission (boredom, frustration, combat exposure, witnessing atrocities, length of the deployment, etc.), organizational stressors (quality of leadership, meaning making, cohesion, predictability of return date, etc.), health problems, and family concerns may cause significant stress in returning troops. Considering this, it makes sense for policy makers to include a transitional phase between the operational theatre and the return home for military personnel. This transition

phase can serve as a screening tool and also catalyst for adequate coping with the typical homecoming challenges.

TLD as a Tool for Post Mission Readjustment

TLD refers to the procedures allowing troops to “unwind” or “to wash off the mission” after long-term deployments in difficult and dangerous operational theatres such as Iraq or Afghanistan. The question of a possible evaluation of such decompression programs was first raised in Belgium in spring of 2010 by the Chief of Defence. The literature review above makes it clear that postoperational stress management can be an important aspect of psychosocial support for soldiers and their significant others. Although other NATO countries use the term TLD, a working group of Belgian operational stress specialists chose to rename this transition period as an “adaptation period”, inspired by the French “*sas d’adaptation*” (literally translated as “transition lock”). Decompression aims to achieve “a gradual reduction in pressure” or “the release from compression or stress.” The so-called “third location” refers to a place that is neither the operational theatre nor home, somewhere in between the deployment zone and the home front. It is a place where a combined program of rest, relaxation, psychoeducation, and postmission debriefing can take place. The theoretical rationale for these programs is based upon the combat motivation literature, which holds that the morale and effectiveness of any individual depends upon his or her membership in a close-knit social group. It is thought to be important to ensure reintegration within the primary group that was exposed to operational or combat stressors (Hacker Hughes et al., 2008).

Decompression has been seen throughout history as time away from the warfront, being temporarily away from combat, taking time for relaxation and physical recovery (De Soir, 2011). However, this kind of decompression or “rest and relaxation” (R&R) did not prepare soldiers to adapt to civilian life, and did not provide the nec-

essary time to unwind before returning to their families. After some armed conflicts, the decompression effect might have occurred somewhat by accident. For example, Freedman (2005) describes how troops returned from the Falklands war by sea or by air. Interestingly, those who sailed all the way home (a lengthy journey) appeared to adjust better psychologically than those who sailed only part of the journey. Presumably, this is because the former had more time available to “debrief” each other, to unwind and decompress. Even if these experiences cannot be seen as strong empirical evidence, they now appear as a starting point in the development of postdeployment decompression leave for soldiers following combat (Cobb, 1976).

Reflecting this growing awareness, a special conference was held in Portsmouth, UK, in order to review the existing decompression programs in Canada, the Netherlands, the United Kingdom, and the United States (Castro, Greenberg, & Vigneulle, 2009). Participants at the meeting, military mental health professionals from a variety of NATO countries, reviewed and compared existing TLD programs, and sought to determine if such programs really do lead to improvements in mental health for returning troops. This was the first attempt to arrive at a consensus among participating nations on the key questions surrounding TLD programs. Following extensive review and discussion, participants agreed that based on early positive evidence, TLD programs should be made available to all deploying personnel. As to content and format, it was thought best for TLD programs to include a combination of psychoeducation, rest, and recreation, and that there should be plenty of mental health professionals and chaplains or padres available for informal interactions. TLDs should provide opportunities and encouragement for informal discussions to take place regarding the operational experiences encountered during the deployment. The program should not be viewed as one of trauma (PTSD) or suicide prevention, although it may reduce the sense of stigma often associated with seeking help for mental health problems (Castro et al., 2009).

The concept of TLD is still quite new in Belgium, and continues to be studied and tested. France is also making use of TLD programs in something of an experimental manner. The experiences of an elite French unit (8^{ième} Régiment Parachutiste), which had been ambushed in Afghanistan resulting in 10 fatalities, convinced the French armed forces to expand their post mission counseling for returning troops. A TLD was first organized somewhat “on the fly,” and took place on a US military base in Bagram. But a number of practical problems there convinced the EMAT (*Etat-Major de l’Armée de Terre*) to follow the lead of several other NATO countries, who placed their TLD programs at a hotel resort in Cyprus.

Although TLD programs clearly show promise, it is important to note that to our knowledge, no study has yet provided high quality empirical evidence that TLD is beneficial. Also, it is still not clear whether and how much a TLD should be linked to the nature and intensity of the operations returning soldiers experienced during deployment. Most of the data that do exist on TLD programs are basically satisfaction reports, rather than hard evidence on the psychological benefits. Countries that are considering implementing TLD programs should be aware of these limitations. At the current time there is an absence of definitive evidence that decompression results in improved post mission mental health outcomes, or conversely that lack of decompression is associated with worsening mental health. There is a clear need for additional study.

Goals of the Decompression Program

The primary and overarching goal of decompression is restore and preserve the resiliency of soldiers after long-term deployment under difficult conditions. During deployments, a broad range of operational stressors, to include combat exposure, length of the mission, physical fatigue, and separation from the family, can negatively influence the troops’ psychological fitness. Therefore, the goals of TLD programs (Table 7.1) should include physical rest and recreation in a

Table 7.1 Goals of TLD programs

Facilitating and easing the transition from combat-life to noncombat life: reducing the stress associated with return reintegration and readjustment in family life.
Promoting wellness and mental hygiene through rest, relaxation, recreation, and reflection: stimulate positive connotation about operational experience through individual reflection and group discussion of operational experience.
Increasing awareness of mental health symptoms and ways to address them: provide tools to work through difficult experiences and ways to recognize uncommon reaction (coping with anger).
Addressing command closure: achieve closure for the felt responsibility towards those who served.
Stimulate information exchange of operational experience: informal mental health interventions, during recreational activities and rest, helping the normalization process, taking away the stigma on help-seeking.
Reducing the stress associated with return, reintegration and readjustment in family life: coping with (young) children, spouses, meeting the expectations on both sides, working on the mindset of both sides.

safe environment, facilitating reintegration into civilian and family life, promoting wellness through relaxation and reflection, increasing recognition of potential mental health programs, encouraging help-seeking behaviors, and reducing stigma surrounding postmission adaptation problems. Importantly, decompression programs should not primarily aim at the prevention of psychiatric disorders such as PTSD or depression, or at reducing suicide. Although these may be desirable outcomes, they should not be the explicit aim of the program. Rather, TLD programs should be presented and seen as a rewarding compensation for troops after long and difficult deployments, as well as a recognition for the sacrifices they have made.

Key Elements in Decompression Programs

Although existing decompression programs vary with respect to location, duration, structure, and content, there is nevertheless broad agreement across NATO countries as to the key components

to include. Typical features of decompression programs are (1) giving returning soldiers a short break from the operation theatre before homecoming; (2) psychoeducation, i.e., counseling on coping and adaptation strategies; (3) rest and recreation; (4) gradual exposure to alcohol consumption; (5) some degree of choice about how to spend time during the TLD program; and (6) structured opportunities to share experiences and engage in reflection on their experiences.

Location and Duration Most NATO nations appear to agree that decompression is best carried out in a third, neutral location. Therefore, a location which is half way between the operation theatre and the home-front is the best possible choice. For troops returning from Afghanistan to Europe, this could mean for example Malta, Cyprus, or Crete. Also, the weather conditions can play an important role and should be considered. A transition period in a cold and cloudy country would likely be more stressful than a sunny tourist destination.

Although Canada, France, Belgium, and the Netherlands prefer to use hotel resort facilities, the United States and the UK seem to prefer military bases. This might offer a better control of the troops and keep journalists away (instead of letting them book rooms in the same hotel resort). It is acceptable that soldiers prefer civilian facilities and that even from the organizational point of view (simply being away from the strictly military environment should be relaxing), but yet (to our knowledge) no empirical data are available to point at the differences in effectiveness regarding the rest and recreational (R&R) aspect of the program.

The experiences of the *Armée de Terre* of France suggest that a three-day TLD program is the optimum. If the program is any shorter than this, there may not be sufficient time to rest, adapt and to recuperate, nor to carry out the educational and social activities. Several days are needed to adapt to a normal (holiday) environment. However, if the TLD goes beyond 3 days, soldiers can begin to get bored and start to looking for action again, increasing the risk for misbehavior.

Structure TLD programs typically alternate between planned, mandatory activities and free time. The shift from the intense activity of military operations to R&R should be smooth. There should be a clear indicator provided to mark the end of the formal operational part of the mission, and the start of the TLD.

Similarly, the TLD structure should be quite clear and allow for adequate rest and physical recuperation alongside the more active and educational program ingredients. Again, the purpose of the TLD is to facilitate recovery, reinsertion and transition in normal life. Therefore, it is recommended that returning soldiers be exposed to the various aspects of normal life, with plenty of free choice of relaxation time. TLD psychologists of the French *Armée de terre* argue that it is senseless to separate soldiers from civilians in the resort where the program is carried out. Their viewpoint is that during a TLD soldiers will act like they would once on the home front. The best solution thus seems to be one in which soldiers are exposed to a structured program with a balance between mandatory elements and free choice or elective sessions. Although the wake-up time in the morning has to be early enough to ensure a disciplined beginning of the day program, it still has to be different from what it was in the operation zone.

Canadian service members remove their combat battledress, kit, and military gear before arriving in Cyprus, where they wear shorts and t-shirts. French soldiers usually arrive in full battle dress, but hand them over to the TLD staff upon arrival in the hotel resort. During the TLD, they wear their official military sports clothes, which help them to be recognizable by both the TLD and the hotel staff. For the French armed forces, this is an important part of the program. Although being allowed to rest and recuperate, the wear of official unit colors in their sports clothes reminds them that the TLD is really considered as “on duty.” Their battle uniforms are laundered by personnel of the hotel resort, and they will wear them again when returning home.

A typical TLD day starts with a late wake up and breakfast, some mandatory session (psychoeducation session, mental relaxation, postmission

debriefing, etc.), followed by free sports and recreation, lunch, and a similar program in the afternoon. Most nations agree that soldiers should have some choice between different kinds of recreational and sports activities, but consider the mental health activities as mandatory. However, some workshops might also be optional, for example those addressing problems with young children after the homecoming, or anger management. Religious services should also be available but never made mandatory. Religious services may be even more important for units which have experienced fatalities or severely wounded casualties during the deployment.

Opportunities for Rest and Recreation (R&R) Although most TLD programs include rest and recreation, forced physical training activities should be avoided. This is especially true for group sports with a competitive edge. The soldiers' aggression levels, which were functional during the deployment, are still too high and carry risks for acting out behavior while on the playing fields. This is also true for risky sports such as jet-skiing, parasailing, canoeing, etc. Because risk-taking behavior is typical for soldiers who have been exposed to constant danger, it would be dangerous for them take part in these activities. It would be especially sad to see accidents with wounded casualties during the TLD program.

Although some nations organize diverse tourist activities during the TLD (e.g., France, Netherlands), others keep soldiers busy with a strict military regime. A *French SAS de fin de mission* may begin with a relaxing boat trip during which a band plays popular songs and soldiers are allowed to swim in the open sea. It may also contain a cultural visit to an ancient Roman mosaic site during the last day. With this cultural activity, the French army aims at a gradual exposure to normal leisure and tourist activities.

Another interesting element in the French program is massage. Each soldier receives at least one massage session, and everyone is examined by an osteopathic specialist. Six months in combat dress, carrying the military kit and gear, is

potentially harmful to the back and lower limbs. The French armed forces consider it as crucial that every soldier returns home in a relaxed muscular condition.

Current TLD programs for NATO forces consider access to alcohol in a safe, controlled environment to be an important aspect of TLD, although the degree of access to alcohol differs varies. For some countries, such as the Netherlands, alcohol was freely available. For other such as the UK, the timing and amount of alcohol was more carefully controlled. In some cultures, alcohol is typically consumed as part of social function or part of the "table culture" or gastronomy, as for example France and Belgium. During the French TLD, soldiers were allowed to drink wine or beer with their meals starting at 7 pm, and bars closed at 1 am.

Although alcohol policies vary from country to country, it is nevertheless clear that military commanders are still responsible for the returning soldiers. Abuse of alcohol during the TLD is a strict disciplinary problem, and should be treated in the same way as it would be during the operation. Alcohol consumption during social events or parties at the TLD should be based on the principle of "mutual coercion mutually agreed upon." This means they everyone in the TLD program agrees to control his buddy over a reasonable and restricted use of alcohol during the time-off, and is clearly briefed on this at the beginning of the TLD. Together with a buddy system in which everyone "watches the back of someone else," good leadership should prevent any form of abuse. There is still some uncertainty regarding how much freedom of movement to allow soldiers during the TLD. Some armies will allow their soldiers to leave the hotel facilities, whereas other nations such as France and Belgium prefer to restrict soldiers to the hotel facilities.

Psychoeducational Components Although there is variability here as well, all the current TLD programs include form of mental health (MH) activities. These sessions typically aim at (1) reducing the stigma associated with MH

support although informing soldiers on the availability of support; (2) facilitating social sharing and mutual support during collective group sessions (preferably in the same groups that operated together); (3) informing soldiers about the normal thoughts, reactions, and emotions they may experience after returning from long term deployments; and (4) facilitating and stimulating the normal working through and psychological integration process. Post mission debriefing sessions might also focus on the most difficult or frightening parts of the tour of duty. These sessions can vary from the well-known protocols on psychological debriefing and do not primarily aim at emotional disclosure and ventilation. But they should always allow for direct support for all the possible reactions. These sessions are typically carried out by uniformed psychologists and are also valuable for identifying those at higher risk for long-term psychological problems.

Deciding who should Participate in TLD Programs

There is still some debate on whether to include in the TLD program military personnel who had to leave the mission prematurely for psychological, medical, or social reasons. Canada does not bring injured service members back in for the TLD, although some have requested it. It remains unclear what benefits this might have for the injured soldiers themselves or their colleagues.

In contrast, the UK brings their injured soldiers to the TLD if they are fit to transport and do not place an undue burden on those in Cyprus. To date, reactions of both the individuals and the units have been positive. Most was it as valuable in promoting the recovery process. For the US, allowing injured soldiers to return to the unit for the post mission activities, starting with a TLD activity, is not part of a general policy. For Belgium and France, this issue has not been raised until very recently, and is still under consideration.

Common Problems during the TLD

A frequent problem with the organization of a TLD is found with the policies on alcohol and freedom of movement during this transition phase. Restrictions on alcohol use are perceived by many troops as “childish,” or showing a lack of trust. During the Netherlands TLD, soldiers receive a fixed number of tickets allowing them to purchase alcohol. Nevertheless, some soldiers do get drunk, and they are cared for by the TLD staff. Canada takes a somewhat different approach. They use a nonrestrictive policy that also applies control measures to mitigate the potential for misconduct. Soldiers are relied upon to use their own judgment and any misconduct is treated on a disciplinary basis. In contrast, the UK does not provide alcohol during the first day at the beach. Alcohol is later available after dinner, with limit of five drinks per person. The UK seeks to prevent “tribalizations” of close-knit units, and the related potential for clashes between differing units as a result of alcohol overconsumption. Belgium also follows the French policy with respect to alcohol during the SAS: no alcohol is permitted during the day (until 7 pm), and all hotel bars must close at 1 am sharp. Also, there is no stocking of alcohol in the hotel rooms.

Evaluation of Decompression Programs

There have been some attempts to evaluate the TLD programs of several NATO countries, but thus far these studies have not gone beyond assessing levels of soldier satisfaction with the programs. There is still no hard evidence regarding the mental health outcomes of TLD. What currently exists is limited to expert opinions and anecdotal evidence on the usefulness and success of these adaptation programs. These subjective reports indicate a high level of support for the utility of TLDs.

As to the right length for a TLD, the consensus view seems to be between 36 and 72 h.

The majority of those who experienced TLD were satisfied with the training received, including those cases that included so-called “BATTLEMIND” training (Castro, Hoge, & Cox, 2006). The psychoeducational components were reported to be satisfactory both during the TLD and 16–24 weeks later. Soldiers with low combat exposure report a greater degree of satisfaction with the TLD. Leaders attitudes toward the benefits of TLD appear to be somewhat mixed.

It is surprising that so many troops seem to be against participation in a TLD prior to attending the program, and yet show high levels of satisfaction with it afterwards. The role of combat exposure as related to the perceived usefulness of TLDs remains largely unclear, and merits further investigation.

Conclusions

At this early stage, the majority of NATO countries consider TLD to be a valuable component of post mission counseling and psychosocial adjustment. However, many questions remain to be answered. Even if the TLD can be perceived as a reward to the service members, it is important to be sure that no additional harm is done while bringing soldiers together and in some respect making them talk about their experiences.

With the limited available research data currently available, it is impossible to draw scientific conclusions about the mental health outcomes of TLD. There may even be potential risks with these decompression programs, comparable to the risks associated with psychological debriefing. Also, expectations might still be unreasonably high and military commanders might view TLD as a panacea for all kinds of operational problems. The utilization of TLD programs should certainly not lead to a disinvestment in other kinds of psychosocial or mental health support activities.

Outcome measures for TLD effectiveness thus far have focused only on the perceived utility of this kind of support. Here, troops who participate largely report their satisfaction. This does not necessarily mean mental health of soldiers

improves after 3 days on a third location. Other outcomes besides satisfaction must be investigated. These would include such mental health symptoms of depression, stress, and trauma; rates of domestic violence; signs of improved reintegration and adaptation; cohesion and morale indicators; cues of reduction of stigma toward mental health; and indications of improved sleep amount and quality. Also, reduction of risky behaviors after deployment (e.g., alcohol and substance abuse, aggressive driving or behavior, mental rumination) should be included in future research, and randomized controlled designs are needed to determine program effectiveness. Future studies should also be planned ahead to allow for systematic data collection and have clear definitions about what outcomes to measure. It is also important to establish priorities as to whether or not the outcomes should be oriented toward operational or mental health issues.

At this writing, mental health professionals involved in TLD programs generally agree as to the effects decompression could or should achieve. These include improved morale, improved relationships with family members, reduced driving accidents, and lowered stigma associated with seeking mental health care. Even so, they generally agree that decompression alone may not reduce PTSD rates, physical injury rates, and suicide rates. Future research is needed to better document these possible outcomes, because decompression programs carry significant costs and must be defended to the civilian public and taxpayers.

Also, it may be unrealistic to provide TLD to all personnel returning from deployment on the basis of mission length. Ideally, the decision on whether to include a TLD should be made after an in-depth analysis of the context of each particular operation, based on the type of operation, the length, conditions, and level of hardship and risk. On the other hand, it is crucial that this decision is communicated to both the soldiers and their families in order to avoid last minute negative reactions or counter-productive opinions and rumors. More energy should be devoted to the management of communications about these programs. Each nation should show its gratitude and

recognition for the troops who have done their duty, serving their countries and the world in risky and arduous operations.

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W. Brad Johnson and Kristin L. Landsinger

The profession of psychology and the profession of arms have been integrally intertwined for more than a century. Both clinical and research psychologists share a long and distinguished history of service to the nation in support of military personnel and military leaders (Budd & Kennedy, 2006; Driskell & Olmstead, 1989; Johnson, 2016). Today, hundreds of active-duty psychologists—primarily clinical/counseling specialists—serve military service members and their families around the globe. Hundreds more serve the Department of Defense (DoD) in civilian roles, providing clinical, consulting, and research services. Military psychologists provide a wide range of services including the screening, evaluation, and clinical treatment of military recruits, active-duty service personnel, spouses, children, and other dependents. Because uniformed military psychologists often find themselves quickly deployed to combat theaters, embedded with active military units, or stationed as mental healthcare providers in solo (single-provider) locations, they must be particularly confident and competent as well-rounded generalists.

W.B. Johnson (✉)
United States Naval Academy, 21 St. Ives Drive,
Severna Park, Annapolis, MD, USA
e-mail: johnsonb@usna.edu

K.L. Landsinger
Department of Leadership, Ethics, & Law, United
States Naval Academy, 73 Gentry Ct, Annapolis,
MD, USA
e-mail: KLandsinger@gmail.com

There are elements of the practice of psychology in military settings that create unique and sometimes intense ethical tensions and conflicts for psychologists. These are often particularly acute for psychologists in uniform. In this brief chapter, we describe the aspects of military psychology practice that heighten ethical tensions and quandaries for psychologists. We then summarize seven specific ethical quandaries that occur with the greatest frequency or create the most acute conflicts for military psychologists. Illustrative vignettes are employed to bring these issues to life. We conclude this chapter with a set of recommendations designed to help psychologists ameliorate and manage common ethical tensions.

How Military Contexts Can Heighten Ethical Tensions

Military psychologists must occasionally struggle with the simultaneous—and sometimes competing—identities of professional psychologist and commissioned military officer (Jeffery, Rankin, & Jeffery, 1992; Johnson, 2008). After taking the oath of office, all military officers are obligated to promote the combat readiness and fighting power of the military and to support the immediate military mission. There may be moments in the work of the uniformed psychologist in which the dual identity of clinical provider

or researcher and commissioned officer create difficulties identifying the primary client, balancing client best interests, deciphering the most pressing ethical obligations, and avoiding potentially harmful multiple relationships (Johnson, Ralph, & Johnson, 2005; Zur & Gonzalez, 2002).

These concurrent identities often create *mixed-agency* ethical dilemmas for psychologists. Mixed-agency dilemmas occur when there are conflicts between loyalties or obligations to clients and a broader organization; or, more simply, simultaneous commitment to two or more entities (Howe, 2003; Kennedy & Johnson, 2009). Role stress can affect a military psychologist when he or she faces multiple obligations to an individual client or client group, a commanding officer, the DoD, or perhaps even society writ large. For instance, in an intense wartime environment, the assessment of a recently traumatized service member for fitness to return to combat may have implications for the service member, his or her military unit, a major military mission, and the tide of a battle, particularly if that service member has a specialized skill set. Although mixed-agency dilemmas may occur in other settings (e.g., managed care, schools, corrections), the military psychologist's dual identities often exacerbate these dilemmas. Here are several additional elements of the military milieu that can heighten ethical tensions for military psychologists.

- *Difficulty identifying the client:* Although civilian psychologists might take for granted the ability to quickly identify the primary recipient of their services, this is not always the case in the military (Johnson, 2008, 2013a). Because individual service members are often referred by their own chain of command, there may be multiple stakeholders invested in the outcome of a psychological assessment. For instance, when evaluating a soldier in advance of a sensitive mission, it may be challenging to discern whether the primary client is the soldier, the mission leader, or the commanding officer. Clearly defining all the parties involved in evaluation and to whom the psychologist owes specific ethical obligations is an important consideration.
- *Conflicts between ethics and organizational demands:* Unlike their civilian counterparts, military psychologists are obligated to defend the Constitution and place the immediate military mission first and foremost (Howe, 2003; Jeffery et al., 1992; Johnson, 2008). Moreover, anything not directly relevant to achieving the military mission is superfluous in many ways. Most importantly, this means that the military objective must sometimes trump individual interests. Nowhere is this conflict more salient than when a psychologist must clear a service member—particularly one who has already suffered traumatic experiences—for return to combat (Johnson, 2013b). The American Psychological Association's (APA) Ethics Code enjoins psychologists to safeguard the best interests of those with whom they work, and to do no harm (APA, 2010). But in the military, individual best interests must be balanced against those of the larger unit, and the nation.
- *Conflicts between ethics and statutes or regulations:* Military psychologists will occasionally discover subtle incongruity or even glaring discord between ethical standards (APA, 2010) and DoD statutes or regulations (Johnson, 2013b; Johnson, Grasso, & Maslowski, 2010). Notable conflicts may occur in the areas of confidentiality, multiple relationships, informed consent, third-party requests for services, and promoting the individual client's best interests. Most alarming, psychologists have been sanctioned ethically for adhering to federal law and legally for adhering to the Ethics Code (Jeffery et al., 1992).
- *Inability to choose to enter or exit clinical/consulting relationships:* Particularly, when assigned to small communities (e.g., isolated bases, aircraft carriers, forward-deployed military units), military psychologists do not have the luxury of vetting, refusing, or referring clients in order to prevent multiple roles, conflicts of interest, or sudden and potentially

harmful role shifts. Military psychologists in solo billets must accept every service member in need of psychological services as a client, no matter their preexisting relationship. Psychologists in these settings must increase their tolerance for unavoidable boundary crossings.

- *Significant career repercussions for clients:* As a commissioned officer, the military psychologist wields profound power over all aspects of a client's life. Diagnostic, treatment, and fitness-for-duty assessments may significantly impact a client's living and working conditions, potential job assignments, and eligibility to remain on active duty (Johnson et al., 2005). Moreover, the referring commanding officer will often defer to the psychologist's expertise and judgment. This may create tension for the psychologist who wishes to act with beneficence toward the individual client but also recognizes his or her obligation to military writ large.
- *The military context is sometimes high risk:* In comparison to their civilian counterparts, military psychologists must conduct research, provide consultations, and practice health care in combat theaters, aboard ships at sea, and as embedded members of deployed units. In addition to the stress of serving in combat-proximal settings, psychologists in these settings are sometimes exposed—directly and indirectly—to traumatic events and disturbing images, physical risk, and emotional exhaustion (Johnson, 2013a).

Top Ethical Quandaries in Military Psychology

Having reviewed the ingredients of military culture and the realities of a psychologist's commissioned status that sometime exacerbate ethical tensions, we now briefly summarize—in no particular order—seven of the primary ethical quandaries routinely experienced by psychologists in the military. Each begins with a short vignette based on amalgamations of our own experiences

or those of colleagues. Selection of these ethical issues was based upon our own experience as uniformed psychologists, consultations with military practitioners, and the literature bearing on the topic (Howe, 2003; Johnson, 2008; Kennedy & Johnson, 2009; Kennedy & McNeil, 2006; Moore & Barnett, 2013; Moore & Reger, 2006).

Boundaries of Competence

A recent graduate of a military clinical psychology internship and a newly commissioned Air Force officer, Captain Estevez was soon deployed to a forward surgical hospital as the only psychologist. In that setting, she quickly discovered that a substantial portion of her clinical triage responsibilities involved brief neuropsychological assessments. Although she'd received only a cursory introduction to neuropsychology generally and assessment specifically, she sought to consult online resources and email periodically with a neuropsychology colleague back home. Self-aware that she was far from competent in this specialty area, she did her best to conduct rudimentary neuropsychology screenings and draw general diagnostic conclusions in her patient's charts. She cringed wondering what real neuropsychologists back in the states would make of her practicing in this area.

Psychologists are obligated by their Ethics Code to provide services only within the boundaries of their demonstrated competence, based upon education, training, supervised experience, consultation, and professional experience (APA, 2010). But, because military psychologists often function as solo mental health providers, even very early in their careers, far from direct supervision or consultation, they are frequently obligated by the exigencies of the context to provide services outside the comfort zone of their established competence (Johnson, 2016; Moore & Reger, 2006). There is even a sense of pride among military practitioners about “doing what one can for anyone who walks through the door” of the clinic or emergency room. It is not unusual for uniformed psychologist to feel some tension, even distress, about whether their solo or isolated context is justification enough for functioning well beyond their competence areas at times.

Confidentiality

An Air Force airman seeks treatment services for anxiety, sleep problems, and episodes of low mood. He suggests vaguely to his psychologist that he may have been sexually assaulted in the barracks but refuses to acknowledge this directly. He is very anxious about keeping this recent traumatic experience, and even his consultation with mental health, confidential. He appears fearful of the perpetrator and also ashamed. Shortly after treatment begins, and before the client will allow any reporting of the assault, his Commanding Officer (CO) refers this airman for a Command Directed Evaluation on the basis of the airman's recent poor performance. The CO requests any mental health records, diagnosis, and fitness for duty assessment.

One of the most persistent and pressing ethical quandaries for military psychologists is that of confidentiality (McCauley, Hughes, & Liebling-Kalifani, 2008). Information about a client or research participant that would never be disclosed or reported without consent in the civilian world may not be protected from disclosure in the military (Kennedy & Johnson, 2009). DoD directives specify that a legitimate military authority—often a commanding officer, military court, or security clearance evaluator—may have access to client records on a “need to know” basis. Military psychologists have often struggled significantly with mixed-agency conflicts surrounding confidentiality. On one hand, confidentiality is considered sacrosanct by nearly all psychologists and it can be difficult for the new military psychologist to come to terms with federally mandated limits on confidentiality and the concomitant challenges those limits impose on the task of engaging service members in caring, professional relationships. Some of the conditions that may trigger disclosure of information about a service member without consent—conditions never encountered in the civilian sector—may include serious risk of harm to a specific operational mission, when clients are “special” personnel (e.g., those with special clearance or Special Forces designations, or when access to weapons is contraindicated). Although psychologists attempt to address this tension with rigorous

informed consent, and sometimes minimalist and creative documentation in client records, concerns about confidentiality continue to create routine conundrums.

Sudden Role Shifts

An Army specialist is currently facing a Uniformed Code of Military Justice (UCMJ) charge for having an unauthorized weapon on Post. While working with her lawyer to prepare her defense, the soldier reveals she was previously seen by an Army psychologist for depression. The lawyer decides to pursue this angle and a Sanity Board evaluation is ordered by the judge. Because the soldier's psychologist is the only licensed mental health provider on the Post, the lawyer, the Court, and the psychologist's own commanding officer inform her that she must conduct the formal mental health evaluation and will likely be called as a witness at the Courts-martial proceedings.

Although the APA Ethics Code cautions psychologists to avoid shifting roles with clients without appropriate informed consent prior to the commencement of service delivery, military psychologists often find themselves suddenly assuming administrative, supervisory, or forensic roles with current, former, and future clients with little warning or capacity to anticipate this new mandated role (APA, 2010; Johnson, 2008, 2016). Particularly, when the psychologist is a solo provider in an isolated duty station, the opportunity to refer a client or refuse a command-directed evaluation or other forensic/administrative assessment may be nonexistent. Of course, such sudden role shifts may be distressing to clients and may diminish the value of the preexisting treatment relationship when the assessment result has adverse consequences for the client. It is equally likely that a current or former client may feel uncomfortable when a uniformed psychologist is assigned to a supervisory/military role with the client. Ethical conflicts are most acute when these role shifts are sudden, unanticipated, and beyond the control of the psychologist. Military psychologists often go to great lengths to warn clients about the potential for shifting roles in advance, and to work

collaboratively with clients to ameliorate negative consequences when an evaluative or supervisory role is suddenly added to a clinical/consultation relationship.

Multiple Relationships

A Navy psychologist is called to his CO's office to discuss a new suicide prevention initiative for the command. When the psychologist arrives, he sees the Command Master Chief (CMC: the senior enlisted leader of the command) is also in the office. The psychologist has been seeing the CMC in therapy for five months addressing a recurring major depression with occasional suicidal thoughts. The CO asks if the psychologist has formally met the CMC and the psychologist acknowledges they have met. With no preamble, the CO then directs the psychologist and the CMC to work together to create and deliver a new suicide prevention program for the command, aimed specifically at sailors. The CO notes there are no better two people for the project. With no time for further discussion, the CO thanks and then dismisses them.

Owing to the increasing frequency of military psychologists becoming embedded with large combat units (e.g., Army brigades, aircraft carriers, deployed air wings)—simultaneously a member of the unit or force and a healthcare professional—it is nearly impossible for the embedded psychologist to avoid providing services to colleagues, friends, senior officers in the chain-of-command, and direct subordinates (Johnson et al., 2005; Kennedy & McNeil, 2006; Staal & Stephenson, 2006). Although the Ethics Code implores psychologists to exercise maximum caution about participating simultaneously in more than one kind of relationship with any client (APA, 2010), multiple relationships in military psychology are ubiquitous and utterly unavoidable. Multiple relationships are most risky when there are substantial differences or conflicts between two or more roles filled by the psychologist, when the multiple roles cause significant distress or discomfort, when an extra-treatment role diminishes the value of the treatment relationship, or when a multiple relationship increases the risk for exploitation (Kitchener, 2000).

Although multiple relationships do heighten the risk for negative—often uncomfortable—healthcare and consultation outcomes, the reality is that embedded or solo psychologists are often the only source of mental health care available to service members. Therefore, military psychologists must increase their tolerance for boundary crossings—daily occurrences—while assiduously avoiding boundary violations (Gutheil & Gabbard, 1993). On the upside, when members of an embedded unit see their psychologist as competent, caring, and helpful, they are more likely to seek services when necessary and more willing to trust the psychologist to manage unavoidable multiple roles professionally. And there are times when a preexisting friendship with a “client” can actually enhance trust, empathy, and caring that carry over in positive ways to a service-delivery relationship.

Presenting Accurate Research Findings and Clinical Diagnoses

A uniformed research psychologist conducts a DoD-directed study on moral commitment—including willingness to report abuse of enemy combatants if this is witnessed—among Army soldiers. The results are not encouraging and reveal that despite a top General's public claims, a substantial proportion of soldiers would not report such abuse. When the findings are conveyed to his director—who happens to write the psychologist's fitness report—the psychologist receives considerable pressure to “re-think” the findings before submitting them formally.

An Army psychologist, newly stationed at a small forward deployed surgical unit in Afghanistan, is alarmed when she discovers that soldiers and marines who have experienced traumatic events (e.g., death of close friends in combat, exposure to remains after IED explosions) are screened for PTSD only with a short paper and pencil screening tool. The tool has high face validity, leading her to believe that many impaired soldiers are denying symptoms in order to “stay in the fight.” When the psychologist objects, noting that many of the combatants she interviews personally are quite symptomatic for PTSD, and that a brief screener is not an adequate method for conducting psychological evaluations, the surgical unit CO says, “we don't need to be over-diagnosing here. If they score low

on the screener, get 'em back out in the field. How would it look if we started diagnosing PTSD all the time?"

As in any organization, psychologists employed by the military may at times feel pressure to suppress or misrepresent research findings that are unpopular with senior military or governmental leaders. In the first vignette above, the psychologist is placed in an ethical quandary when implicitly pressured by a superior officer to shelve or somehow tamper with the results of a study that clearly contradict the military's public statements about soldier willingness to report ethical transgressions against enemy combatants. The ethical obligation to be transparent and honest in reporting results is created by Standards 2.04 and 9.01 of the Ethics Code (APA, 2010), which creates a mandate for psychologists to base all opinions contained in their recommendations, reports, and diagnostic evaluation statements on information and techniques sufficient to substantiate their findings. Military psychologists must be vigilant regarding pressure, even coercion, to deliver research or clinical outcomes that are preferred or directly requested by an authority but which are not based entirely on the best evidence available.

In the second vignette, the psychologist experiences pressure to ignore a scientifically and professionally questionable approach to evaluating service members following traumatic events, as well as to downplay her own clinical evidence gathered from interviews with some of these combatants. Military psychologists must be cautious about becoming coopted by commanding officers in achieving expeditious administrative outcomes (Howe, 2003; Jeffery et al., 1992; Johnson, 2016). Clinical psychologists in uniform are sometimes pressured to diagnose particularly troublesome service members with personality disorders (leading to expeditious administrative separations) or to minimize or outright suppress evidence of psychopathology (e.g., PTSD, substance abuse, depression), in order to keep a high-value service member "in the fight" or to protect the military from negative public relations or expensive mental health care services.

Consultation to Detainees or Intelligence-Gathering Operations

A detainee who is living on the psychiatric cell block for self-injurious behaviors agrees to meet with interrogators. When he comes back, he appears to be in good spirits, which is documented in his mental health record. A few hours later, the interrogator comes back to the unit and requests copies of all the detainee's mental health records. He cites "national security" as a rationale and notes that "you wear the uniform; you should understand how this works." When the psychologist declines to give him the records, he immediately approaches the prison commander who subsequently orders the psychologist to release the records to the interrogator.

Few issues in recent memory have created more heated debate and divisive polarization among psychologists than the issue of psychologist participation in national security intelligence gathering, specifically, interrogation work. Although there has been strident opposition to participation in national security intelligence work on the part of psychologists, the words "interrogation" and "torture" are too often conflated by opponents of psychologist consultation to interrogations, making reasoned dialogue nearly impossible. In fact, there is clear and consistent empirical evidence that interviewers and interrogators using rapport-based techniques do gather valuable and actionable intelligence from detainees without causing harm (Johnson, 2013a; Meissner, Redlich, Bhatt, & Brandon, 2012). Moreover, the APA's policy development over the past decade has unequivocally: (a) prohibited torture, cruel, inhuman, and degrading treatment; (b) prohibited harsh ("enhanced") interrogation techniques; (c) prohibited psychologists from mixing roles with detainees or disclosing clinical healthcare records to intelligence entities (Johnson, 2013a; Kennedy & Johnson, 2009).

In the case above, the psychologist is clearly correct in refusing to release client information to an interrogator. Ethical standards bearing on misuse of a psychologist's work, multiple roles, confidentiality, and conflicts between ethics and both the law and organizational demands are all relevant in supporting his decision. Although correct in his ethical assessment and decision, it is clear

that this military psychologist's efforts to abide by the Ethics Code and APA policy are not well supported by his command. Should he continue to experience pressure to behave unethically or in any manner that violates human rights, it is also important that he solicit legal consultation.

Most recently, the APA has passed a new policy effectively prohibiting any psychologist from providing services to detainees at Guantanamo Bay (GITMO: APA, 2015). Although not part of the ethics code, and therefore not enforceable by the Ethics Committee at this time, a psychologist might be expelled from the APA should he or she provide any mental healthcare for detainees at GITMO. This policy is the first that we know of prohibiting psychologists from working in a specific context or setting. In our view, it creates an unfortunate precedent; it implies that even appropriately trained military psychologists cannot reasonably practice ethically with national security detainees. As a consequence of the new policy, DoD has begun withdrawal of all uniformed psychologists from GITMO, leaving detainees without high-quality mental health care. At the writing of this chapter, we note there appears to be no concern within APA about the ethical implications of leaving detainees without psychological care.

The Psychologist's Own Psychological Fitness

Several months into a combat theater deployment, a Navy psychologist finds that she is having great difficulty attending to her clients. She has heard so many grisly and traumatic stories of death and injury from the combatants she treats, she has begun to have nightmares and difficulty sleeping. She also misses her daughter back home terribly. On off days, she has begun to ride the base bus around for hours at a time, drinking up to a fifth of vodka in a day. She cringes to herself the next day when she realizes she is still somewhat intoxicated doing triage clinical work. Although she has some awareness that she is struggling emotionally and that her coping strategies are risky, she is the only psychologist at the base and reluctant to admit—to herself or anyone else—that she can't "hack it" like the brave men and women she sees every day in her clinic.

Embedded psychologists are sometimes exposed directly or vicariously to traumatic events and disturbing images. Deployment-related stressors for psychologists include extended absences from family, exposure to direct threat, and exposure to traumatic client material (Johnson, Bertschinger, Snell, & Wilson, 2014; Kraft, 2007). It is, of course, inevitable that some of these psychologists will become "wounded healers" (Daneault, 2008), or psychologists who have become distressed and sometimes impaired as a result of their work.

Although psychologists are ethically required to limit or suspend their professional work when too distressed or impaired to practice competently (APA, 2010), severely distressed clinicians are often the last ones capable of making such competence assessments effectively (Davis et al., 2006). In the case above, the psychologist is very likely to be suffering from compassion fatigue, secondary traumatic stress, and possibly burnout more generally that serve to suppress her competence and place her clients at risk of incompetent care (Johnson, Bertschinger, Foster, & Jeter, 2014). Although it is incumbent on this psychologist to own some awareness of her slipping competence and to seek consultation or somehow limit her practice until her coping improves (APA, 2010), it is equally incumbent on her broader healthcare professional community to engage her in assessing competence and supporting her in regaining personal stasis. In combat environments, isolated duty assignments, and when working with traumatized client populations, it may truly "take a village" to monitor and preserve professional competence.

Conclusion and Recommendations

Military psychologists often work and provide services in a milieu that creates or exacerbates ethical tensions and conflicts. Uniformed military psychologists often struggle with their dual identities as military officer and licensed healthcare professional, and they occasionally encounter mixed-agency dilemmas in which ethical obligations to individual clients may not easily be

reconciled with obligations to a larger institution or the exigencies of a specific military mission. Among other common ethical quandaries, military psychologists often report concern about boundaries of competence, confidentiality, multiple relationships, sudden—and unanticipated—role shifts, ensuring accuracy in research findings and clinical diagnoses, preserving their own psychological fitness, and in rare cases, consulting to detainee mental health care.

We conclude this chapter with several brief recommendations for military psychologists designed to reduce or mitigate ethical tensions so that they do not escalate into ethical conflicts (Johnson, 2008, 2014, 2016; Johnson et al., 2005).

- *Establish strong consultative relationships with senior members of the military organizations that solicit your services.* Quite often, collaborative and proactive working relationships with commanding officers and others will prevent conflicts related to intrusions on client confidentiality; leaders will be more inclined to defer to your judgment regarding a service member's disposition if they know and trust you.
- *Remember that your commissioned military status does not override your obligations to the Ethics Code:* As you reason through ethical quandaries and conflicts, remain attuned to your unequivocal obligation to abide by the Ethics Code (APA, 2010). Although balancing ethical obligations with federal statutes and the exigencies of a military mission is critically important, your identity as a military officer will not necessarily buffer you from the professional consequences of transgressing an ethical standard.
- *Provide rigorous and ongoing informed consent to all clients:* Appreciating that delivery of psychological services in military settings comes with persistent risks to confidentiality, multiple roles, and unanticipated role shifts, be particularly attentive to securing detailed and ongoing informed consent for services from clients (both individual and organizational).
- *Know ethical standards and federal statutes and abide by an ethical decision-making process:* Having facility with your professional ethics code as well as those government regulations and federal laws most relevant to your specific work is critical to thinking wisely about your various obligations. Moreover, it is always wise to abide by a consistent and pragmatic ethical decision-making process when confronted with a dilemmas or conflict (e.g., Barnett & Johnson, 2008; Kitchener, 2000).
- *Appreciate the distinction between mixed-agency tensions and conflicts:* Although tensions between distinct ethical obligations, between ethics and laws, and between ethical obligations owed to various entities will occur with some frequency, remember that most of these tensions can be resolved effectively with thoughtful dialog and consultation. Most tensions need not escalate to the point of an ethical conflict (e.g., when abiding by a law will violate an ethical standard or vice versa).
- *Assume that every member of the military organization is a potential client:* Owing to isolated duty stations, deployments with the units you serve, and the close quarters and daily boundary crossings ubiquitous to military psychology, assume that any member of the unit may very well become a client at some point. Balance friendly collegiality with good personal boundaries in anticipation of possibly shifting to a service-delivery role with colleagues, subordinates, and superiors.
- *Increase your own tolerance for routine boundary crossings:* Because everyday interactions with clients external to the consultation room are unavoidable and inevitable in military settings, work diligently to increase your comfort with such interactions while doing your best to preserve privacy, confidentiality, and the client's best interests. Be sure to have conversations with clients about how they would prefer to handle such interactions during the informed consent process.
- *Establish and maintain ongoing external consulting relationships:* In order to maintain reasonable boundaries with members of the military community—particularly when

embedded with a unit on deployment—arrange and nurture at least one solid collegial consulting relationship external to your military community. Such relationships can be important both for ethics consultations and for collegial friendship and your own mental health.

- *Remain attuned and responsive to your own levels of distress and competence:* Especially when deployed to a combat theater, embedded with a military unit for extended periods, or when providing services to traumatized service members, be sure to vigorously pursue self-care, actively engage with colleagues (via distance consultation if necessary), be self-compassionate, and seek honest assessments of your current psychological and professional competence.
- *Always ask yourself: In this situation, what is in my client's best interest?* When ethical or ethical–legal conflicts become particularly prickly, it is always helpful to default to the first and foremost ethical principle of psychologists, Principle A, Beneficence (APA, 2010). Focusing first on your individual client and how to articulate his or her best interests should always be a starting point when reasoning through a way forward clinically and ethically.

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Substance Use Disorders in the United States Military: Current Approaches and Future Directions

9

Bettina Schmid, David S. Tubman, David J. Loomis II,
Jorge E. Grandela, Michael A. Vernale III,
Erick C. Messler, and Joann Rigoglioso

Military service carries a unique set of challenges and rewards. Attitudes, values, and behaviors of service members must be considered in the broader context of the culture and time. In an earlier era, alcohol was glamorized and being able to “hold one’s liquor” was an admirable trait. Influences on alcohol and drug use still existing in society today, for example, widespread use of alcohol and drugs on college campuses (National Institute on Alcohol Abuse and Alcoholism, 2015), and legalization of marijuana for recreational use in some states (e.g., Colorado Amendment 64, 2012). However, there has been a cultural shift to promote responsible drinking, use of designated drivers, and discourage use of

illegal drugs, for example the influence of Mothers Against Drunk Driving (incorporated in 1980; MADD, 2016).

The U.S. military reflects these same struggles in its ranks. Substance use and abuse is a significant problem in the military. Although policies in the military accentuate personal responsibility, alcohol and drug use, particularly prescription drug abuse, have soared to epidemic levels (Institute of Medicine [IOM] 2012). This report highlights factors including the availability of inexpensive alcohol on military installations, workplace culture, increases in prescriptions for pain medication, and stress related to deployment.

Since 2001, with Operation Iraqi Freedom (and later, Operation New Dawn) and Operation Enduring Freedom, military personnel and their families have endured innumerable hardships and challenges associated with deployments. A report by the IOM (2013) noted the majority of service members returning from deployment reported that their experiences were rewarding and they were able to readjust to life back home; however, 44% of service members returning from deployments experienced difficulties, including onset and/or exacerbation of physical and psychiatric problems including substance use and abuse. Many service members with mental health problems do not access or engage in treatment due to a number of barriers, including concerns regarding stigma (Elbogen et al., 2015; Hoge et al., 2004). The IOM report noted that the physical and psychiatric problems of service members

B. Schmid (✉)
VA Salt Lake City Health Care System,
Salt Lake City, UT, USA
e-mail: bettschmid@gmail.com

D.S. Tubman
1804 Monarch Drive, Napa, CA, USA

D.J. Loomis II
1143 York Dr., Vista, CA, USA

J.E. Grandela
30 Morningmist Drive, Fredericksburg, VA, USA

M.A. Vernale III
Clinical Psychologist, 42P, Mental Health Clinic,
Dover Air Force Base, Dover, DE 19902, USA

E.C. Messler
902 Cedar Street, Great Falls, MT 59405, USA

J. Rigoglioso
11885 Cypress Valley Drive, San Diego, CA, USA

also affect military families, and recommended federal funding to address the social, psychological, and economic effects of deployment on military families.

The Department of Defense requires a comprehensive health screening, including mental health screening, for all service members immediately upon return from deployment (Post-Deployment Health Assessment; U.S. Department of Defense, 2007) and 90 to 180 days post deployment (Post-Deployment Health Reassessment [PDHRA]; U.S. Department of Defense, 2005). A population-based longitudinal study of over 88,000 soldiers by Milliken, Auchterlonie, and Hoge (2007) supported the policy of re-screening service members, noting that a greater number of mental health problems, including alcohol-related problems, were identified in the PDHRA; however, soldiers who endorsed alcohol problems during these assessments were rarely referred for alcohol treatment. A 2008 survey of alcohol use in the U.S. Army by Lande and colleagues noted that there was a significant difference in consumption patterns between military personnel deployed to combat operations and those personnel assigned to non-combat operations (Lande, Marin, Chang, & Lande, 2008). Specifically, the authors concluded that excessive alcohol consumption was prominent with military personnel who were younger, experiencing life stressors, and who had recently returned from an area of combat.

These issues are not limited to active duty service members. Studies have indicated that Reserve and National Guard personnel with combat exposure have a greater risk of developing alcohol- and drug-related problems, and require more psychological treatment upon their return home (Milliken et al., 2007). For example, a study conducted by researchers at Columbia University surveyed 963 members of the Ohio Army National Guard, and concluded that there was high probability that 12% of the soldiers surveyed would develop alcohol abuse problems either during deployment or afterwards (Preidt, 2012). Additionally, a recent study of U.S. National Guard soldiers returning from Afghanistan found that increased alcohol use was related to higher combat exposure and lower

levels of psychological hardiness (Bartone, Johnsen, Eid, Hystad, & Laberg, 2016).

The U.S. Armed Forces have adopted comprehensive guidelines to reduce substance use disorders and to facilitate treatment. Public Law 92–129 was enacted in 1971, directing the Secretary of Defense to “prescribe and implement procedures... [to] identify, treat, and rehabilitate members of the Armed Forces who are drug or alcohol dependent.” This legislation was in line with the disease model of addiction and recognized that members of the military still had much to contribute in service of their country if they were given the opportunity for rehabilitation. As a result, each branch of the Armed Forces was required to develop and implement alcohol and other drug abuse prevention and control programs in accordance with Department of Defense Directive 1010.4 (U.S. Department of Defense, 2014), Department of Defense Instruction (DODI) 1010.1 (U.S. Department of Defense, 2012a) and DODI 1010.9 (U.S. Department of Defense, 2012b). This chapter outlines the approaches taken by each service in addressing prevention, screening, diagnosis, and treatment of substance use disorders.

Prevention and Treatment Within the United States Air Force

Introduction and History

Military interest in the impact of alcohol on duty performance, including aviation, predates the United States Air Force (USAF) itself. For example, an Army National Guard study dating back to 1939 explored the relationship between alcohol and flying over a period of 5 years with 22 pilots (Army National Guard, as cited in Dalitsch, 2014). Conclusions drawn from this study included the following: (a) there was practically no tendency to drink while flying among the older and more experienced pilots, (b) there was apparently moderate alcohol use among the younger pilots, and (c) incidental use of alcohol was a weaker determinant of performance

compared to the physical and mental endowment of the pilot at the helm of the aircraft.

When the above is viewed in contrast to current USAF approaches to substance misuse, it is clear that several changes have occurred. In the past several decades, the USAF has gone from viewing substance misuse and abuse as perhaps a moral, and primarily a disciplinary and administrative issue, to a legitimate public health concern that poses risk to the well-being of both the mission and the community and should be addressed using a scientific framework for understanding prevention and treatment methods. The USAF, like other branches of service and society at large, has a history of using approaches for both prevention and treatment of substance abuse that were not empirically supported. For example, fear-based messaging and scare-tactics such as parking destroyed vehicles at the front gate of bases, threatening extreme punishment, public shaming, and requiring attendance at support groups such as Alcoholics Anonymous. Additionally, cultural factors that normalize heavy alcohol use such as alcohol-centered unit parties, traditions involving alcohol, combined with stigmas associated with seeking help for substance abuse problems have been barriers to prevention and treatment efforts.

These methods have been gradually replaced by evidence-based approaches. One of the driving factors in this process was the transition of the substance abuse treatment program from the non-medical Services department to the Mental Health department at the turn of the twenty-first century. Consequently, current USAF policy and programming is now based on decades of behavioral science and involves collaboration with national substance abuse agencies and the academic community. These partnerships have resulted in significant efforts to address the challenge of developing robust primary, secondary, and tertiary prevention strategies that are evidence-based, and relevant to the unique features of the USAF community.

Individuals in their late teens and early twenties, the age range in which most men and women enlist, are at increased risk for heavy drinking (Chan, Neighbors, Gilson, Larimer, and Marlatt, 2007). Young men, and some young women, in the military tend to drink more than their demographi-

cally matched civilian counterparts (Substance Abuse and Mental Health Services Administration, and Bray et al. as cited in Ames & Cunradi, 2004/2005). Despite evidence suggesting members of the USAF tend to binge drink and use tobacco at a lower rate than members of sister services (Barlas, Higgins, Pflieger, & Diecker, 2013), substance abuse, especially among the young adult demographic, poses a threat to the USAF's mission and community well-being. Thus, much of the USAF effort on preventing alcohol-related misconduct has focused on utilizing resources within the spectrum of available base-wide agencies to reduce substance misuse in the 18 to 25 age group. Current USAF prevention efforts, as outlined below, target a broad range of risk factors throughout all ranks and age groups (U.S. Department of the Air Force, 2014b). These efforts are informed by research conducted on Air Force members that identify population-specific target areas (e.g., Foran, Slep, & Heyman, 2011), involve multiple base agencies, are individually-focused as well as community-based, and are formally led by both the Alcohol and Drug Abuse Prevention and Treatment (ADAPT) Program and the Drug Demand Reduction Program (DDRP).

ADAPT Program

Mission Air Force Instruction (AFI) 44–121, *ADAPT Program*, lists the objectives of ADAPT:

The primary objectives of the ADAPT Program are to promote [military] readiness, health, and wellness through the prevention and treatment of substance misuse and abuse, to minimize the negative consequences of substance misuse and abuse to the individual, family, and organization, to provide comprehensive education and treatment to individuals who experience problems attributed to substance misuse and abuse, to restore function and return identified substance abusers to unrestricted duty status or to assist them in their transition to civilian life, as appropriate (U.S. Department of the Air Force, 2014b, p. 13).

Although staff are trained to provide services addressing the range of substances that are misused and abused, the primary focus of the ADAPT clinic tends to be on alcohol, as illicit substance

abuse among service members is extremely low. In a survey of anonymously gathered data from over 39,000 service members, Barlas, Higgins, Pflieger, and Diecker (2013) reported 1.3% of respondents reported illicit drug use, and 1.2% reported misuse of any prescription drug type in the past 12 months (although the authors recommended caution in interpreting results due to possible discomfort of respondents in reporting illicit drug use in an online survey). Referrals to ADAPT for treatment for substance use disorders other than alcohol (e.g., prescription drug abuse) are uncommon.

Clinic Structure and Personnel The USAF ADAPT program is an *element*, or clinic, within the Mental Health Flight. The Mental Health Flight, which includes ADAPT, Family Advocacy Program, and the Mental Health Clinic, is one of several medical units within the military hierarchy that composes the Medical Operations Squadron within the Medical Group. The ADAPT clinic generally consists of a combination of military and civilian professional, para-professional, and administrative staff. Typically, the clinic is led by a military officer (licensed psychologist or social worker) identified as the ADAPT program manager and an enlisted mental health technician identified as the ADAPT non-commissioned officer in charge (NCOIC). The primary responsibility of the ADAPT program manager is to manage clinical operations and provide training and clinical supervision of staff. The NCOIC shares in clinic oversight and generally has primary oversight of para-professionals operating within the clinic. A psychiatrist or other physician is appointed as the ADAPT program medical director in order to oversee lab studies and provide medical assessment and interventions as indicated. Enlisted, civilian (government employees), and contractor paraprofessional staff are either Certified Alcohol and Drug Counselors (CADC; certified by the International Certification and Reciprocity Consortium through the Air Force Substance Abuse Counselor Certification Board) or non-certified technicians working on acquiring their CADC credentials. Also, there may be administrative support personnel who help with patient scheduling and other clerical responsibilities.

Applicable Operating Publications Air Force Instruction 44-121, Alcohol and Drug Abuse Prevention and Treatment (ADAPT) Program, is the primary publication that guides ADAPT operations; however, AFI 44-172, “Mental Health” (U.S. Department of the Air Force, 2015) and other Department of Defense (DoD) and Air Force documents guiding general medical care and administration are also applicable. The most recent edition of AFI 44-172 mandates the use of Veterans Administration(VA)/DoD Clinical Practice Guidelines (Management of Substance Use Disorders Work Group, 2015), when applicable. Thus, current Air Force substance abuse standards of care are based on the confluence of the above sources.

ADAPT Services

The ADAPT clinic seeks to meet the above objectives in both clinical and non-clinical contexts through evidence-based interventions that vary across a spectrum of need: Universal (Primary) Prevention and Education, Selective/Targeted (Secondary) Prevention, Indicated (Tertiary) Prevention, Assessment, and Treatment and Continuing Care (also referred to as Aftercare).

Universal (Primary) Prevention and Education Intervention at the primary prevention level involves a spectrum of services delivered directly by commanders and helping agencies, to include ADAPT staff in collaboration with other services (e.g., Family Practice Clinics, Chaplain Services, Airman and Family Readiness Services, First Sergeants, base leadership) facilitated through an installation-level organization called the Integrated Delivery System (IDS).

Air Force Instruction 34-219 (AFI 34-219; U.S. Department of the Air Force, 2016), *Alcoholic Beverage Program*, outlines policies for procuring, controlling, selling and using alcohol beverages. This document also requires that each installation implement an alcohol deglamorization program that guides media outreach and ensures that leadership and on-base service agencies do not promote excessive drinking, promote responsible alcohol consumption, and encourage

help-seeking for those experiencing problems with substance misuse.

Individual ADAPT clinics are charged with implementing a series of standard community-based alcohol and drug misuse prevention services to all active duty members (see Table 9.1), as well as identifying and implementing prevention services that meet specific installation-based needs and cultural factors. Specific evidence-based approaches to universal prevention, such as the DoD's "That Guy" alcohol deglamorization campaign (Department of Defense, 2005; see www.thatguy.com), San Diego State University's eCHECKUP TO GO (San Diego University, 2003; see www.echeckuptogo.com), the USAF's *Social Norms Project* that was developed in collaboration with Hobart and William Smith Colleges (Perkins & Craig, 2014), and the USAF's trainee-specific Alcohol Misconduct Prevention Program (Klesges et al., 2013) have been implemented at several Air Force installations. These evidence-based approaches are gradually replacing nonempirically supported (and potentially counterproductive) strategies of promoting fear messages and scare tactic strategies (see Substance Abuse and Mental Health Services Administration [SAMHSA], 2014 for comprehensive review of fear-based prevention programs).

Selective/Targeted(Secondary) Prevention Service members who are male, enlisted, between age 18 and 25, and on their first duty assignment are the most common demographic seen in ADAPT clinics for alcohol and drug misuse. ADAPT staff provide prevention-focused training to airmen attending the First-Term Airmen Course, a several-day long, mandatory training for all airmen who are at their first duty station. Base leaders and medical personnel are also targeted for training on recognizing and referring those who exhibit signs of substance abuse. See Table 9.1, Primary and Targeted Prevention initiatives reproduced from AFI 44-121.

Indicated (Tertiary) Prevention Commanders and medical professionals are required to refer airmen who are identified as being involved in risky drinking behavior or alcohol-related

misconduct to the ADAPT clinic for a mandatory evaluation. Every airman is screened for alcohol misuse with the Alcohol Use Disorders Identification Test (AUDIT-C) at routine medical appointments, which may prompt a medical referral to ADAPT, if indicated. Additionally, many service members self-refer to ADAPT, an appointment that is kept confidential unless the patient meets full *Diagnostic and Statistical Manual for Mental Disorders* (5th Ed.; *DSM-5*; American Psychiatric Association, 2013) criteria for a substance use disorder. The majority of individuals who are assessed in ADAPT are deemed to have risk factors present, but do not meet full *DSM-5* criteria. Such individuals receive Early Intervention (Level 0.5 care) in accordance with the *American Society of Addiction Medicine Patient Placement Criteria* (ASAM PPC; Mee-Lee, 2013), and are treated in the ADAPT clinic with Alcohol Brief Counseling, 2.0 (ABC 2.0).

ABC 2.0 is a structured, technician-led, provider-supervised, counseling protocol designed to deliver a USAF-relevant, brief, prevention-focused, one-on-one intervention consistent with the spirit of Motivational Interviewing (MI; Miller & Rollnick, 2002), a patient-centered, evidence-based counseling approach (e.g., Moyer, Finney, Swearingen, & Vergun, 2002). ABC 2.0 requires a minimum of three sessions designed to elicit patient responses to identified risks and concerns that culminate in the formation of a *Change Plan*, in which the patient formulates specific goals (i.e., pertaining to alcohol, and other physical, mental, spiritual and social goals) that he/she plans to enact to improve quality of life via promoting congruency between behavior and personal values.

Over the course of the ABC 2.0 sessions, counselors guide patients through a discussion of their *Substance Use Assessment Tool* (SUAT) results (see following paragraph for details on SUAT); discuss patient concerns; assign the *Alcohol Education Module*, which provides information about alcohol's effect on the body, social norms, and low risk drinking guidelines; and assign the *Values Exploration Module*, which helps patients consider ways in which

Table 9.1 Substance Abuse and Misuse Education

	If the Individual is...	Then the required training...
1	A military member (enlisted or officer) on his/her first permanent duty assignment	Will focus on prevention of substance abuse and misuse, standards, desire for peer acceptance, role models, responsible behavior, healthy alternatives, and legal/administrative consequences of substance abuse and misuse
2	A military member in the grade of E1 through E4 on a second or subsequent permanent change of station	Will be conducted within 60 days after Permanent Change of Station and shall emphasize standards, healthy lifestyles, responsible behavior, and consequences of substance abuse and misuse to self and career
3	A health care professional who provides direct patient care (to include providers, nurses and technicians)	Will emphasize identification, assessment, and referral of personnel displaying signs of problematic substance abuse and misuse, and the services that are available for treatment. Training will be provided annually as part of in-service training events
4	An airman leadership school or non-commissioned officer academy student	Will focus on responsibilities of leaders in substance abuse and misuse prevention, identification and referral of substance abusers, the education and counseling processes, Substance Use Disorders (SUD) treatment programs, intervention, and the impact of SUD on the mission. Curriculum developed IAW <i>AFH 36-2235</i> , Information for Designers of Instructional Systems
5	An air university student attending a Preliminary Military Education Course, Senior NCO Academy; Squadron Officer School; Air Command and Staff College; Air War College	Will focus on roles and responsibilities of senior leaders in the substance abuse and misuse prevention program; effects of substance abuse and misuse on mission, morale, readiness, and health and wellness; the education, counseling, referral, and follow-up process; influence of senior leaders' attitudes on substance abuse and benefits of the service's prevention and treatment programs. Curriculum developed IAW <i>AFH 36-2235</i>
6	Commander, senior enlisted advisor, first sergeant, and other senior personnel	Will emphasize the early identification of substance abusers, assessment and referral of personnel displaying signs of problematic substance use and misuse, the services that are available for treatment. Training should also emphasize the need for active support for substance abuse and misuse prevention programs, fostering help-seeking behavior, and reducing the stigma associated w/SUD treatment. Training will be provided annually as part of in-service training events

Adapted from AFI 44-121, pp. 15-16

their drinking behavior may be inconsistent with personal values. Patients are also assigned a drinking tracking log to monitor alcohol use during prevention counseling. Based on the presence of additional risk factors or patient needs/ desires, additional sessions, referrals to other helping agencies, and/or other modules may be added to ABC 2.0 (e.g., *Anger Management*, *Values Clarification*, *Anxiety Management*, *Assertive Communication*, *Changing Self-Talk*, *Sleep Enhancement*). Each module is supplemented with a structured interview form to aid staff in session delivery. ABC 2.0 is completed with the formulation of a behaviorally based change plan, which takes into consideration risk factors, information discussed during ABC 2.0, and personal values (see Fig. 9.1).

Assessment A comprehensive biopsychosocial assessment is conducted for each patient seen in ADAPT which consists of completion of the SUAT, review of the electronic medical record, clinical interview, contact with collateral sources, and lab studies. The SUAT collects patient-generated information about the reason for referral, learning considerations, extended demographics, military details, prior medical history, substance use history, psychosocial history, and current medical and mental health history (including a screening for comorbid mental health disorders, a mental status examination, and a risk assessment). Additionally, contained within the SUAT are the following validated screening tools: The AUDIT (Saunders, Aasland, Babo, de la Fuente, & Grant, 1993), the Short

ADAPT Process Flowchart

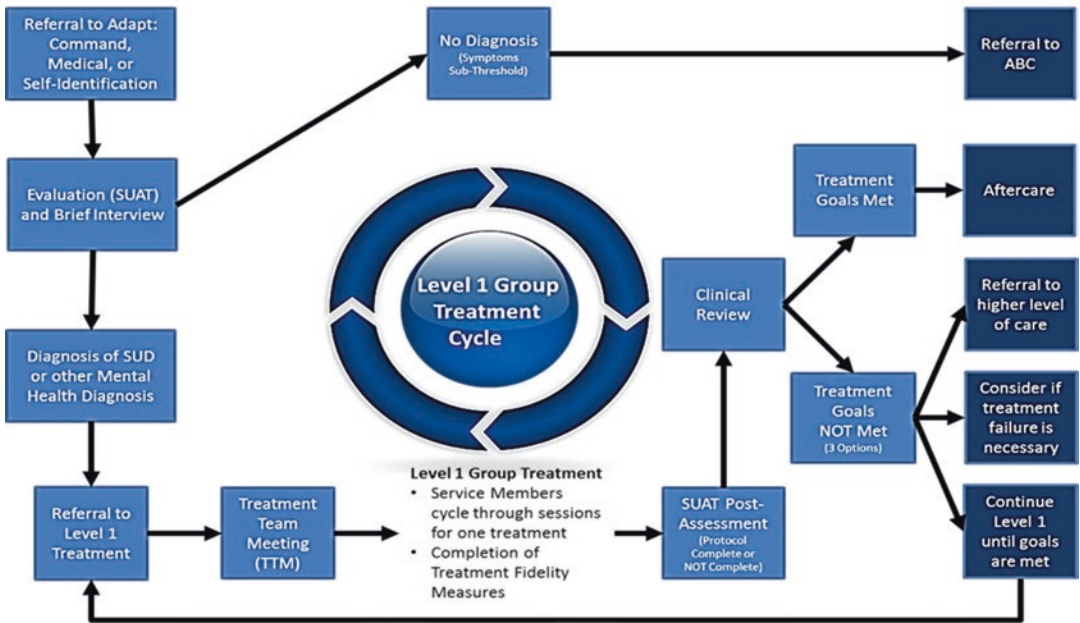


Fig. 9.1 Flowchart depicting courses of care for substance abuse patients. From the U.S. Air Force Level One Outpatient Treatment Manual (Air Force Medical

Operations Agency and Clearinghouse for Military Family Readiness), (n.d.), page 7

Alcohol Dependence Data (Davidson & Raistrick, 1986); the Short Index of Problems, Second Edition: Lifetime (Feinn, Tennen, & Kranzler, 2003), the Comprehensive Effects of Alcohol (Fromme, Strood, & Kaplan, 1993), and the Readiness to Change Questionnaire (Heather, Luce, Peck, Dunbar, & James, 1999).

Information from the SUAT is used to clarify diagnosis, inform appropriate level of care, and guide motivational enhancement discussions that occur in the context of ABC 2.0. If *DSM-5* diagnostic criteria for a substance use disorder are met, the case is staffed with the ADAPT program manager who then engages the patient in a more focused assessment to clarify diagnosis, to assist in the development of a biopsychosocial treatment plan, and to ascertain the need for referral to other specialists.

Treatment and Continuing Care Individuals who meet diagnostic criteria for a *DSM-5* substance use disorder are then assessed using the

ASAM PPC (Mee-Lee, 2013) to determine the appropriate level of care. All ADAPT clinics are required to conduct Level I (outpatient) care on-site, whereas those requiring higher levels of care (e.g., Level II, partial hospitalization or Level III, residential care) are referred to off-base facilities (either military or civilian).

All diagnosed patients are formally enrolled into the ADAPT program, which requires the following: (a) Generation of a patient-specific treatment plan with behaviorally-based outcomes to determine progress, (b) Command notification of treatment, risk factors, and current and potential duty impact, which is achieved during a Treatment Team Meeting with the service member, ADAPT staff, and approved Command representatives, (c) Temporary restriction from deployment and sometimes duty-specific limitations (e.g., restriction from bearing weapons or restriction from working with dangerous machinery), (d) Notification to the member’s primary care provider to achieve appropriate continuity of care, (e) Abstinence

from alcohol during treatment, (f) Attendance at scheduled appointments, and (g) Completion of continuing care upon finishing treatment. ADAPT care is separated into two distinct phases, *Treatment* and *Continuing Care* (also referred to as *Aftercare*). The length of the treatment phase varies and depends on the rate at which the patient achieves his/her treatment goals; the typical length of treatment is approximately 3 months. A common goal in treatment is for the patient to achieve at least 3 months of abstinence. When the patient achieves 3 months of abstinence, the *DSM-5* qualifies the diagnosis of Alcohol Use Disorder as being “In Early Remission.”

The typical course of outpatient treatment involves attending individual and group sessions held at an ADAPT clinic. Group sessions are technician- and/or ADAPT program manager-led and require implementation of one of three evidence-based group treatment manuals developed exclusively for USAF ADAPT Level I treatment by staff at the Air Force Medical Operations Agency and researchers from the Clearinghouse for Military Family Readiness at The Pennsylvania State University. Group therapy manuals include: (a) *Cognitive-Behavioral Coping Skills Training (CBCST)* which is based on three different CBCST manuals (Kadden et al., 2003; Monti, Abrams, Kadden, & Cooney, 1989; Monti, Kadden, Rohsenow, Cooney, & Abrams, 2002); (b) *A Cognitive-Behavioral Approach: Treating Alcohol Use Disorder (CBT)*, a manual based on the CBT program that was originally developed by Carroll (1998) in collaboration with the National Institute on Drug Abuse for the treatment of cocaine abuse; and (c) *Group Treatment for Substance Abuse: A Stages-of-Change Therapy Manual*, which is an Air Force adaptation of the manual by Velasquez, Maurer, Crouch, and DiClemente (2001) and is supplemented with the original manual.

To address all aspects of the biopsychosocial treatment plan, patients are encouraged to engage in activities outside of ADAPT, such as exercise, attendance in support groups, and individual psychotherapy for comorbid issues, if warranted. All patients transition into Continuing Care after meeting treatment goals. In accordance with VA/DoD Clinical Practice Guidelines

(The Management of Substance Use Disorders Work Group, 2015), continuing care is designed to aid the patient in sustaining treatment goals, to assess for new goals, and to support the patient in relapse prevention. The length of Continuing Care is patient-specific; however, for those with more severe conditions, it can last up to 12 months. After a member completes Continuing Care, the ADAPT record is closed and he or she is typically returned to full duty status.

Program Completion and Program Failure A patient graduates from ADAPT upon achieving established treatment goals and demonstrating sustained progress during Continuing Care. The decision to graduate a patient from ADAPT is made by the Treatment Team based on consultation of the sources mentioned above and the *DSM-5* criteria for either partial or full remission. Upon completion, patients are returned to full duty status without further treatment mandates. The majority of patients seen in ADAPT successfully complete the program without long-term consequence to their duty status; however, a small percentage are deemed unsuitable for continued military services.

Failure from the ADAPT program is based on criteria outlined in AFI 44–121: (a) a pattern of unacceptable behavior; (b) unwillingness to engage with the ADAPT program after having alcohol-related misconduct; (c) inability or unwillingness to comply with the treatment plan; or (d) involvement in alcohol-related misconduct after receiving initial treatment. Alcohol consumption alone does not necessarily constitute program failure. Upon determination of program failure, members are processed for administrative separation from the USAF under honorable conditions (unless other factors, such as legal problems, change the characterization of the separation) .

Drug Abuse Prevention

Air Force Instruction 1–1, paragraph 2.6, describes the USAF’s zero tolerance stance toward possessing and/or using any intoxicating substance other than the lawful use of alcohol, tobacco, and prescription drugs (U.S. Department of the Air Force,

2014a). The USAF's primary approach to preventing illicit substance abuse is through collaborative Integrated Delivery System (IDS)-facilitated outreach activities (e.g., Red Ribbon Week, Drug Education for Youth), and random drug testing, outlined in AFI 44-120, "Military Drug Demand Reduction Program" (DDRP; U.S. Department of the Air Force, 2011). This program is headed by the DDRP Manager, who works with base leaders, medical providers, and legal representatives to ensure effective drug testing implementation, to identify installation trends, and to process referral procedures when samples are positive for drugs. AFI 1-1 outlines the USAF requirement that all active duty airmen must be tested annually. Members who test positive for illicit substances are referred to ADAPT for assessment and are at risk of Uniform Codes of Military Justice Article 112a legal action taken against them that could include less than honorable discharge, criminal prosecution, and administrative action such as demotion and loss of pay.

Areas of concern in the field of substance use disorders are the exponential rise of synthetic drugs (e.g., "bath salts," "spice,") and the lack of scientifically based, medically anchored means of testing for these substances and providing treatment. Medical professionals, researchers, and law enforcement agencies have little data on the effects of these new synthetic drugs. Moreover, many of these drugs, which are now illegal, were once legal. This makes the identification a challenge in most health care settings and proactive outreach difficult.

To combat prescription drug abuse, the USAF utilizes an electronic medical database that monitors prescribed drugs that are commonly abused. Medical professionals who suspect prescription drug abuse are required to refer to ADAPT for further assessment. Additional safety measures to more closely monitor such cases include using standard testing procedures for drug screens and utilizing a primary care manager that acts as a gatekeeper for all prescriptions.

Future Directions

In line with 2013, IOM recommendations for military substance abuse care (O'Brien, Oster,

and Morden, 2013), the goals for the last decade of USAF substance abuse prevention and treatment have been to implement and standardized evidence-based practices and training across all installations, better equip healthcare providers to recognize and screen for substance use problems, and destigmatize treatment by shifting away from a cultural climate that evokes fear and toward a social norming approach. The future direction of prevention and treatment is to continue to both develop and implement evidence-based approaches.

One evidence-based initiative is *The Social Norms Project*, a media campaign aimed at correcting misperceptions of peers' alcohol use, which was developed and implemented in collaboration with Hobart and William Smith Colleges (Perkins & Craig, 2014). This extensive study was conducted at several installations across the USAF from 2012 to 2014. Findings from this study revealed that the campaign was effective in lowering drinking frequency and quantity, resulting in fewer incidents of alcohol-related misconduct compared to incident rates prior to implementation of the campaign. In the coming years, the USAF plans to implement this program across the service.

Since 2013, the office of the Air Force Surgeon General has made standardized training of ADAPT and DDRP staff in the treatment and prevention of substance use disorders a top priority. In 2014, a series of electronic training materials were developed in collaboration with The Pennsylvania State University and disseminated in conjunction with the introduction of ABC 2.0 materials. Additionally, the Air Force strongly encourages each mental health technician to obtain certification in alcohol and drug counseling (Certified Alcohol and Drug Counseling [CADC]). Since 1988, the USAF has been part of the International Certification and Reciprocity Consortium (IC&RC) as a recognized entity who can certify CADCs (U.S. Air Force, 2015). The credentialing offered by the IC&RC ensures trained, ethical professionals are available to patients from a variety of settings. A service member who works as an ADAPT technician is eligible to sit for the exam only after reaching a requisite number of hours of patient care and

completing a formal case presentation in which the technician demonstrates the knowledge and competency necessary to provide alcohol and/or drug abuse treatment to patients and significant others in a variety of treatment settings.

In 2014, the USAF also introduced a standardized means of collecting data for service-wide analysis, employment of evidence-based treatment, and process improvement. Patients are invited to participate in an anonymous survey at the 3-, 6-, and 12-month point upon completion of treatment to measure substance use, misuse, and functioning. Collateral information is requested of the member's supervisor at the 6-month mark. Findings from these surveys guide changes to program implementation. Additionally, with the development and mandate of the three Level One Group Treatment Manuals (see Treatment above), the USAF has also created treatment implementation surveys to measure protocol fidelity and provide insight into service-wide substance abuse training needs. This spirit of empiricism will continue to drive the development and implementation of evidence-based approaches toward prevention and treatment of substance misuse across the USAF.

Prevention and Treatment Within the United States Navy

Introduction and History

In the 1960s, the Navy's alcohol and drug program began with two separate approaches, one for alcohol treatment and one for drug treatment. Prior to this, the Navy viewed substance abuse as a disciplinary problem which was managed through punishment. The alcohol treatment program was established in 1965 at Long Beach Naval Hospital in Long Beach, California by Captain Joseph Zuska, M.D., the Senior Medical Officer (Stewart, 2007), who started an informal program built on the principles of Alcoholics Anonymous and the Minnesota model of treatment (an innovative treatment program for addiction, developed in 1949; Hazelden Betty Ford Foundation, 2016). In 1967, Dr. Zuska's, pro-

gram was formally recognized by the Navy, and the first official Alcoholic Rehabilitation Center was established (at the time, it was called the Multidisciplinary Alcoholic Rehabilitation Clinic). In 1969, the Bureau of Medicine and Surgery (BUMED) funded the treatment program. By the early 1970s, the Long Beach Alcohol Treatment Program became a nationally recognized model for alcohol treatment.

As the Navy was developing its alcohol treatment program, separately commanding officer, Captain "Hap" Chandler, led an effort to develop a drug abuse treatment program at Miramar Naval Air Station in San Diego (Holles, 1971; J. Synold, former director of the Miramar Navy Drug Rehabilitation Center, personal communication, August 6, 2016). Sailors were provided a one-time exemption from disciplinary action in order for them to receive rehabilitation (Zumwalt, 1971). The Navy supported a research project at this site to compare the effectiveness of various treatment approaches (Drake & Kolb, 1972; Gunderson, Kolb, & Arthur, 1974). The drug treatment program was funded and staffed under the Navy's line command and Miramar Navy Drug Rehabilitation Center became a fully operating command structure.

In 1996, the Navy realigned and consolidated all alcohol and drug treatment programs resulting in over 200 Substance Abuse Rehabilitation Programs, located worldwide on Navy and Marine bases with education, evaluation, outpatient treatment, intensive outpatient treatment, and continuing care services being combined under Bureau of Medicine and Surgery (BUMED). In addition, the Navy has three residential treatment programs with locations in Jacksonville, FL, Norfolk, VA, and San Diego, CA.

Organization

The Chief of Naval Operations is the program sponsor for Navy Alcohol and Drug Abuse Prevention (NADAP) program policy. Chief of Naval Operations Instruction (OPNAVINST) 5350.4D (U.S. Department of the Navy, 2009), is the Navy issuance that provides comprehensive

policy and procedures for NADAP. Navy Personnel Command (COMNAVPERSCOM) is responsible for the implementation of NADAP, and the BUMED is responsible for developing, implementing, and monitoring the medical aspects of the program. Naval Education and Training Command is responsible to provide education programs in alcohol and drug abuse prevention, and conduct drug testing. Echelon 2 and 3 Commands, the two levels of military leadership below the Chief of Naval Operations, are responsible to provide coordination of alcohol and drug abuse prevention program policy to subordinate commands. Commanding officers appoint Drug and Alcohol Control Officers who provide guidance to Drug and Alcohol Program Advisors, who are responsible to the commanding officer for management of the command's substance abuse prevention program.

In addition, the Navy provides all medical services for the U.S. Marine Corps. Many Marine Corps units have embedded or organic Navy medical personnel incorporated into their units (referred to as "Green Side"). Navy Medicine provides the full range of substance abuse treatment services to marines (and other service members as needed; U.S. Department of the Navy, 2016).

The Marine Corps, through Marine Corps Community Services, also provides outpatient substance abuse counseling services, to include the following: Prime for Life 4.5 (half-day early intervention course) and Prime for Life 16 (16-hour early intervention training), outpatient and intensive outpatient programs, and continuing care. Although a Navy provider supervises this treatment, these services are not part of Navy Medicine and availability of services varies at each Marine base (U.S. Department of the Navy, 2011).

Prevention and Deterrence

Sailors receive education and training on alcohol and drug abuse awareness and prevention upon entry into the Navy, when checking into a new command (unit), and when going through a Navy

school. In addition, junior enlisted sailors are required to complete Alcohol-AWARE, a basic alcohol awareness training, within 2 years of completing recruit training (U.S. Department of the Navy, 2009). Per Navy-Specific Administrative Message (NAVADMIN) 213/15 (U.S. Department of the Navy, 2012b), alcohol, drug, and tobacco awareness training must be conducted by commands once per deployment cycle or once every 2 years. Although not mandated, most Navy commands conduct safety stand-down training that addresses alcohol use prior to holiday weekends or port calls (a port call is a brief stop at a port in which sailors are given time off to go into town), and at the beginning of the summer months.

Drug Screening The Navy has a *zero tolerance* policy for drug use and utilizes random urinalysis sampling as a deterrent and means of identifying personnel who have violated this policy (U.S. Department of the Navy, 2009). The minimum monthly testing requirement is 15% of assigned personnel and 100% of personnel must be tested at least once annually. The implementation of unit sweeps, although no longer mandatory, is recommended.

Drug and Alcohol Program Advisor (DAPA)

Drug and Alcohol Program Advisors are appointed by the unit commanding officer and are responsible for management of the command's substance abuse prevention program. The primary command DAPA should be a senior enlisted sailor (E7 or above) and is considered the command's principal advisor for alcohol and drug matters. Once appointed, Their duties are required to attend a 5-day course to prepare them for their role and responsibilities. Their duties include (a) planning and organizing education and prevention activities, (b) serving as designated self-referral agents to whom sailors can disclose problematic substance use and request treatment without incurring punitive actions, (c) recording alcohol or drug related events in the

Alcohol and Drug Management Information and Tracking System, (d) coordinating and scheduling screening appointments and completing the screening package which provides information about the sailor to be used during the screening assessment, and (e) assisting with obtaining command approval when a sailor has been recommended for treatment, scheduling a treatment start date with a Navy Substance Abuse Rehabilitation Program (SARP), and getting temporary additional duty orders (temporary additional duty orders are used by the military to maintain accountability for personnel and demonstrate that the service member has been authorized to perform duties outside of his or her normally assigned duties, such as service schools, conferences).

Marine Corps units have Substance Abuse Control Officers (SACO), which serve in a similar role as the Navy DAPAs. A SACO is appointed by the commanding officer and serves in that position for at least 1 year. The SACO's duties include referring and coordinating substance abuse treatment, as needed, for marines or sailors within the unit).

Substance Abuse Rehabilitation Program

The Navy's substance use disorder treatment program is called the SARP (U.S. Department of the Navy, 2009). The Navy has approximately 29 SARP clinics around the world. Three SARP facilities provide comprehensive treatment for co-occurring disorders including outpatient, intensive outpatient, and residential treatment. Early intervention and treatment is provided by certified alcohol and drug counselors and mental health licensed independent providers. The Navy SARP provides early intervention, three levels of treatment, and continuing care services. Intervention/treatment level corresponds to the ASAM (Mee-Lee, 2013) criteria guidelines. Bureau of Medicine and Surgery Instruction (BUMEDINST) 5353.4B (U.S. Department of the Navy, 2015a) provides guidance for Navy SARP levels of care to include minimum and maximum time in treatment for each level of care.

Early Intervention (Level 0.05) Alcohol-IMPACT is a 20-hour early intervention program for sailors referred to SARP (usually for an alcohol-related incident) who did not meet criteria for a substance use disorder. It is a group-based educational program designed to decrease risk of alcohol or drug abuse by increasing the sailor's awareness of the impact of alcohol and drugs can have on the body, life, and on society.

Outpatient (Level I) Outpatient treatment can range from 56 to 72 h of treatment which typically occurs over a 2-week period. This level of care is typically for service members that have a mild substance use disorder and is designed to assist the member develop low-risk drinking behavior.

Intensive Outpatient (Level II) Intensive outpatient (IOP) treatment can range from 112 to 128 h which typically occurs over a 4-week period. This level of care is for service members with a moderate to severe substance use disorder, and low or moderate risk of substance use based on ASAM criteria. It is designed to assist service members to maintain sobriety. Service members are expected to be abstinent from alcohol use for at least 1 year post-treatment and possibly for the rest of their military career. In addition to the daily treatment programming, patients are expected to complete homework assignments and to attend sobriety support meetings in the evenings and on weekends while in IOP.

Residential (Level III) Residential treatment is a 5-week program. This level of care is for service members with a moderate to severe substance use disorder, and moderate or high risk of substance use based on ASAM criteria. It is designed to assist service members to maintain sobriety. Service members are expected to be abstinent from alcohol use for at least 1 year post-treatment and possibly for the rest of their military careers. In addition to the daily treatment programming, patients are expected to complete homework assignments and to attend sobriety support meetings in the evenings and on weekends while in residential treatment.

Continuing Care (Aftercare) Continuing Care treatment is a 12-month program. This level of care is for service members who have a moderate to severe substance use disorder and have completed IOP or residential treatment. The program is designed to assist service members with relapse prevention. Continuing Care is part of an after-care plan which also includes attending sobriety support meetings, obtaining a sponsor or mentor, and developing a sober support network. Patients in Continuing Care are also enrolled in the Navy MORE (My Ongoing Recovery Experience) program, which is an online, module-based program to support recovery. Navy MORE was created in 2010 in collaboration with the Hazelden Betty Ford Foundation, a private, nonprofit alcohol and drug addiction rehabilitation center (Bureau of Medicine and Surgery Public Affairs, 2010).

Clinical Screening Assessment

From an administrative perspective, a sailor is identified as either a self-referral or a command/incident referral to be screened for a substance use problem. This is an administrative rather than clinical distinction. It is used to determine if, under certain circumstances, a sailor will be deemed a treatment failure or not. A sailor who self-refers for treatment, then relapses during recovery, is afforded the opportunity for further assistance without concern for incurring administrative and/or punitive action. If a sailor incurs an alcohol-related incident, he or she cannot be considered a self-referral and is at greater risk of being considered a treatment failure if the sailor relapses with alcohol use. Referrals can also be made by a medical officer or other LIP that is providing care for the service member.

Screening assessments are most commonly scheduled by command DAPAs once a service member has been identified for whom there are concerns about substance use. Substance abuse screenings are typically conducted by alcohol and drug counselors and mental health LIPs, but can be completed by any LIP. The purpose of a screening is to determine if a sailor has an alcohol or drug abuse problem/diagnosis and, if so,

the recommended level of intervention. The primary function of SARP treatment is to return sailors with alcohol use disorders to full duty status. The screening assessment utilizes the Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (American Psychiatric Association, 2013) to assign a diagnosis, and the American Society of Addiction Medicine criteria (Mee-Lee, 2013) to determine if treatment is needed and the indicated level of treatment.

Commands are required to complete a screening package to include Navy Personnel (NAVPERS) 5350/3 and OPNAV 5350/7, Navy forms that gather information about the referred sailor's performance history and any collateral information about the sailor's alcohol or drug use history. This information is used to record any alcohol-related incidents in the Alcohol and Drug Management Information Tracking System. Once the assessment is completed, the LIP provides the Command with a written summary that contains an intervention or treatment recommendation for the sailor.

Once the Command receives the treatment recommendation and agrees to send the service member for treatment, the Command DAPA contacts SARP to schedule a date for treatment to begin (of note, Command can refuse or delay treatment. By instruction, if they refuse, they are supposed to notify Office of the Chief of Naval Operations in writing via the chain of command). Patients are required to be medically screened and cleared to participate in SARP treatment.

Treatment

The BUMED does not endorse a particular theory or approach to substance abuse treatment. Consequently, Navy SARP treatment programs may be understood as eclectic or multimodal, though grounded in cognitive and behavioral principles and interventions, and utilizing a biopsychosocial model to conceptualize substance use disorders. Overarching treatment goals include: (a) patient awareness and acceptance that a substance use problem exists, (b) identifying potential obstacles that may hinder the patient

from making positive changes in regard to substance use, and (c) identifying and using interventions patients can use to address the identified obstacles to positive change.

SARP programs utilize group and individual therapy, and employ psychoeducational groups, skills development groups, support groups, and interpersonal process group approaches in treatment. Psychopharmacological treatment is also considered and offered based on clinical assessment. Treatment goals for all drug-related disorders and alcohol-use disorders requiring IOP or residential treatment are abstinence-based. Outpatient treatment goals for alcohol use disorders focus on developing low-risk drinking behavior. A large percentage of SARP patients have co-occurring disorders (such as mood disorders, PTSD). Most of the SARP clinics that offer Level II and III treatment are certified to treat co-occurring disorders.

Administrative Issues

Sailors who have been diagnosed with an alcohol use disorder are afforded one period of treatment in response to an alcohol incident per career. Commanding officers may recommend a second period of treatment for officers and senior enlisted personnel (E5 and above) if: (a) they believe that those sailors possess exceptional potential for further military service, and (b) at least 3 years have elapsed since any previous alcohol incidents.

Per OPNAVINST 5350.4D (U.S. Department of the Navy, 2009), commanding officers are to initiate administrative separation processing for “individuals who incur a second DUI/DWI in a career” and “those individuals identified as a treatment failure.” A sailor is deemed a treatment failure for one of the following reasons: refusal to complete recommended substance use treatment; incurring an alcohol-related incident after a period of substance abuse treatment; or failure to participate in, failure to follow, or failure to successfully complete any medically prescribed and command-approved aftercare plan.

Future Directions

Navy substance use disorders treatment will continue its focus on providing state of the art, evidenced-based treatment for co-occurring disorders. There are multiple initiatives that continue to be a high priority for Navy medicine and substance use disorder treatment: outcome measures to assess effectiveness, standardization of procedural coding and clinical documentation across treatment sites, and increased utilization of the larger SARPs (which provide all levels of treatment) as training sites for future Navy drug and alcohol counselors. Also important is the ongoing dialogue and cooperation between BUMED and the Bureau of Naval Personnel (BUPERS; the Navy human resources organization) to balance the effective medical treatment of substance use disorders (BUMED) and the overall military/administrative management of substance disorders in the Navy (BUPERS). Navy medicine provides the greatest number of comprehensive levels of treatment in the Department of Defense. The Navy has three of the five residential treatment facilities in DoD and is well positioned to continue being a leader in the treatment of substance use disorders.

Prevention and Treatment Within the United States Army

Introduction and History

According to the National Institute on Drug Abuse (NIDA, 2011), the most commonly abused substance among military personnel is alcohol. A study by Stahre, Brewer, Fonseca, and Naimi (2009) indicated that binge drinking is common among active duty military personnel, with 43% of active duty service members reporting binge drinking (defined as five or more drinks for men/ four or more drinks for women on a single occasion) within the past 30 days; further, 67% of such episodes occurred among members between the ages of 17 and 25. Twenty-seven percent of Army soldiers were found to meet criteria for alcohol misuse within 3–4 months after returning

home from deployment in Iraq (Santiago et al., 2010). These soldiers exhibited high-risk behaviors such as drinking while driving, riding with a drunk driver, missing work due to hangover, and use of other mood altering substances.

As a result of Department of Defense issuances DODD 1010.4, DODI 1010.1, and DODI 1010.9, the U.S. Army developed and implemented the Army Substance Abuse Program (ASAP), a comprehensive program to prevent and control the abuse of alcohol and other drugs (U.S. Department of the Army, 2012). At the time of this writing, ASAP is in a state of transition. Since 2010, ASAP has fallen under the prevention mission of the U.S. Army Installation Management Command. Outpatient care was integrated with ASAP prevention services, but was relatively isolated from most other behavioral care services.

In March 2015, the Secretary of the Army mandated a comprehensive review of the Army Substance Abuse Program. In October 2015, the Secretary approved recommendations from this review, which included realignment of substance use disorder clinical care under the U.S. Army Medical Command (MEDCOM), integrating it within the Behavioral Health System of Care. This move gave rise to the Army Substance Use Disorder Clinical Care (SUDCC) program, an innovative model for providing substance use disorder and other behavioral health care in an integrated manner (Wolfe, 2016).

Mission and Objectives

The ASAP, including SUDCC, is guided by Army Regulation 600–85 (U.S. Department of the Army, 2012); this regulation is being updated for release in 2017. It outlines the separate roles and responsibilities regarding substance abuse programs at all levels of leadership within the Army. Per AR 600–85,

the Army Center for Substance Abuse Programs mission is to strengthen the overall fitness and effectiveness of the Army's workforce, to conserve manpower, and to enhance the combat readiness of Soldiers

(U.S. Department of the Army, 2012). At the service level, the program is divided into prevention and treatment, however they are best viewed as a whole with intervention at all levels. Substance abuse in the military is much like substance abuse in the civilian population. Military members use alcohol and drugs for many of the same reasons as civilians (e.g., recreational use, ease emotional or physical pain), though some stressors associated with military service may raise the risk level for soldiers. In addition, service members, like civilians, are susceptible to the addictive effects of medications prescribed for legitimate medical problems, such as pain medications. The vision for the SUDCC within MEDCOM is to provide substance use disorder clinical care within an integrated medical and behavioral health model to enhance health and readiness for service members and other beneficiaries.

Objectives of the Army Center for Substance Abuse Programs as outlined in AR 600–85 include (a) increasing individual fitness and unit readiness, (b) providing services that emphasize alcohol and drug prevention, education, and rehabilitation, (c) implementing effective substance use risk reduction and prevention strategies, (d) restoring service members to duty if possible, (e) providing substance abuse prevention programs at all levels in the military hierarchy, and (f) providing services to the Army's civilian corps to maximize productivity and reduce absenteeism/attrition.

Currently, per AR 600–85, ASAP is considered to be “a Command program that emphasizes readiness and personal responsibility.” Command (i.e., the leaders in the soldier's supervisory hierarchy) plays an essential role in substance abuse prevention, drug and alcohol testing, early identification of substance problems, rehabilitation, and administrative or judicial actions. Though referrals may come from various sources, including the military member, the final decision to enroll a soldier in ASAP has belonged to the Command. Such decisions are made based on Command consultation with the substance use disorder professionals who have evaluated and/or provided treatment for the soldier. Decisions regarding separation or retention of those who engage in problematic use of alcohol or other

substances are the responsibility of the soldier's chain of command.

One major criticism of ASAP being a Command program is that it places final authority for decisions regarding admission to treatment in the hands of leaders who are not health care professionals and do not have the breadth and depth of training to fully understand their soldier's substance abuse issues (Highfield, 2015; Zoroya, 2015a, 2015b). By placing substance use disorder clinical services under MEDCOM, such decisions will rest with licensed health care providers.

Clinic Structure and Personnel

The transition of substance use disorder clinical services from IMCOM to MEDCOM reflects an administrative move, rather than a physical move. The locations of treatment clinics vary based on resources and needs at the local installation level. At some military installations, clinics are given space in a military hospital. In other cases, the clinic is located in a building elsewhere on the installation. Those who provide direct care to patients and the administrative staff that manage SUDCC clinics will continue in their roles, under different leadership. The ASAP (SUDCC) functions, and staff roles and responsibilities are outlined in AR 600–85.

The substance use disorder care clinics are primarily staffed by civilian professional, paraprofessional, and administrative staff, and in some clinics, there are military staff as well. Clinic directors (licensed behavioral health professionals with certification as alcohol and drug abuse counselors) are responsible for overall administration of the rehabilitation program, and supervision and training of the ASAP counselors. The SUDCC clinic is staffed by a multidisciplinary team, to include licensed professional counselors, licensed marriage and family therapists, licensed clinical social workers, and psychologists. These providers must also possess a certification or licensure as a substance abuse provider per Army Regulation 40–68 (Clinical Quality Management; U.S. Department of the Army, 2009). These providers are privileged

through the military treatment facilities as behavioral health providers with specialized substance abuse credentialing. Installation prevention coordinators' duties include promoting ASAP services, providing alcohol and other drug prevention and education training programs, and overseeing the Unit Prevention Leaders training program.

Assessment

When soldiers are referred to ASAP (including self-referrals), they are initially evaluated by a SUDCC provider. Currently, this includes consultation with the soldier's commander. If clinically necessary, a referral will be made to the physician, usually the SUDCC clinical consultant, who will evaluate and provide medication or recommend a higher level of treatment. All cases are staffed with the SUDCC rehabilitation team (consisting of the soldier, the soldier's commander or first sergeant, SUDCC counseling staff, and others as appropriate) for the purpose of reviewing the results of the evaluation and developing rehabilitation options.

Possible recommendations from the treatment team include: (a) supervisory counseling by the soldier's leaders, (b) referral to another agency (e.g., chaplain, marriage counseling, Alcoholics Anonymous), (c) no services by SUDCC at this time, (d) referral to the Army Alcohol and Drug Abuse Prevention Training (ADAPT; an educational and motivational program), (e) Level I rehabilitation (outpatient treatment), or (f) Level II rehabilitation (residential treatment).

Services

The Army ADAPT was an educational and motivational program. It was a 12-hour program that focused on early intervention and prevention by providing information on the adverse effects and consequences of alcohol and other drug abuse.

The ADAPT was later replaced by another educational/motivational targeted intervention program, Prime for Life®, an evidence-based

program that emphasizes prevention, intervention, and pretreatment (Prevention Research Institute, 1983). The program is for soldiers who engage in high-risk behaviors such as binge drinking, and drinking and driving, by addressing positive change in beliefs, attitudes, risk perceptions, and behaviors to meaningfully reduce risk. Originally released as a 20-hour program, it has been condensed to 12–16 hours.

Treatment is a clinical intervention that can be provided at various levels of intensity (i.e., outpatient, partial inpatient, or residential) based on the needs of the patient. Placement in Level I or Level II treatment is based on the criteria of the American Society of Addictive Medicine (Mee-Lee, 2013). Additionally, SUDCC counselors may require soldiers to go through the Army ADAPT program as an adjunct to Level I or Level II treatment. The goal of treatment is to restore the soldier so that he or she is considered “fit for duty.”

Level I, nonresidential/outpatient rehabilitation is the least intensive level of treatment and is provided on-site at SUDCC clinics. It is tailored to the needs of the individual based on the initial assessment. It consists of individual, group, and/or family counseling, and ranges from 30 to 360 days. Evidence-based treatment modalities are utilized, such as motivational interviewing, cognitive behavioral therapy for addiction, and rational emotive behavior therapy. At-risk SUD patients are managed in an integrated process with behavioral health patients.

Level II, partial inpatient/residential treatment consists of enrollment in an intensive treatment program for soldiers who are determined to have more severe problems with alcohol and/or drugs. Soldiers are referred by SUDCC counselors to military or community alcohol and drug treatment facilities. Treatment frequency and duration varies in length depending on the facility and specific program in which the individual is enrolled. The SUDCC counselors coordinate with the community programs to track progress in treatment. Upon completion of this program, soldiers are enrolled in a mandatory follow-up program at the local SUDCC clinic for a total rehabilitation duration of 1 year.

Program Completion and Program Failure

During treatment, soldiers may be removed from their usual duties, especially if they hold positions of trust or responsibility (e.g., supervisory position, handling classified material). Ideally, soldiers who successfully complete treatment and maintain sobriety will regain status as fit for military duty and return to their regular assignments. However, soldiers who are not compliant with treatment or fail to respond to rehabilitation efforts, are typically processed for administrative separation; details of the circumstances and parameters for separation as an alcohol or drug abuse rehabilitation failure are outlined in AR 600–85 and the Uniform Code of Military Justice (2010).

Program Effectiveness and Future Directions

The Army has reexamined the structure and authority for ASAP, resulting in the decision by the Secretary of the Army to transfer the clinical assets of ASAP back to MEDCOM effective October 1, 2016. An article in USA Today (Zoroya, 2015a) examined the issues surrounding this move, and included various viewpoints. The author reported that approximately 20,000 soldiers per year were referred to ASAP, which consisted of 54 clinics worldwide. The article identified concerns about adequate staffing and staff credentials, clinics meeting standards of care, and limitations in how ASAP coordinated care with other health care providers.

An article on the www.army.mil website underscored the Army’s commitment to the mission, soldiers, family members, and Army civilians, and highlighted the benefits of moving clinical services back to MEDCOM (Wolf, 2016). Wolf reported the transition should be completed by May 31, 2017. This change is expected to improve the ability to address co-occurring mental/physical illnesses and substance use disorders, promote evidence-based

early intervention, facilitate a multidisciplinary approach, including better coordination with primary care providers and behavioral health providers, embed behavioral health providers in Army units, improve healthcare management between various levels of care for substance use disorders (eliminating the need for referrals outside of the treatment team), and standardize clinical care.

Conclusion

All branches of the U.S. Armed Forces have made efforts to develop and implement rehabilitation and prevention programs aimed at reducing alcohol and other drug problems. These military programs, combined with community-sponsored events and health promotions, are effectively reducing alcohol and drug use in the military population by emphasizing personal responsibility, providing early identification and treatment, and reducing alcohol- and drug-related incidents in the U.S. military.

Strengths

There are several strengths in the current approach to addressing substance use problems in the military. First, the approach is unified, originating with federal law and directed by the Secretary of Defense that is informed by research and applies to all services. This is especially helpful as there has been an increasing trend toward joint operations (e.g., merging military installations of different services, shared military operations) in which members of different military services often work together in the same location and/or on the same project or mission.

Second, the military considers itself a professional organization and has an explicit commitment to recognizing the value of its workforce. Rather than labeling those who have problems with alcohol or drugs, and/or hastily discharging them from the organization, the military places emphasis on rehabilitation for those with sub-

stance use disorders. Many service members have been given this second chance, and have returned to duty to continue to serve their country.

Third, military substance abuse programs take advantage of the numerous resources available for prevention, education, and treatment. The resources include financial counseling, chaplain services, family services, and 12-step meetings, both within the military and from local community organizations. Each branch of the military uses a multilevel, multidisciplinary approach.

Fourth, as behavioral health has matured as a science, it has impacted military health care. Specifically, over the past two decades, the importance of using evidence-based interventions is now standard practice for all services. This has influenced training and certification requirements for clinic staff, as well as development of programs and selection of materials for assessment, prevention, education, and treatment.

Fifth, the DoD has implemented several strategies to reduce stigma associated with seeking help for behavioral health problems, including problems with alcohol or drugs (Dingfelder, 2009). Maintaining an image of confidence and competence is an integral part of service members' respect in the unit and personal self-esteem. Asking for help was seen as a sign of weakness, and deterred many from seeking help which could have restored their functioning and quality of life. In recent years, all of the services have poured tremendous resources into public service campaigns aimed at reducing stigma and promoting the idea that it takes courage and is a sign of strength to ask for help. This has been carried out through printed materials such as posters and hand-outs, publicized testimonials from high-ranking military leaders, and training leaders to reach out to their subordinates to encourage them to access behavioral health resources if needed.

Challenges

There remain a number of challenges in addressing alcohol and drug abuse in the military. First, the

campaign to reduce stigma toward behavioral health in the military has only been partially successful (Acosta et al., 2014). The culture of strength and courage is necessary for service members to do the tough jobs in the military, especially in combat situations. Additionally, being perceived as a top-notch performer is important in advancing one's career. Thus, although there are official, explicit messages encouraging service members to seek help, there remain powerful influences discouraging them from openly seeking help.

A related challenge is that there are segments of the military that promote heavy drinking, especially among the younger enlisted members. Similar to the college population, many young, single service members engage in heavy drinking as a form of recreation. The combination of a youthful sense of invulnerability and limited life experience sets them up for alcohol abuse and subsequent alcohol-related incidents.

Another challenge is the availability of alcohol and drugs. The IOM (2012) study pointed to this as a major factor influencing alcohol and drug use among military personnel. Alcohol can be purchased inexpensively on military installations (of note, alcohol is prohibited in deployment zones). Marijuana has been legalized for recreational use in several states. Finally, there is the availability of synthetic drugs which may or may not be illegal (e.g., spice) and some household substances that can be used as drugs. Even though the military provides explicit directives that such substances are prohibited for service members, some are willing to take the risk. Finally, one of the most insidious problems the military is facing is dependence on prescription drugs.

Also, serving geographically dispersed service members is a challenge. For example, recruiters, members of the Reserve and National Guard, and Reserve Officers' Training Corps instructors often live and work in communities that may be several hours away from the nearest military installation, thus several hours away from a military drug and alcohol clinic. Traversing the distance to a military installation for assessment and treatment may be a hardship for the service member and his/her leaders, and takes them

away from the mission. Currently, many military substance abuse clinics are trying to coordinate services through providers and facilities that are local to the service member. In the future, it may be possible to take advantage of technology such as telemental health for services to be provided remotely.

In conclusion, America's military has matured to become a professional organization, with a highly skilled, highly educated workforce dealing with very real threats from enemies around the world. Leaders at all levels are aware of the cost of substance abuse to mission readiness, and to the well-being of service members and their families. They take this matter seriously and are dedicated to supporting the efforts of the military substance abuse prevention and treatment programs. Excellent resources and expert staff members are in place to provide services, and at the same time, they are continuing to face the challenges that exist within and outside the military community.

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Ryan R. Green, Daniel A. Jacobson,
J. Wesley Waggoner, and Patrick Armistead-Jehle

Neuropsychology is the science and study of brain-behavior relationships and the clinical application of that knowledge. Neuropsychology has received a remarkable increase in political and media attention, research funding, and academic interest over the past few decades. Indeed, the 1990s were known as the “Decade of the Brain.”

Neuropsychology in the military, in many ways, has been influential in driving the field forward (e.g., History [of DVBIC], 2016). Military neuropsychology has expanded into multiple subspecialties, and a vast literature of peer-

reviewed publications, edited and non-edited volumes, list serves, media outlets, and blog posts have been published. The vastness of the available information makes it quite challenging to summarize the history, theory, science, treatment, complex issues, and the future directions of military neuropsychology.

The purpose, therefore, of this chapter is to serve as an introductory primer for learners of all experience levels to be exposed to some of the nuances of neuropsychology and its relationship to the Armed Forces. For those interested in further study, several volumes have been published which expand on many of the topics herein (e.g., Bush, 2012; Kennedy & Moore, 2010).

R.R. Green (✉)
Tripler Army Medical Center,
Honolulu, HI 96859, USA

Board eligible Neuropsychologist; Chief,
Aeromedical Psychology; and Chief, Human Factors
at the School of Army Aviation Medicine,
Fort Rucker, AL, USA
e-mail: ryan.r.green5.mil@mail.mil

D.A. Jacobson
USAF/Tripler Army Medical Center,
1676 Ala Moana Blvd #608, Honolulu, HI 9681,
USA
e-mail: gattaca2383@gmail.com

J. Wesley Waggoner
US Air Force,
4 Marchmont Dr., Fairborn, OH 45324, USA
e-mail: John.Waggoner.3@us.af.mil

P. Armistead-Jehle
Munson Army Health Center,
550 Pope Ave, Fort Leavenworth, KS 66223, USA
e-mail: Patrick.j.armistead-jehle.civ@mail.mil

Neuropsychology in the Armed Forces

The relevance of any topic is an extremely important consideration. It is, therefore, useful to ask, “Is the study of brain-behavior relationships relevant in a military context? And if so, why?” As you will read in the pages below, neuropsychology in the military is not just a good idea whose time has come, but a proven force multiplier useful in many military applications. It does not take much imagination, reading of military histories, or review of military epidemiological studies to appreciate that a potential tragic result of engaging in and preparing for

armed combat is the possibility of experiencing a neurologic injury (DePalma, 2015). These injuries may lead to a number of sensorial, motoric, emotional, or cognitive difficulties. Indeed, the primary mission and application for neuropsychology in an armed forces context is to help service members (SMs) who have experienced neurologic disorders or injuries by providing assessment, diagnosis, and treatment plans to foster effective recovery (McCrea et al., 2008).

Although traumatic brain injury (TBI) is one of the most commonly occurring neurological conditions (impacting nearly 350,000 SMs; DBVIC, 2016), SMs experience multiple neurologic disorders and injuries. These disorders and injuries can be quite varied (e.g., seizure disorders, cerebral vascular accidents, neoplasms, neurodegenerative conditions, hypoxia, and psychiatric conditions which affect cognitive functioning) and may result in a host of neuropsychiatric (e.g., emotional dysregulation), neurobehavioral (e.g., sleep dysregulation, disinhibition, movement disorders), and neurocognitive sequelae (e.g., deficits in attention/concentration, processing speed, memory, etc. Holster et al., 2016; Raymont, Salazar, Krueger, & Grafman, 2011).

It is within this context that neuropsychologists use standardized assessment measures to evaluate patients' cognitive and emotional functioning in order to provide data to improve the rehabilitation focus of the multidisciplinary medical treatment team and to help optimize health outcomes (Vanderploeg et al., 2008). Understanding the neuropsychological strengths and weaknesses of an individual can provide family members and patients with an important context and narrative to understand various behaviors, guide rehabilitation and treatment planning, facilitate return to duty and vocational placement determinations, and help determine cognitive capacity/decision-making abilities in medicolegal contexts.

Neurocognitive measures have also been used to evaluate pre-deployment cognitive abilities. This "premorbid" assessment provides baseline data in the event an SM experiences a neurologic injury (Vasterling et al., 2012) and can help predict the likelihood that an SM may experience various psychiatric conditions related to deployments to dangerous and austere environments (Sørensen,

Anderson, Karstoft, & Madsen, 2016). This process allows neuropsychologists to compare pre-injury cognitive and psychological test scores with post-injury test scores to determine whether any changes in functioning have occurred and facilitate treatment planning and return to duty decisions (Dretsch, Kelly, Coldren, Parish, & Russell, 2015).

Cognitive pre- and post-testing has also been used to assess the utility of treatment interventions to help guide the progression of treatment focus as it evolves over time (Cicerone, et al., 2008; Holleman, Vink, Nijland, & Schmand, 2016). This method can also be used when a patient requires neurosurgical intervention to assess presurgical functioning as well as potential deficits acquired from neurosurgery. Oftentimes, patients who have received neurosurgical intervention will have serial neuropsychological evaluations (e.g., approximately every 12–24 months) to assess recovery and responses to intervention.

In addition to helping predict and measure outcomes, the study of brain-behavior relationships also helps improve our understanding of how to prevent neurologic disorders and injuries (Manoogian, McNeely, Duma, Brolinson, & Greenwald, 2006; Olvey, Knox, & Cohn, 2004). As we learn more about what the limitations and vulnerabilities of the brain are, we can then intervene to prevent neurologic problems through education, training, better equipment, and improved tactical engagement (Kaul et al., 2016). For example, combat helmets have undergone considerable changes from World War I to today and will likely continue to evolve with our understandings of brain-behavior relationships and the improved effectiveness of current equipment (Committee on Review of Test Protocols Used by the DoD to Test Combat Helmets, Board on Army Science and Technology, Division on Engineering and Physical Sciences, & National Research Council, 2014).

A Brief History of Neuropsychology in the Armed Forces

While neuropsychology has existed in its current form for the past several decades, behavioral manifestations of neurological injury have been docu-

mented on Egyptian papyrus dating back to 3000 BCE (Kulas & Naugle, 2003). Over the next few millennia, further attempts at identifying brain localization dysfunction were theorized by Hippocrates (believed the brain to be the seat of intelligence), Aristotle (believed that humans had higher cognitive/rational functions separating them from “beasts”), Galen (denied mind-body dualism), Descartes (advocated the most widely accepted conceptualization of mind-body dualism), Gall (phrenology and localization of function), and, finally, by the nineteenth century Paul Broca (localization of expressive language function; Puente, 1992). Most of these historical advances were based on religion, philosophy, gross anatomical observations, and single case studies of brain lesions. With the advances of neurology, neuroscience, psychology, and neuroimaging, modern neuropsychology is vastly different from its early origins in both form and application.

Contemporary (Neuro) Psychological Assessment

One of the first applications of contemporary assessment of behavioral functioning was implemented in the US military during World War I. In 1917 Robert Woodworth implemented a group personality test called the Personal Data Sheet which laid the foundation for modern personality testing including advanced psychometrics. In the same year, the president of the American Psychological Association, Dr. Robert Yerkes, worked with Lewis Terman (publisher of the Stanford-Binet IQ test) and David Wechsler (eventual creator of the Wechsler Adult Intelligence Scale) to create the Army alpha and beta tests, which were used during the screening process for Army recruits to disqualify those with intellectual disabilities (Cardona & Ritchie, 2007). While cognitive testing was a valuable tool in the screening process for potential enlistees, the various psychiatric screening tests developed during subsequent conflicts were overall ineffective in predicting compatibility with military service and were found to be useful only in screening out the most serious mental illnesses.

The Expansion of Military (Neuro) Psychology

Toward the end of World War II and during the postwar period, the role of military psychologists expanded beyond that of military personnel selection adding clinical psychologists who primarily focused on clinical assessment and treatment and with the Army introducing behavioral scientists via the research psychologist (71F) occupational specialty. Currently, there are approximately 30 research psychologists who are engaged in laboratory-based “neuroscience, human performance, sleep management, psychosocial and environmental stressors, personality and social/organizational factors, leadership, and occupational health” (Kennedy & Moore, 2010; U.S. Army Research Psychologist, 2012).

This increase in the breadth of the role of military psychologists, as well as an increase in the number of psychologists employed as service members themselves, began a new era of assessing, treating, and rehabilitating those with psychological wounds. Additionally, as technology continued to advance weaponry, battlefield medicine simultaneously evolved and became increasingly more effective. Thus, injuries that would have led to almost certain death in past conflicts (e.g., polytrauma, penetrating head injuries, etc.) could now often be stabilized in a manner that would preserve life. However, while countless lives have been saved due to the advancement of battlefield medicine, many of these former life-threatening injuries have now expressed themselves as temporary or permanent disabilities. Whether these injuries are acute or chronic in nature, clinical neuropsychologists are uniquely qualified to assess, treat, and aid in the rehabilitation process when involving neurological, cognitive, and/or psychological sequelae.

Military Neuropsychology Training and Functions

Clinical neuropsychology is itself a relatively young specialty given that the formal training requirements for neuropsychologists were not

established until 1982 by the newly formed American Board of Clinical Psychology (Puente, 1992). Shortly thereafter, the Air Force and Navy began offering neuropsychology fellowship training to their active duty clinical psychologists at civilian institutions. The Army began offering fellowship training a few years later at Walter Reed Army Medical Center and Tripler Army Medical Center (Kennedy & Moore, 2010). Walter Reed Army Medical Center was also the first military postdoctoral fellowship in neuropsychology to be accredited by the American Psychology Association. In 2008, the Army expanded fellowship training to a third site located at San Antonio Military Medical Center (SAMMC), formerly known as Brooke Army Medical Center. Then, in 2014, the Air Force established SAMMC as its primary fellowship training location (see Parker, 2017, Chap. 5).

Per estimates from the service-respective psychology consultants, of the approximately 600 active duty clinical psychology positions allocated between the three branches, 3–5% of the psychologists have completed fellowship training in clinical neuropsychology and are qualified to provide neuropsychological services. The three branches make a concerted effort to offer post-fellowship follow-on assignments at large military treatment facilities where the new neuropsychologists can apply their unique skillset. In addition to active duty neuropsychologists, a number of civil service and contract neuropsychologists are located at many military treatment facilities. These civilian neuropsychologists play a crucial role in the continuity of the garrison mission, to include overseeing training programs, as they do not typically deploy to combat zones like their active duty colleagues.

Neuropsychologists' contemporary functions within the military health system include assessment and treatment within the traditional mental health clinics, in stand-alone neuropsychology clinics, and in concussion clinics. At facilities with inpatient units, military neuropsychologists often provide initial assessment of mental status and cognitive functioning for acutely injured patients, then make recommendations to the rehabilitation staff. In outpatient settings, mili-

tary neuropsychologists are often called upon to make fitness for duty recommendations, in addition to clarifying differential diagnoses.

Current DoD Research and Treatment Initiatives Involving Neuropsychology

There is an extensive history of research within the Department of Defense (DoD) involving neuropsychology. Across the past several years, the clinical needs of deployed service members who have experienced TBI have driven many of the research initiatives within the DoD. As mentioned above, nearly 350,000 active duty military service members have experienced a TBI (DVBIC, 2016). The majority of these injuries (82%) have been categorized as mild in severity, and as such, mild TBI (mTBI) has been the focus of several programs of research (DVBIC, 2016). Although a full review of these initiatives is beyond the scope of the current chapter, several will be highlighted.

The Naval Medical Center San Diego involves neuropsychologists in several ongoing research projects including the following: identification of novel assessment methods to track changes in individuals who continue to report concussion-related symptoms in the absence of positive neuroimaging or findings on neuropsychological evaluation, the comparison of different cognitive remediation strategies in a randomized controlled trial, assessment of effects associated with sub-concussive blast exposures, evaluation of progressive return to activity interventions, and the study of long-term outcomes from mTBI in a 15-year longitudinal study. Among the broad range of research areas, military neuropsychologists have also been engaged in the evaluation of visual impairment following mTBI (Ettenhofer & Barry, 2016).

Womack Army Medical Center at Fort Bragg provides another example of extensive neuropsychological involvement in research. This program focuses on a wide range of concussion-related issues, including response patterns on symptom questionnaires and traditional neuropsychologi-

cal test batteries (Belanger et al., 2016), computerized assessment of neurocognitive functioning after concussion (Cole et al., 2013; Cole Arrieux, Dennison, & Ivins, 2017), diagnosis and treatment of posttraumatic headache (Finkel et al., 2016; Yerry, Kuehn, & Finkel, 2015), manualized treatment for problems related to concussion sustained on deployment (Bell et al., 2015, 2016), oculomotor functioning as a biomarker for concussion (Walsh et al., 2016), and the effectiveness of clinical recommendations for how to safely return service members to duty after concussion.

Past studies have also collected data, including various symptom questionnaires and computerized neurocognitive testing, on over 17,000 army paratroopers (Ivins et al., 2003, 2015; Bailie et al., 2015) and have included an epidemiological study of soldier health after deployment. Current dissemination efforts are focused on clarifying the nature of cognitive functions being measured by computerized neurocognitive tests and the clinical utility of such tools. Future studies will investigate a novel dietary-based intervention for chronic posttraumatic headache, a prototype for assessing multiple oculomotor functions in one device as a potential postconcussion assessment tool, and cardiac functioning as an objective biomarker for concussion.

Validity Testing

Neuropsychologists across the DoD have also been heavily involved in the study of validity testing in service members with a history of mTBI from a variety of independent samples (Armistead-Jehle & Buican, 2012; Grills & Armistead-Jehle, 2016; Jones, 2013; Jones, Ingram, & Ben-Porath, 2012; Lange, Brickell, & French, 2015; Lange, Brickell, Lippa, et al., 2015). Additional work has been done on the neuropsychological correlates of posttraumatic stress disorder (for a review, see Vasterling, MacDonald, Ulloa, & Rodier, 2010), cognitive sequelae of sustained combat operations (for a review, see Holster et al., 2016), factors associated with neurocognitive performance in service members with a history of concussion (Armistead-

Jehle, Cooper, & Vanderploeg, 2016; Cooper, Chau, Armistead-Jehle, Vanderploeg, & Bowles, 2012; Cooper, Vanderploeg, Armistead-Jehle, Lewis, & Bowles, 2014), and medically unexplained symptoms (Graver, *in press*; Graver & Bieliauskas, 2009).

Treatment Outcomes

In regard to treatment outcomes research, a recent prospective study at SAMMC evaluated response to cognitive rehabilitation (CR) in service members with a history of mTBI (Cooper et al., 2016). This randomized clinical trial demonstrated that therapist-directed CR and integrated CR with psychotherapy groups reduced participant's self-reported cognitive symptoms with greater efficacy than psychoeducation alone. Research from SAMMC involving neuropsychology has also demonstrated the benefit of multidisciplinary treatment (i.e., cognitive rehabilitation, vestibular therapy, headache management, and behavioral healthcare) in active duty military patients with a history of concussion (Janak et al., 2017).

Beyond these current trends in research activity, neuropsychology has played an integral role with regard to treatment within the DoD. Although neuropsychology is engaged across the spectrum of neurologic and psychiatric diagnoses, given the heightened demands of TBI-related care, much of the recent focus has been on this condition. Branches of the DoD require concussion specific clinics within military treatment facilities (MTF). As a function of the size of the MTF, different levels of care are mandated and resourced. Across the DoD, several of these clinics are managed by neuropsychologists, with these individuals running point on the direction and administration of TBI-related treatment.

Beyond MTF-based concussion clinics, a 4-week intensive outpatient program has been developed at the National Intrepid Center of Excellence (NICoE) at the Walter Reed National Military Medical Center (WRNMMC), Bethesda. This model of care utilizes neuropsychological services as an aspect of comprehensive interdisciplinary care. As an extension of the original

NICoE, five Intrepid Spirit Centers have been opened at major military installations across the continental United States (with four more planned in the upcoming years). These centers extend the NICoE interdisciplinary model of care with a focus on diagnosis and treatment (NICoE, 2016).

Complex Issues in Military Neuropsychology

As is true for most fields involved with novel research and treatment modalities, neuropsychology in the military is not without its debates. Given the limitations of this chapter, a brief review of some of the most salient issues will be summarized including concussion outcomes, blast wave vs. blunt force trauma, performance/symptom validity, Integrated Disability Evaluation System (IDES) evaluations and the diagnosis of malingering, and medically unexplained symptoms (i.e., somatoform disorders). Although the debates discussed herein do not exhaustively cover the debates in the field and are generally associated with neuropsychology as a science (that is, they are not uniquely associated with neuropsychology in the military), these issues are nevertheless germane to neuropsychology in the military for several reasons including the high number of SMs who experience neuropsychological concerns, their political- and media-related consequences, and potential disability- and/or disciplinary-related issues.

Concussion Outcomes

Concussion or mTBI has, perhaps erroneously, been called the “signature injury” of our current military engagements. That is, approximately 80% of concussions occur in garrison calling into question whether it is truly a deployment-related problem that has a higher representation than other battle-related injuries. However, this is not the only concern concussion researchers have encountered. There continues to be a vibrant debate in the literature regarding whether a small subset of individuals continue to experience symptoms that are

directly related to the concussion after 3 months of recovery (Vasterling et al., 2012; Shenton et al., 2012). Generally speaking, there are two views on whether these persistent postconcussive symptoms (PPCS) such as headache, photophobia, phonophobia, sleep difficulties, dizziness, and psychiatric conditions, are caused by neurobiological sequelae from the concussion.

Proponents of the first view suggest that concussions are fundamentally different from more serious moderate or severe TBIs such that concussions should not be considered on the same continuum as the potentially more pernicious TBIs. They further suggest that, if symptoms following a concussion continue past 90 days (i.e., PPCS), these symptoms are not attributable to the concussion but to various other “non-specific” factors including sleep difficulties, psychosocial stressors, psychiatric disorders, and malingering and may perhaps be psychogenic in nature.

Proponents of the second view suggest that all severities of TBI occur on a spectrum from mild to severe and that there is a small but meaningful subset of individuals (often referred to as the “miserable minority”) who continue to experience PPCS associated with neurobiological changes from the concussion. Many estimates of what percentage of individuals experience PPCS have been proffered and they vary considerably from study to study (e.g., from 0-15; for example see McCrea et al., 2013). Research in this area continues and will likely help clarify the nuances between these two views.

Blast Wave Versus Blunt Force Trauma

A related issue in the literature concerns the relationship between blunt-force traumatic brain injuries and blast-exposure brain injuries. Researchers have tried to identify whether mechanisms of injury are distinct from blunt-force injuries (e.g., MacDonald et al., 2014). Clarifying whether the mechanisms and potential neurobiological sequelae are similar in the two types of injuries is essential for developing and testing candidate therapies for rehabilitation purposes as well as for developing improved protective equip-

ment to address each of the causes of injury (Courtney & Courtney, 2015). Interestingly, although recent research has suggested that the clinical outcomes of these two populations are similar (Dretsch et al., 2015), some have called into question the use of group inferential statistics in identifying group differences given the possibility that these statistical methods may mask individual differences (see Han et al., 2014; Iverson, 2010). Research is continuing in this area and is taking advantage of advanced technologies including multimodal neuroimaging and other biomarkers to help identify the potential differences in these two types of injuries.

Performance Validity

Another relevant debate is related to how SMs score on performance and symptom validity measures (PVT and SVT, respectively). These measures have skewed distributions such that the vast majority of individuals should be able to score above assigned cutoffs, suggesting that if a patient does not perform above the cutoff then it is more likely that factors not related purely to cognitive ability attenuated their performance (e.g., behavioral factors; it should be noted however that individuals with neurodegenerative processes or other neurological injuries may perform more poorly on these measures and that is taken into consideration when interpreting these measures).

Interestingly, there is ongoing research whether PVTs and SVTs perform in the way in which they are purported and whether cut scores adequately allow clinicians to interpret level of effort, motivation, and engagement in the tasks (for a comprehensive review, see Bigler, 2014). PVTs and SVTs are frequently included in neuropsychological test batteries to help determine whether the neurocognitive and psychological data are valid and SMs tend to not “pass” these measures at a higher rate even if they are not in a compensation and pension evaluation (approximately 25–35%; Armistead-Jehle & Buican, 2012; McCormick, Yoash-Gantz, McDonald, Campbell, & Tupler, 2013) compared to civilians (approximately 3–6%; Gfeller & Roskos, 2013).

Whether test data are valid is extremely important for data interpretation, diagnosis, and treatment planning. Data that are considered invalid, for example, may need to be interpreted with certain caveats (e.g., only intact scores are interpreted and may actually underestimate the patient’s abilities and scores in the impaired range are not interpreted because they may overestimate the impairment). Interestingly, there are many reasons a patient’s PVT and SVT data may be invalid including lacking motivation/energy, neurobiological underpinnings (e.g., seizure during testing, moderate to severe dementia, and active psychotic disorder), and feigning/exaggerating cognitive impairment to name a few.

Although the exact mechanism driving data invalidity in any given patient is often very difficult to discern, and may be contextually dependent (e.g., PVT and SVT failure in those in compensation and pension evaluations can be as high as 54–71%; Armistead-Jehle & Buican, 2012; Nelson et al., 2010; McCormick et al., 2013; Young, Kearns, & Roper, 2011), there are possible military disciplinary consequences. Specifically, if an individual is found to be feigning symptoms, they are potentially subject to the Uniform Code of Military Justice (UCMJ) given that Article 115 of the Manual for Courts-Martial (Joint Service Committee on Military Justice, 2012) states that “Any person subject to this chapter who for the purpose of avoiding work, duty, or service - (1) feigns illness, physical disablement, mental lapse or derangement; or (2) intentionally inflicts self-injury; shall be punished as a court-martial may direct” (IV-59 and IV 60). Although diagnosing malingering in a neuropsychological context is infrequent partly due to its politically charged nature, it is important to note that a malingering diagnosis may lead to punishment under the UCMJ.

Malingering

PVTs and SVTs are also closely related to another debate that involves IDES evaluations and the diagnosis of malingering. Neuropsychologists in the military and the Department of Veterans

Affairs (VA) healthcare systems are often asked to conduct evaluations to determine SMs' fitness for duty or level of disability. Interestingly, there is an inherent incentive for SMs and veterans to exaggerate or malingering symptoms in order to gain access to disability moneys, medical treatment, and other benefits. Individuals who exaggerate or malingering symptoms may be more likely to fail PVTs and SVTs and therefore may be candidates for a diagnosis of malingering if certain criteria are met.

The Army Office of the Surgeon General (OTSG) has given guidance on diagnosing malingering (OTSG/MEDCOM Policy 14-094, 2014) and stated the following:

Although the influence of secondary gain is an important clinical consideration in the differential diagnosis, the diagnosis of malingering should not be made unless there is substantial and definitive evidence from collateral and/or objective sources that false or grossly exaggerated symptoms are intentionally produced for external incentives. Poor effort on psychological/neuropsychological tests does not equate to malingering, which requires proof of intent... (pg. 6).

Often included in discussions of this nature is guidance from the OTSG to give the "benefit of the doubt" to SMs when they are reporting symptoms even when the symptoms appear to be non-credible. Interestingly, some have interpreted the necessity for requiring "proof of intent" as a near impossibility and giving the benefit of the doubt as unethical. For example, Poyner (2010) pointed out that giving the benefit of the doubt makes conducting objective, ethically responsible assessments difficult given that empirical data may otherwise have to be ignored.

Medically Unexplained Symptoms

The final debate discussed herein relates to what is sometimes called medically unexplained symptoms. Neuropsychologists in the military are often referred patients who report cognitive difficulties but have no clear medical etiology that accounts for these problems. These patients frequently perform in the normal range of functioning on neurocognitive measures despite sub-

jective complaints for cognitive inefficiencies or difficulties. They are then often described as not "demonstrating" the feared medical condition or are diagnosed with a somatoform disorder.

Somatoform disorders are principally conceptualized as involving medically unexplained symptoms, represent "sickness behaviors" (not biological sickness), and are therefore traditionally thought to be better explained by psychological processes (i.e., are psychogenic). That is, if the symptoms are not proven to be biologically driven, then there may be a psychological explanation. Notably, not only are somatoform disorders thought by some to have a psychological etiology, but most psychiatric disorders as defined in the DSM-5 (American Psychiatric Association, 2013) have no clear biological etiology and may therefore be characterized as psychogenic in nature, although they are rarely discussed as such in the current zeitgeist. For example, depression, as pointed out by Dantzer and his colleagues (2011), is not classified as a disease in the strict sense given that its causal mechanisms are poorly understood and there is no sine qua non neuroanatomical marker, metabolic biomarker, or other identifiable biological cause. In other words, depression would also be considered psychogenic and may well be "all in one's head."

Contrary to the psychogenic hypothesis, some suggest that medically unexplained symptoms can actually be caused and therefore explained by biological processes. For example, Irwin (2011) suggests that somatic sensitivity related to pain, sleep disturbance, and fatigue (all of which can affect neurocognitive functioning and all of which get frequently reported by SMs) may be accounted for by inflammatory processes associated with the proinflammatory cytokine network.

Interestingly, many researchers have noted the Cartesian, mind-body dualism inherent in this debate and have challenged the false dichotomy by offering alternative frameworks from which conceptualization of these patients can begin. Sharpe (2013) offered a practical way to arrest the dualistic nature of the debate. He suggests viewing all somatic symptoms as both "medically explained" and "medically unexplained" to varying degrees

given that they are “neither mere reflections of bodily pathology, nor simple manifestations of mental processes” (pg. 320). From this non-dualistic framework, he recommends using “symptom burden” or how much patients are bothered by their symptoms (e.g., how many symptoms they report, the severity of symptoms they report, and their psychological reaction to them) to determine diagnosis. He further points out that the DSM-5 (American Psychiatric Association, 2013) diagnosis of Somatic Symptom Disorder has provided a means by which both “medically explained” and “medically unexplained” symptoms can be addressed without falsely dichotomizing patients into those with biological disease and those with psychogenic disease, such that even individuals with cancer can be diagnosed with Somatic Symptom Disorder if they meet the symptom burden criteria.

Applications to Civilian Neuropsychology

As suggested above, much of neuropsychological sciences, treatments, and debates are not exclusive to the military and its applications of neuropsychology. This section, however, will suggest ways in which military neuropsychology can particularly aid the advance of civilian applications. For example, some military neuropsychologists are adept at working within large-scale, well-funded, interdisciplinary neuro-rehabilitation teams (e.g., NICoE) which may offer generalizability to civilian contexts. Although neuropsychologists working with civilian sports-related concussion were among the first to advance research in this area including diagnosis and management, military neuropsychologists frequently diagnose and treat concussion and may be able to offer additional insights to sports teams with regard to evaluation of and recovery from sports-related head injury. Furthermore, military neuropsychologists have considerable experience working with individuals seeking disability due to occupational impairment which, in our highly litigious culture, is an ever expanding area of expertise for civilian neuropsychologists. Finally,

military neuropsychologists are commonly asked to make personnel decisions based on cognitive and personality characteristics. Strategies used by military neuropsychologists for selection of troops for Special Operations, Military Training Instructors (MTI), and pilots may be useful for selection of individuals for civilian occupations including high-level positions (e.g., CEOs), police and other security professions, and commercial airline pilots.

Treatment and Rehabilitation

Due to the large-scale TBI challenges faced during OIF, OEF, and Operation New Dawn (OND), the Department of Defense (DoD), in collaboration with neuropsychologists and numerous other healthcare professionals, has developed large-scale rehabilitation facilities aimed at helping troops overcome cognitive and psychiatric deficits.

In addition to the Defense and Veterans Brain Injury Center (DVBIC) supporting 11 MTFs and 5 Department of Veterans Affairs (VA) healthcare facilities, a 4-week intensive outpatient program has been developed at the National Intrepid Center of Excellence (NICoE) at the Walter Reed National Military Medical Center (WRNMMC), Bethesda. This model of care utilizes neuropsychological services as an aspect of comprehensive state-of-the-art, interdisciplinary care. As an extension of the original NICoE, five Intrepid Spirit Centers have been opened at major military installations across the continental United States (with four more planned in the upcoming years). These centers extend the NICoE interdisciplinary model of care with a focus on diagnosis and treatment (NICoE, 2016). These centers can serve as a useful model for management of TBI in civilian populations where patients who have sustained a brain injury struggle with numerous referrals to multiple specialties in different locations, lack of insurance, potentially limited insight, and other barriers to rehabilitative care (Langlois, Rutland-Brown, & Wald, 2006). Due to the interdisciplinary approach and colocated offices of brain injury

centers, patients are rapidly assessed and diagnosed using a combination of neuropsychological assessment, neuroimaging, and behavioral monitoring. Next, evidence-based treatment recommendations are implemented by occupational therapists, physical therapists, speech pathologists, and behavioral health specialists. Outcomes in brain injury centers may be improved due to the cutting-edge services available to patients, the immediate access to early intervention, and the convenience of patients having the majority of their appointments in a centralized location. Civilian healthcare facilities may be able to improve brain injury outcomes by forming multidisciplinary, assessment, and treatment-focused teams modeled after those in the DoD healthcare system.

Additionally, given the frequency with which a military neuropsychologist encounters patients who have sustained a concussion, they may be in a unique position to collaborate with civilian sports neuropsychologists and physicians in diagnosing and preventing concussion during play of organized sports. Estimates of the incidence of concussion in the United States are around 128 per 100,000 people (Ropper & Gorson, 2007). Military neuropsychologists have contributed to understanding the factors that contribute to the susceptibility of sustaining a concussion as well as treatment and recovery issues. Furthermore, the DoD has implemented highly specific guidelines for the medical management of troops that have sustained a concussion with important return to duty considerations (see Traumatic Brain Injury Resources for Providers, Defense Centers of Excellence, 2016). Finally, as referenced above, the DoD utilizes a premorbid assessment tool for the screening of cognitive functioning for all deploying SMs as a baseline assessment, and various professional sporting leagues and the National Collegiate Athletic Association (NCAA) have enacted similar screening and monitoring programs. However, the adoption of a universal, nation-wide screening program for all “at-risk” student athletes has yet to come to fruition. A broad, nation-wide program modeled after the DoD’s concussion management protocol may be useful so that all athletes can receive

high-quality, standard of care in the event of a sport-related concussion.

Forensic Neuropsychological Applications

Further military neuropsychological applications that are generalizable to a civilian context can be seen in forensic and disability assessments. These types of cases are increasing in frequency for civilian neuropsychologists as disability benefits are becoming more readily available for neurocognitive and neuropsychiatric issues (Leonard, 2015). In contrast, the DoD has recognized neurocognitive and neuropsychiatric problems associated with military service as legitimately compensable since the Civil War (VA, 2010). Military neuropsychologists get unique training during residency and fellowships to help them participate in medical evaluation board (MEB) evaluations to help determine initial disability ratings based on the nature and extent of the injuries in question. Such training is not readily available at many civilian training sites and is highly supervisor dependent when it is available. A military neuropsychologist may be able to offer insights into civilian training programs and independent practitioners with regard to strategies to implement during the initial interview, battery selection, assessments of malingering, and determinations of occupational impairment as such evaluations are commonplace in the military.

Given that nearly every neuropsychological evaluation administered throughout the DoD may be associated with monetary benefits for the patient, assessments of performance and symptom validity are frequently administered by military neuropsychologists. This practice is also common in civilian evaluations as more academic accommodations, occupational services, and monetary compensations have been made available to individuals with neurocognitive disorders (Slick, Tan, Strauss, & Hultsch, 2004). Thus, civilian neuropsychologists may need additional preparation/training to perform this service competently and to efficiently utilize the most current strategies to assess effort and malingering.

Assessment and Selection

Selection of personnel for unique jobs is another area that military neuropsychologists have a great deal of experience and which can generalize to and enhance civilian applications. For instance, military neuropsychologists may assess the cognitive ability of pilots, special operators, MTIs, individuals working closely with nuclear weapons, and individuals working near the President of the United States. More specifically, pilots are selected in part based on general intelligence and other cognitive factors including processing speed, working memory, and executive functioning (Carretta & Ree, 1996; Ree & Carretta, 1996).

Generally speaking, requirements for special duty selection mandate that the individual possesses the basic faculties to perform the required duties and that there are no significant personality features that would preclude an individual from a high-level special service mission. Such selection procedures are aimed at curbing the frequency of inappropriate behavior and abuses of power between MTIs and the recruits they train and lead. Moreover, due to the presence of cell phones, constant surveillance, and rapid access to social media, individual's privacy appears to be ever shrinking. When behavioral conduct of employees is critical such as in law enforcement, teaching, medicine, and other fields, it may be useful to implement more rigorous neuropsychological and psychological testing similar to military programs in order to screen out candidates with data suggestive of undesirable traits which may lead to inappropriate behavior and abuses of power.

Future of Neuropsychology in the Military

Up to this point, we have discussed the many roles in which military neuropsychologists enhance mission readiness and work to preserve the fighting strength. In the last section, we will consider future developments in military psychology that warrant consideration for neuropsychology to remain a force-multiplying service to the US military. This section will address the need for further development of ecological validity for neuropsychological tests administered to military members, the development of neuropsychological screening paradigms based on advanced structural equation modeling to predict resistance and susceptibility to neuropsychological trauma, the development of improved and definitive biological markers useful for diagnosing brain injuries that present with only subtle neuroanatomical and neurochemical changes, and the development of neuropsychological treatments that can improve cognitive ability beyond that of traditional rehabilitative and occupational strategies.

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Ecological Validity

Ecological validity, which is the applicability of a measure to the "real world," is a considerable issue when using neuropsychological assessment tools used to evaluate SMs. Although the problem is not unique to military neuropsychology, given that the ecological validity and relevance of neuropsychological tests to performance in real-world situations have also been criticized in civilian populations (Chaytor & Schmitter-Edgecombe, 2003; Spooner & Pachana, 2006), it has particular relevance in military contexts given that SMs are asked to perform in battlefield environments that may stress an individual's cognitive abilities in ways that are quite different than their civilian counterparts.

Limitations on ecological validity are due to both test construction and testing environment but the most salient issue with regard to ecological validity of neuropsychological tests in military populations is the testing environment. The testing environment, to a large degree, is contrived and suited to the standardization of administration (Manchester, Priestley, & Jackson, 2004). Many patients complain of difficulties in attention and executive functioning but perform within normal limits during testing due to the artificial testing environment which is often described as a "prosthetic frontal lobe" that pro-

vides structure, limits distractions and interruptions, and allows for few outside influences. This is in stark contrast with a real-world environment filled with unpredictable stimuli that can result in distractions and interruptions (e.g., phone calls, emails, text messages, etc.). As suggested above, the military operational environment is even more complex with regard to environmental factors that may impact cognitive functioning. For example, decisions that require calculated risks to human life need to be made rapidly during the chaos and threats associated with a quickly changing battlefield landscape. Even minor fluctuations in executive function may cause delays in decision making that can negatively impact the mission or lead to casualties. It is possible that such minor changes would not be observed during traditional neuropsychological testing methods, but may result in considerable consequences if they are present.

To improve ecological validity, several changes in current testing paradigms need to occur. For example, military neuropsychologists need to develop and utilize tests that have stronger associations with actual job performance or outcome. Such tests place a higher emphasis on the concept of verisimilitude (Chaytor & Schmitter-Edgecombe, 2003). Verisimilitude yokes the neuropsychological performance with the outcome of a particular task. It is because of the unique occupations of SMs in the Armed Forces and the tasks they are required to perform that it is important neuropsychologists working with this population consider the ecological strength or weaknesses of the tests they administer.

Additionally, advancements in technology may be helpful in improving the ecological validity of neuropsychological evaluations. For example, virtual reality is becoming more mainstream, affordable, and computer programs for specific virtual reality tasks are becoming easier to write (Parsons & Rizzo, 2008). Though few neuropsychologists are currently using virtual reality technology, it is possible that this will become a useful tool to enhance the ecological validity of neuropsychological tests without the significant time constraints associated with field observa-

tions. Moreover, programs could be written for assessment of specific job duties as opposed to generalized cognitive functioning.

Predicting Performance and Attrition

In addition to ecological validity, future military neuropsychologists need to focus on predicting performance based on neuropsychological test results. As funds and resources become scarce during lean fiscal periods, proper selection of SMs who are aptly suited for their particular jobs becomes paramount. TBI in the battlefield offers an analogy of how the predictive ability of neuropsychological testing can improve mission readiness, help maintain the fighting strength, and potentially reduce the number of TBI-related injuries SMs experience.

More specifically, given the relative success of asymmetrical warfare, it is likely that enemy combatants will continue to use Improvised Explosive Devices (IEDs). This places troops at considerable risk for TBI. Although such injuries can be successfully treated particularly in the case of concussion, in some instances, SMs require significant intervention, experience long-term disability, develop comorbid psychological issues, and may be separated from the military. Given operational demands and strategic necessity, preventing all TBIs in military populations is not possible. However, by utilizing data sets collected over the last 15 years and applying advanced statistical techniques from structural equation modeling (SEM) such as confirmatory factor analysis, path analysis, partial least squares path analysis, and latent growth modeling, it may be possible to determine which soldiers are most vulnerable to prolonged symptoms which complicate TBI recovery, subsequently reduce the fighting strength, and elevate health costs. For example, individuals with a previous mental health diagnosis, tendency to somaticize, prior history of TBI, and a constellation of other factors may be vulnerable to experiencing PPCS which may lead to discharge and/or medical disability (Katz, Cohen, & Alexander, 2015). By using advanced prediction models to reduce the

risk of exposure of certain individuals to TBI, the military may be able to preserve fighting strength and reduce long-term healthcare costs.

Occupational selection and prevention of attrition are also important factors when attempting to minimize costs. The average SM costs upwards of \$30,000 to train (e.g., Klesges, Haddock, Chang, Talcott, & Lando, 2001). Attrition occurs for numerous reasons including maladjustment, medical problems, psychological problems, academic/technical training failure, and disciplinary problems. In order to reduce the likelihood that these concerns will manifest, there are cursory medical and psychological screenings that occur prior to enlistment (Jones, Hyams, & Wessely, 2003). Such screening has been shown to be cost effective but incomplete as attrition can occur at various points throughout the stages of training and career progression. Development and application of effective and efficient neuropsychological screeners with high predictive value that can match a SM's neurocognitive strengths and weakness with job selection can be an important future development in reducing attrition, selecting members with increased resilience, helping to ensure SMs' job satisfaction, and help preserve resources.

Biomarkers and the Role of Neuropsychologists

Another future role of neuropsychologists in the military will be assisting geneticists, neurologists, and neuroradiologists in the development of biomarkers associated with various psychological and neuropsychiatric disorders. Advanced imaging techniques such as diffusion tensor imaging (DTI), magnetoencephalography (MEG), and quantitative electroencephalography (QEEG) have made it possible to view subtle changes in structure and function of the brain which may correlate with cognitive performance and behavioral output (Alhourani et al., 2016; Haneef, Levin, Frost, & Mizrahi, 2013; Shenton et al., 2012). By using advanced imaging methods and correlating them with neuropsychological assessments, it may be possible to develop

biological markers which can help with more definitive diagnosis and treatment of various neurological insults.

Furthermore, a combination of advanced imaging techniques with neuropsychological performance can contribute to more accurate return to duty and dispositional determinations by neuropsychologists following neurological insults. For example, neuropsychologists are often asked to evaluate a patient's ability to return to special duty tasks such as aviation or Special Operations following a neurological insult. These individuals can be highly motivated to return to full duty status and therefore have a tendency to underestimate any impairment they are experiencing. Current neuropsychological tests alone may not be sensitive enough to capture subtle changes in cognitive functioning that may have an impact on high-level duty performance. By combining neuropsychological tests with more advanced imaging methods, subtle deficits may be identified and improved treatment and dispositional recommendations can then be made.

Neurocognitive Enhancement

Finally, in addition to being able to more definitively diagnose and assess neuropsychological problems, military neuropsychologists will need to invest in the development and research of interventions that can enhance and support cognition. For example, battlefield commanders must rapidly process a large amount of data from numerous sources. They must simultaneously process what is in their immediate environment, they must process information being related to them from a central command, and they must process information from other intelligence sources. The amount of real-time data being made available to battlefield commanders is so prodigious that data filters were developed to control the flow and rate of information presented. In other words, commanders must be able to rapidly compile vast amounts of information in order to make efficient, effective decisions in the battlefield. Neuropsychologists

should play a role in the military's development of effective cognitive training programs that can improve rapid information processing and decision making.

There are several compounds, procedures, and instruments that are purporting to promote cognitive enhancement (Bostrom & Sandberg, 2009). For example, ampakines are endogenous compounds that have been shown to improve long-term potentiation and encoding of information in animal models and in some human trials through the induction of neurotrophic factors (Lynch & Gall, 2006). Additionally, transcranial magnetic stimulation (TMS) has been shown to enhance human cognition in the domains of perceptual, motor, and executive processing (Luber & Lisanby, 2014). To date, most neuro-rehabilitative programs in the military have focused primarily on recovery, but as the scientific literature on human performance and cognitive enhancement continues to grow, the military will no doubt have an interest in applying the principles to gain a tactical advantage on the battlefield. Neuropsychologists will play an important role in assessing the efficacy, outcomes, and cost-benefit analysis of any cognitive enhancement trials forwarded by the military.

Conclusion

Neuropsychology in the military is a multifaceted force multiplier. Its applications include assessment, treatment planning, and follow-up care for individuals who have sustained neurologic injury; pre- and post-test testing; selection and assessment; and helping to improve equipment through the understanding of brain-behavior relationships.

Neuropsychology in the military has been influenced by a history dating back to ancient Egypt where the first documented theories regarding brain-behavior relationships were proffered. Enormous strides have been made with advances in both science and technology over the past two centuries allowing us to greatly expand our understanding of the central nervous system and the behavioral manifestations that occur upon its compromise.

Clinical psychology found its initial niche within the military during World War I when cognitive and personality assessment were first used to aid in personnel selection. Beginning in World War II and continuing to this day, much of the cognitive and psychological assessment applications have turned to a more clinical neuropsychological focus by means of evaluating and treating service members with neurological injury or disease. Our twenty-first-century conflicts in Iraq and Afghanistan have resulted in neuropsychologists being forward deploying to combat zones to perform clinical evaluations and standing up TBI clinics to intervene more quickly near the time of injury and in making critical fitness for duty determinations.

To aid in the DoD mission for readiness, neuropsychologists in the DoD have engaged in multiple research and treatment initiatives. These efforts include improving TBI and concussion diagnosis and management; cognitive rehabilitation; validity testing; and various levels of care including acute concussion care to chronic severe TBI care. Brain-behavior research in the DoD will likely be an ongoing field of enquiry for many decades to come and will likely continue the tradition of enhancing our understanding of the functioning of the central nervous system.

Military neuropsychology has benefited from advances in the civilian sector. Military neuropsychology can also impact civilian neuropsychology through continued collaboration. The development of large-scale neuro-trauma centers throughout the DoD has allowed neuropsychologists in the military the opportunity to be an important member of an inter-disciplinary team and implement standardized assessment and management guidelines for SMs that have sustained a neurological injury. Due to the military's use of standardized concussion protocols and its ability to implement universal policies, the DoD has been able to screen all active duty members who will be deploying in order to have baseline data so that return to duty determinations can be made in the battlefield if an assessment for TBI is necessary. Such a practice may be useful in high school and primary school sports to promote proper identification and management of concus-

sion in at-risk youth populations. Military neuropsychologists are adept at making dispositions with regard to disability and ability to return to work and have experience with disability evaluations. Lastly, military neuropsychologists have considerable experience with developing selection criteria for unique occupations. As job performance and behavioral conduct move from the office into the public domain, high profile organizations may consider implementing additional selection criteria based on neuropsychological and psychological measures.

The future of military neuropsychology will likely be diverse and multifaceted. It is likely that neuropsychologists will be called on to improve ecological validity of their measures for specific military jobs, make special duty and dispositional recommendations on SMs using prediction models based on more advanced statistical methodologies such as SEM, aid in the development of biological markers that can more accurately detect the presence of subtle brain injuries, and evaluate cognitive enhancement paradigms that facilitate rapid information processing and decision making.

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Part II

Resilience and Health Promotion

Elizabeth Najera, Ryan R. Landoll,
Liz Davenport Pollock, Marissa Berman,
Kathryn Ellis, Katherine M. Knies, Dustin A. Seidler,
Paul T. Bartone, and Stephen V. Bowles

The US military is comprised of 1.3 million active duty service members and 1.1 million reservists (US Department of Defense, 2014). In 2014, over half of the active duty service members (55.3%) and nearly half of the reservists (45.3%) reported being married. These couples must constantly balance the unique requirements of military life with the demands of maintaining a marriage (Segal, 1986). For both military personnel and their spouses, marital relationships can either serve as a source of support that helps them thrive through adversity, or as a source of additional stress (Cabrera, Bliese, Hoge, Castro, & Messer, 2010; Carlson, Ferguson, Perrewe, & Whitten, 2011; Gottman, Gottman, & Atkins, 2011; Orthner & Rose, 2009). Due to the ambiguous and dynamic

global environment in which the modern military operates, continuous demands are placed on military couples. Most notably, these demands include extended separations of the family and service member(s). Other stressors such as undesired spousal unemployment, financial crises, problems with addiction, and child and/or elder care can also cause additional pressure on the spousal relationships (Wright, Riviere, Merrill, & Cabrera, 2013). Depending on the nature of challenges and the resources available, couples and families are likely to require the development of novel strengths and skills in order to work through these additional challenges (Bowles, Bartone et al., 2015; Bowles, Pollock et al., 2015). This chapter provides an overview of military couples (both the

E. Najera (✉)
United States Air Force, Keesler Mental Health,
Biloxi, MS, USA
e-mail: elizabeth.najera@us.af.mil

R.R. Landoll
Uniformed Services University
e-mail: ryan.landoll@usuhs.edu

L.D. Pollock
Consortium for Health and Military Performance
(CHAMP)
e-mail: lizdavenportpollock@yahoo.com

M. Berman
VHA National Center for Organization Development
e-mail: marissa.a.berman@gmail.com

K. Ellis
OTR/L, Walter Reed National Military Medical
Center at Bethesda
e-mail: kathryn.m.ellis@gmail.com

K.M. Knies
University of South Carolina
e-mail: kniesk@gmail.com

D.A. Seidler
Southern Illinois University, 108 N Lawrence S
e-mail: dustin.seidler@siu.edu

P.T. Bartone • S.V. Bowles
National Defense University, Institute for National
Strategic Studies, Center for Technology and
National Security Policy, Washington, DC, USA
e-mail: bartonep@gmail.com;
dr.stephen.bowles@gmail.com

typical military–civilian dyad and dual-military couples), their unique challenges, and the strengths that military couples utilize to address life’s demands. The chapter also addresses how military couples respond to post-traumatic stress disorder (PTSD) and combat injury. We conclude with some practical advice for providers and a discussion of military resiliency programs that aim to improve the psychological wellbeing of both service members and their spouses.

Challenges for Military Couples

Stressors that occur in the professional realm can have a significant impact on family life and the quality of the marital relationship. Specifically, associations exist among stressful events like combat exposure and family separation, and negative individual and family outcomes such as depression, trauma, PTSD symptoms, intimate relationship problems (Goff, Crow, Reisbig, & Hamilton, 2007), decreased marital satisfaction (Allen, Rhoades, Stanley, & Markman, 2010), and poor family adjustment (Meis, Barry, Kehle, Erbes, & Polusny, 2010; Taft, Schumm, Panuzio, & Proctor, 2008). Past research indicates that the military deployment of a parent is associated with depression in both deployed service members and their children (Jensen, Martin, & Watanabe, 1996). Service members suffering from depression or PTSD symptoms may experience more difficulty adjusting back to family life when they return from deployment, compared to those without mental health problems (Sayers, Farrow, Ross, & Oslin, 2009). In addition, decreased relationship satisfaction has been linked to some of the consequences of these disorders: increased sleep problems, sexual dysfunction and dissociation, for service members who recently returned from war (Goff et al., 2007). Previous research examining separated couples found that husbands with PTSD symptoms experienced lower marital satisfaction, parenting alliance (the degree to which parents operate as a collaborative team in their

childcare practices), and spousal bonding. Spousal or intimate partner relationship problems are associated with an increased risk of suicide, heavy drinking, and health problems among service members (Badr, Barker, & Milbury, 2011; Foran, Smith Slep, & Heyman, 2011; Luxton et al., 2010).

Civilian spouses are often left to manage family responsibilities far from their own families, friends, and other sources of support, at locations where they have moved due to military assignments. Furthermore, studies on the impact of increased work demands and difficult work schedules show negative consequences for marriages including increased instability, divorce, conflict, violence, and decreased marital satisfaction and happiness (Carlson, Kacmar, Zivnuska, & Ferguson, 2015; Orthner & Rose, 2009). All of these factors have negative implications for psychological wellbeing and mental health (Carlson et al., 2015; Orthner & Rose, 2009).

The Mental Health Advisory Team V (McBride, Thomas, McGurk, Wood, & Bliese, 2010; MHAT V, 2008) and Negrusa, Negrusa, and Hosek (2014) found that the longer married service members are deployed, the greater their risk of divorce. Negrusa et al. (2014) also found evidence for an increased risk of divorce for hostile deployment locations as compared to non-hostile deployments. The following two sections examine processes that occur during and after a member returns from deployment, which may contribute to the dissolution of marriages.

Role Transitions

The multiple rounds of separation that military couples deal with on a regular basis are especially challenging for couples. When a partner is away from the family for a certain period of time (e.g., deployments or trainings), those at home must take on the roles and responsibilities the away partner maintained; this is especially true for those with children. When the service member returns home, the family must shift again to reallocate roles. In family systems terms, these are “accordion families” that are continuously

contracting and expanding due to members of the family being physically present or not (Minuchin & Fishman, 1981). Some families handle this smoothly, while others experience this as one additional hurdle to overcome. Clear communication and maintaining emotional connections during role transitions can help reduce the negative impact on the couple (Paley, Lester, & Mogil, 2013).

The manner in which each spouse manages emotions, conflict, and physical separation can have a direct impact on a couple's deployment and reintegration experiences. For example, if spouses have different ways of handling separations, such as emotional distancing versus seeking emotional closeness, this can create immediate conflict and less intimacy while whittling away at marital satisfaction over time (Paley et al., 2013). When the deployed spouse returns home, these couples can have a harder time navigating not only the role transitions but also reestablishing emotional connection and intimacy (Paley et al., 2013).

Stress Spillover/Crossover and Managing Emotions

In very few other occupations are personal and professional lives combined to the extent they are in military communities. Service members and their families often live, work, attend school, shop, and receive medical care on military installations across the world. Spillover is an intrapersonal process whereby an emotional impact for a person in one domain (e.g., home and work) carries over into another domain. For example, stress from work can "spillover" into family life when a service member walks through the front door of home after a difficult day. Crossover is an interpersonal process whereby the emotional impact of work on one partner is transferred to, or "crosses over" to, the other partner (Bakker, Demerouti, & Dollard, 2008; Carlson et al., 2011, 2015). The military's intense work demands, difficult work schedules, regular requirements of long separation, and conflation of professional and personal

lives may cause service members to be especially susceptible to these experiences.

When stress spills over into relationships, it can cause a "self-regulatory depletion" where individuals are "stressed out," and less able/likely to limit their negative behaviors toward their loved ones, and are also less likely to have a positive appraisal of their relationships in general (Buck & Neff, 2012). This dynamic can be exacerbated in military couples if one member of the couple deploys before the couple is able to rebalance or repair some of the negative behaviors (Paley et al., 2013). Then, while apart, negative feelings (like anger, frustration, sadness, and hurt) can fester and further damage the relationship. This can be especially damaging over the long term when individuals are not able to lower their stress levels and are therefore unable to replenish their ability to manage emotions well (Buck & Neff, 2012). However, despite these challenges, it is also important to recognize many of the protective factors that can exist for military couples.

Protective Factors for Couples

The following family skills and attributes identified within the Military Family Fitness Model help strengthen and maintain couples fitness: appraisal, communication, cohesion, adaptability, flexibility, coping and routines, celebrations, and traditions (Bowles et al., 2015). These core positive psychological dimensions build on couples' fitness to help couples effectively cope with the challenges they face due to the military lifestyle. Couples' fitness, like family fitness, "is the dynamic process of reinforcing current skills and resources and/or acquiring new skills and resources to create a resilient or 'fit' couples system" (Bowles et al., 2015). Since it is well documented that the health of military couples can have an impact on both the military member's performance and the wellbeing of his/her spouse (Cabrera et al., 2010; Gottman et al., 2011), it is important to understand how military life impacts couples and to identify ways to improve marriage and spouse fitness. Support for healthy marriages

and spouses is not only important for the couple but is also important for the organizational health of the military.

Social Support

While military life can be stressful, most military couples are able to be resilient and thrive despite difficult circumstances. One protective factor that can help spouses access support and thrive amidst difficulties is social support. Social support has traditionally been defined as information leading people to believe that they are cared for or loved, valued and esteemed, or have a sense of belonging (Cobb, 1976).

There are two systems of social support that may benefit military spouses. One source of support is the informal network of relationships that a spouse has with their family including their partner, friends, and community members. Healthy informal relationships are an important source of support and are linked to improved physical and mental health, including resilience to stress, less functional impairment for depression, and a decreased likelihood of developing PTSD (Ozbay et al., 2007). Bowles, Bartone, Seidler, and Legner (2014) showed that in military couples where the service member was severely wounded, hardiness and family support predict emotional wellbeing of service members and their wives. A second source of support is the more formal support system that comes from the military service member's organization (Orthner & Rose, 2009). The formal support system would include a work culture that is supportive of family responsibilities and services provided for family members (Orthner & Rose, 2009; Zvonkovic, Solomon, Humble, & Manoogian, 2005). In fact, Cabrera et al. (2010) looked at 2604 married active duty soldiers and found that the negative link between an individual's aggressiveness and their perceptions of marital quality may be influenced by the degree to which their work climate supports the soldier's family responsibilities at the military unit level. Thus, having both formal and informal social supports within

the unit can be critical for improving the military couple's resilience.

A study by Orthner and Rose (2009) further confirms the protective effects of relationships for spouses. This study examined the link between "work-required" travel for US Army soldiers and their spouses' psychological well-being in a survey of over 8000 female spouses. They found that longer deployments resulted in higher levels of negative psychological symptoms than did shorter deployments. However, this impact was small and was actually negated when spouses were connected to social supports such as strong relationships with their partner, friends, and community members, and when their soldier's work climate was perceived as supportive (Orthner & Rose, 2009). In this study, a supportive work climate was described as a work environment that provides physical and mental health resources and has a caring supervisor. Of note, a strong marital relationship was the strongest predictor of a spouse's psychological wellbeing (Orthner & Rose, 2009). This underscores the importance of marital health in the military, where deployments are common. It also confirms previous research showing that a healthy marriage is particularly helpful as a protective factor against life's difficulties, and is associated with increased mental and physical health (US Department of Health and Human Services, 2007).

Positive Emotions

Experiencing positive emotions may enhance personal resources and reduce depression in military spouses. Dolphin, Steinhart, and Cance (2015) studied the experience of 252 Army spouses after their soldiers returned home from deployment. During this period of redeployment, many military families experience readjustment issues (Dolphin et al., 2015; Marek et al., 2012; Sayers et al., 2009). However, the Army wives in this study who reported experiencing more positive emotions during their soldier's deployment were more likely to engage in adaptive coping

(dealing with stressors as they occur) and resilient behaviors (the ability to persevere following stressful events) throughout the deployment and were less likely to engage in maladaptive coping (avoidance and disengagement) after the homecoming. Furthermore, adaptive coping and resilience were related to fewer symptoms of depression, while maladaptive coping was related to increased symptoms of depression (Dolphin et al., 2015).

The results of the Dolphin et al. (2015) study may be explained by the “Broaden and Build Hypothesis” of positive emotions. According to this theory, distinct positive emotions such as joy, contentment, love, and pride broaden thoughts, actions, and interests. Over time, this broadening results in the building of physical, intellectual, social, and psychological resources such as improved health, enhanced knowledge and skills, and improved relationships (Fredrickson, 2001; Kok & Fredrickson, 2013). In contrast, negative emotions such as anxiety, sadness, anger, and despair, which may have an evolutionary function in helping us to take decisive actions in threatening situations, have a similar impact in that they narrow thoughts, actions, and interests (Fredrickson, 2001; Kok & Fredrickson, 2013). Thus, positive emotions facilitate broadened thinking, which then facilitates adaptation to adversity, which further facilitates the experience of positive emotions. This cycle continues and helps to “build” personal resources used to handle life’s difficulties (Fredrickson & Joiner, 2002).

Positive Appraisal of Service

Another protective factor for spouses as it relates to their marital satisfaction is the degree to which they find meaningfulness in military service. Bergmann, Renshaw, Allen, Markman, and Stanley (2014) examined the impact of meaningfulness of service on military satisfaction in a sample of 606 U.S. Army couples where the service member was male and the spouse was female. They found that for spouses, meaningfulness of their husbands’ service was related to

higher overall marital satisfaction. This finding held even when accounting for PTSD symptoms of service members, which are related to a decrease in marital satisfaction. Overall, the results suggest that when a spouse perceives military service to be meaningful, protective effects against the unique stressors experienced in military marriages including symptoms of PTSD may occur. For service members, meaningfulness of service was associated with higher marital satisfaction when the spouse also had high meaningfulness of the service member’s service (Bergmann et al., 2014).

A spouse’s sense of meaningfulness in their partner’s military service has also been shown to impact the service member’s commitment to the military. In a study involving 186 U.S. active duty military couples, Schaefer, Green, Saxena, Weiss, and MacDermid Wadsworth (2013) found that, “indirect mechanisms of crossover (e.g., positive emotions displayed by the spouse during discussions of reenlistment) facilitated the positive relationships between the organizational commitment of military spouses and members” (Schaefer et al., 2013). When a spouse feels commitment to the military, those attitudes are communicated and positively affect the military member’s level of commitment to the military (Schaefer et al., 2013).

Together, the research on spouse level of commitment indicates that this could be an important protective factor with wide ramifications. First, a spouse’s sense of meaningfulness in military service is linked to marital satisfaction for the spouse and the service member. Second, a spouse’s sense of meaningfulness has an impact on their service member’s sense of commitment to the military. Both a service member’s sense of commitment and their level of marital satisfaction have important implications for their military performance (Gade, Tiggel, & Schumm, 2003). Furthermore, research on positive psychology highlights the value of positive “meaning making” from difficult events for both individual and family coping (Fincham & Beach, 2010). The ability to find positive meaning in challenging and stressful events is also a key feature of psychological

hardiness (Bartone, 2006; Britt, Adler, & Bartone, 2001). In a study of severely wounded military personnel and their wives, hardiness was found to predict greater wellbeing in these couples (Bowles et al., 2014). Military couples that are high in hardiness also appear to be more adept at finding positive meaning, even in the face of life-changing injuries.

It may be particularly helpful to encourage spouses to develop a sense of meaningfulness in their military experiences that includes both their service member's military role as well as their own supportive role as a military spouse. This may be especially important for military spouses that struggle to build their own careers due to frequent moves. Further research is needed to understand how to best assist couples that struggle to find meaning in their military service.

Negrusa et al. (2014) studied the impact of deployments on divorce for military couples from 1999 to 2008 and found that military couples married before 9/11 and deployed for 12 months or more to a war zone were 28% more likely to divorce within 3 years of marriage. The authors postulate that this was due to a clash between the expectation for lower rate of deployments and the reality of the increase in deployment following the war in Iraq and Afghanistan (Negrusa et al., 2014). This highlights the importance of increasing awareness and education for military couples on the impact of deployment, managing expectations, and implementing resilience building practices.

Togetherness

Togetherness also referred to as cohesiveness can be a valuable asset for couples. Military couples who experience more feelings of togetherness manage deployment and the reintegration period better than those with fewer feelings of togetherness (Borelli et al., 2013). Togetherness is defined as being a part of a couple unit dealing with the hardships of deployment together, rather than as two individuals (Borelli et al., 2013). One of the indicators of togetherness is

the use of the term "we." Couples who used "we" more in discussing the deployment and the time at home after deployment were more likely to have a stronger couple identity and higher relationship satisfaction (Borelli et al., 2013). Lastly, a key aspect of togetherness is that the couple has similar levels of togetherness (Patterson, 2002). For example, if one partner desires intense closeness, his/her partner would also desire, or at least, be okay with their partner's desired closeness.

Communication

Consistent with several empirically based interventions, engaging in effective communication skills and positive bonding is essential for protecting and/or restoring military couples' relationships from the effects of deployment (Gottman et al., 2011; Monson & Fredman, 2012). Throughout their military career, soldiers' families are often subject to abrupt changes (e.g., relocation, unforeseen deployment, etc.) resulting in what sometimes feels like a constant state of readjustment. In addition to constant readjustment stressors, Hall (2011) highlights secrecy, stoicism, and denial as strategies soldiers utilize within the military for strength, belonging, and survival. Though these skills may be effective for a soldier while he or she is in the company of other troops, they do not necessary translate when coping with day-to-day stresses of life at home or communicating with his/her partner. Secrecy, a lack of vulnerability, and denial all demonstrate poor communication. Many "relationship maintenance" strategies reported by spouses of members who were deployed focus heavily on forms of communication between partners who are geographically separated (Merolla, 2010). While communication between spouses is of critical importance in a deployed environment, it can also be challenging to balance this with the demands of the mission – this may be particularly demanding when both spouses are in the military.

Dual-Military Marriages

Dual-military marriages, or couples consisting of two service members from the same or different military branches, is a relationship pattern that has received limited attention but warrants consideration due to their unique circumstances. As of 2014, 11.7% of married active duty service members were in dual-military marriages (US Department of Defense, 2014). For the last 9 years, the number of dual-military couples has remained relatively constant for both enlisted service members and officers (US Department of Defense, 2014). Of the four military branches, the Air Force has the highest percentage (19.3%) of active duty dual-military couples (US Department of Defense, 2014). Dual-military marriages are more prevalent among military women than men, with 45.5% of active duty married women married to another service member, as compared to 6.8% active duty married men. This is especially seen in the Marines and Air Force, where 57.5% of married female Marines and 55.1% of married female Air Force members were married to another service member (US Department of Defense, 2014). The vast majority of these dual-military marriages are among enlisted members (79.8%), with only 20.2% of dual marriages involving officers (US Department of Defense, 2014).

Dual-Military Challenges

All military couples can expect to be geographically separated for extended periods. Dual-military couples, however, are likely to spend a greater amount of time apart than service members married to civilians, given that both members are obligated to meet separate mission requirements (Bethea, 2007). Increased time apart among dual-military couples is often due to deploying at different times, being stationed at separate locations, and both members working long, unpredictable hours (Bethea, 2007). Extended periods of separation can be stressful for couples. Anderson et al. (2011) found that

service members who were stationed apart from their families were 3.5 times more likely to be relationally distressed than members who were accompanied by their families. For dual-military couples with children, overlapping deployments require long-term childcare plans, which can create additional stress. Dual-military couples have twice as many factors to coordinate to reach their career and family goals as do non-dual-military couples (Smith, 2015).

There is evidence that the increased intensity of military-specific challenges for dual-military couples influences their decisions to remain in the service, more so than other military couples. Long (2008) explored factors affecting retention rates of dual-military officers in the Air Force and found that, after 10 years of service, dual-military officers were less likely to remain in the military than other groups (i.e., those married to civilians or to Guard and Reserve members). Long points out, it is only after 20 years of military service that active duty members are eligible for retirement benefits. Those members who separate prior to the completion of 20 years do not receive these entitlements. She concludes the number of moves, deployments, and childcare demands influence dual-military members' choices to leave their careers more so than other Air Force officers. She also found that dual-military members perceive fewer opportunities for promotion and suggested that these members may foresee making undesired career sacrifices to remain stationed together, which she concludes ultimately contributes to their decision to separate.

Despite the numerous challenges dual-military couples face, these partners may have some advantages over those in military-civilian marriages. Dual-military spouses are likely to understand their partner's military experiences and work demands (Bowden, Orthner, Zimmerman, & Meehan, 1992; Bethea, 2007). In addition, dual-military couples report fewer financial hardships than other military couples given that both members are employed (Bowden et al., 1992). In spite of the increased challenges dual-military couples' experience, these marriages appear to be

similar to military-civilian marriages in certain areas of relationship wellbeing. In two studies, dual-military couples were found to have similar levels of marital satisfaction, communication with spouse, and risk of divorce or separation as other couples (Anderson et al., 2011; Bowden et al., 1992). Karney and Crown (2007) looked at rates of divorce among military men married to civilian spouses, military women married to civilian spouses, and dual-military couples. They found that dual-military couples were less likely to divorce than military wife/civilian husband relationships; they also found that dual-military couples were more likely to divorce than military husband/civilian wife pairings. Further research is needed to better understand these findings and dual-military couples in general.

Military Couples and Injuries

Post-traumatic Stress Disorder (PTSD)

While a focus on resilience and positive psychology is preferred from a prevention aspect, some issues/struggles are inevitable as part of life, and particularly combat. Therefore, it is also important to understand how military couples are impacted by psychopathology and the role of military couples in treatment. From 2002 to 2014, the US Department of Veterans Affairs (VA) reported that close to 400,000 veterans sought care for PTSD (United States Department of Veterans Affairs, 2015). Although reporting periods of service members deployed and the percentage of service members who have deployed who are still on active duty make it difficult to determine an exact percentage, this represents a sizeable portion of returning service members from operations in support of the Global War on Terror (GWOT). Clinical practice guidelines issued by the VA and Department of Defense highlight several evidence-based psychotherapies, including exposure-based therapies (e.g., prolonged exposure therapy) and cognitive-based therapies (e.g., cognitive processing therapy), stress inoculation training (SIT), and eye movement desensitization and reprocessing ther-

apy (EMDR; Management of Post-Traumatic Stress Working Group, 2010). However, there has been less focus on the role of the military couple in treating PTSD, despite acknowledgment of the significant role that PTSD plays in the lives of military couples and the potential impact of a spouse's behaviors on accommodating individual's psychopathology (Fredman et al., 2015; Sherman, Zanotti, & Jones, 2005).

Partner accommodation, or "altering one's own behaviors to minimize partner distress and/or relationship conflict due to patients' PTSD symptoms," is often confused with social support, but unlike social support, partner accommodation should be avoided (Fredman et al., 2015). Social support, alternatively, leads people to believe that they are cared for, are valued, or belong (Cobb, 1976). In contrast to social support, partner accommodation usually takes the form of "tiptoeing" around the individual suffering from PTSD and not expressing one's personal thoughts and feelings in hopes of not angering or upsetting that person (Fredman, Vorstenbosch, Wagner, Macdonald, & Monson, 2014). Fredman et al. (2015) found that individuals who suffered from PTSD and whose partners engaged in higher levels of accommodation experienced little to no improvement in individual distress and relationship satisfaction unless these individuals received cognitive behavioral couple's therapy for PTSD. Alternatively, those whose partners engaged in reduced levels of accommodation at baseline showed significant improvement in PTSD and depressive symptoms and relationship distress over time. Furthermore, it has been noted that accommodation within relationships when one partner suffers from PTSD may have a sustainment factor regarding avoidant behaviors over time (Campbell, 2015). Thus, clinicians have been encouraged to consider the role of attachment styles and partner's accommodating behavior in treatment planning (Borelli et al., 2014; Campbell, 2015). Fortunately, there are several promising interventions to consider.

Integrative behavioral couple therapy (IBCT) endorses acceptance as a route toward problem resolution (Jacobson, Christensen, Prince, Cordova, & Eldridge, 2000). It is a process

grounded in mindfulness where the couple is encouraged to remain focused on the reality of the present moment, accepting and opening up to it without getting entangled in unpleasant thoughts or emotions (Kabat-Zinn, 1990, 2003). Focusing on affect regulation and creating a secure connection that fosters resilience is particularly applicable to relationships impacted by traumatic stress and symptoms of PTSD (Lebow, Chambers, Christensen, & Johnson, 2012). Couples regularly report difficulties with reintegration and role transition upon return from deployment. The partner who remained at home often has developed new skills and responsibilities managing the household. The returning partner may feel a desire to return to former roles which have changed and contribute to responsibilities that have fallen squarely on the partner at home, yet, this well-intentioned desire can often create difficulties with cooperation, communication, and problem solving. These problems can be magnified in the context of trauma. Couples who are able to resolve their pain and move out of a constant state of distress are those who process their emotions in a clear, reflective, and integrated manner, enabling each partner to be more responsive to and trusting of the other (Zuccarini, 2010).

Rotunda, O'Farrell, Murphy, and Babey (2008) developed the first study examining outcomes of behavior couples therapy (BCT) with one partner who is diagnosed with comorbid substance use disorder and combat-related PTSD. BCT includes weekly sessions over a five-to-six-month period, utilizing a recovery contract to promote sobriety and counseling to increase positive activities and improve communication. For most clients in the study, the recovery contract included 12-step meetings and spousal witness and reinforcement of medication adherence. BCT resulted in increased relationship satisfaction and less drinking, interpersonal violence, and psychological distress. Interestingly, the results were similar regardless of the presence of PTSD, suggesting that BCT may be an effective intervention for clients with a dual diagnosis of PTSD and substance use disorder. However, because this study was not a randomized con-

trolled trial, replicating this study with a control group would be warranted to consider it an empirically supported treatment for this population (Rotunda et al., 2008).

In addition to substance use concerns, PTSD can also be accompanied by increased risk for intimate partner violence (IPV). The Strength at Home-Couples (SAH-C) program (Taft et al., 2014) was developed through a collaborative agreement with the Centers for Disease Control and Prevention in response to the need for a military-specific intimate partner violence (IPV) prevention program, including a component focusing on the role of PTSD. SAH-C is a 10-week couple's group intervention that is designed to prevent IPV and improve intimate relationships among returning veterans and their romantic partners. The program is intended for couples that are experiencing relationship difficulties but are not engaging in a pattern of physical IPV or coercive, controlling behavior. Although it is not specifically for PTSD, it was designed to be sensitive to the fact that many military couples have histories of traumatic stress that negatively affect their relationships. The program, which is specifically tailored to military couples, incorporates components of cognitive behavioral therapy (CBT) for IPV, anger management and assertiveness training, and relationship-focused treatment of PTSD. The groups are conducted in a multi-couple, closed-group format, with 3–5 couples in each group. The group atmosphere is supportive and nonconfrontational. Each two-hour session contains brief didactic material, group activities to learn and practice new behaviors, and time to reflect on change efforts and build group cohesion. The intervention is designed to prevent IPV by helping participants develop effective conflict resolution skills, increase intimacy and closeness in their relationships, and improve communication with one another.

Finally, cognitive behavioral conjoint therapy (CBCT) for PTSD is aimed at capitalizing on the relationship to resolve individual psychopathology, as well as improving relationship quality. It involves 15 sessions that are 75 min in duration and focuses on treatment orientation, psychoedu-

cation about PTSD and associated intimate relationship problems, behavioral interventions aimed at increasing relationship quality and approach behaviors (e.g., “bids” for connection; Gottman & Gottman, 2008), and cognitive interventions targeting both symptoms of PTSD and relationship distress (Monson, Fredman, & Adair, 2008). One particular advantage of this conjoint approach is its focus on “undermining” avoidance (Monson et al., 2008). For example, a spouse may act to maintain avoidance behavior in an effort to reduce the partner’s distress, which can actually be counterproductive to most exposure-based therapies. A small pilot study of couples yielded positive findings for this conjoint approach (Monson et al., 2011).

There are several promising new areas of intervention which capture the dynamic nature of military couples that are built on aspects of positive psychology and couples’ resilience. Many of these interventions have empirical support, albeit limited in nature. The Pennsylvania State University Clearinghouse for Military Family Readiness (<http://www.militaryfamilies.psu.edu/>) offers a searchable database for clinicians to keep up to date on interventions designed for use with military families, along with information on the empirical support for these interventions. They also provide a rating describing the overall effectiveness of each program in accomplishing their intended outcomes. This website is updated frequently and is an excellent resource for clinicians to remain up to date on the state of programming for military service members and their families.

Combat Injuries

The experience of couples reunited in the hospital secondary to a combat-related injury is very different from the experiences of couples reunited as planned. The unique challenges and difficulties continue throughout rehabilitation and recovery. Bowles et al. (2014) found family support predicted emotional wellbeing in severely wounded service members and psychological hardiness predicted fewer PTSD symptoms.

These researchers also found, in spouses of severely wounded service members, both support from family members and psychological hardiness were positively associated with wellbeing. According to the Congressional Research Service (2015), in the OIF/OEF (Operation Iraqi Freedom/ Operation Enduring Freedom) conflicts there have been 52,022 service members physically wounded in action and of them 1645 had major limb amputation. In addition, 327,299 service members suffered traumatic brain injury (TBI), and 138,197 were diagnosed with PTSD (Congressional Research Service, 2015). Another combat-related injury is genitourinary trauma, which is highly correlated with bilateral above knee amputations (90%; Jezior, 2012). Urogenital complications can also occur secondary to decreased testosterone and prolonged hospitalization, which is a common result of other non-amputation traumatic injuries (e.g., TBI, PTSD, spinal cord injuries, neuromuscular injuries). Lastly, orthopedic injuries, burns, facial injuries, and vision loss are other combat-related injuries resulting in devastating life changes and challenges for the military couple. As evident by the information in this chapter, military couples have multiple stressors; however, when an injury and rehabilitation are involved, it can compound those stressors.

Demographics of Combat Wounded Couples (Warriors and Their Spouses)

A 2014 RAND report was published focusing on the experience of caregivers for wounded, ill, and injured military service members (Ramchand et al., 2014). The findings are helpful for understanding the demographics and typical experiences of those in relationships with a caregiver/care recipient dynamic. Thirty-seven percent of post-9/11 care recipients are in a romantic relationship with their caregiver. Sixty-four percent of post-9/11 care recipients receive care from a caregiver for mental health reasons: 52% PTSD, 46% major depressive disorder, and 15% substance abuse; 20% receive care for management of TBI symptoms; and

80.3% receive care for a disability that impairs physical movement. Post-9/11 injured service members require help with activities of daily living (ADL; 44.35%) and instrumental activities of daily living (IADL; 79.4%). ADL include base self-care skills: bathing, dressing, toileting, feeding, grooming, and sexual activity. IADL include higher-level functional activities such as medication management, filling out paperwork, chores, driving, employment, childcare, managing stressful situations, and management of intimate relationships (Ramchand et al., 2014).

Caregiving places a strain on relationships, resulting in decreased quality of the relationship, and decreased health with a 40% increase in depression when compared to non-caregivers. Caregivers are also more likely to not advance in their career and demonstrate absenteeism. When caregiving is involved in relationships, it also decreases the quality of relationship with children if they are present. Thirty-nine percent of military caregivers have children and 44% of parents report less quality time with their children, 46% of parents report tension in household, and 27% of parents report caregiving has made them worse parents. These statistics are unique to post-9/11 caregivers when compared to pre-9/11 military caregivers and civilian caregivers (Ramchand et al., 2014).

Caregiver Role Transition and Confusion

As mentioned in the earlier sections, couples distribute roles once deployed and then re-distribute roles post-deployment. The expected role transition and re-distribution can be challenging, but with wounded service members and their partners, often the roles are re-distributed in ways they did not expect nor that provide stability to relationship or self-fulfillment. The injured partner often requires assistance with their ADLs and IADLs and often times the burden of care falls on their partner. Partners who are caregivers may view their roles as not much of a choice. Something they may resent and struggle to view their partner as attractive if they are in need of the

caregiving. Likewise, the injured partner may struggle to feel successful in his role as a romantic partner if he or she is unable to complete basic daily functions without the intervention from their partner. In “Breaking the silence: Supporting intimate relationships for our wounded troops and their partners: A call to action” (Satcher, Tepper, Thrasher, & Rachel, 2012), the authors suggest, “The caregiver partner may still love the soldier, but that love may no longer feel sexual. Furthermore, the soldier may question his or her suitability as a good partner or may feel like a mere burden.”

Role confusion is typical of wounded service members and their partners. Often times, the non-injured partner is paid to assist with the non-medical care of the service member. This creates a challenging dichotomy, because often times, partners feel it is their role to care for their partner, whether they view it as an obligation or an honor. When a monetary value is placed on their care, they may begin to view it more as a job obligation and it de-romanticizes the interactions between two nurturing and loving people. In addition, some partners place a high level of value and meaning to their role as a caregiver and are reinforced by their injured partners and their community for their efforts. Roles can become even more confusing as the injured person heals and recovers. It may be challenging for partners who identify with the caregiver role to re-distribute the responsibilities to be more similar to pre-injury. Providers should place a high value on the need for couples to maintain, and understand the importance of, their roles as romantic and intimate partners.

Communication and Processing of Injury

As mentioned earlier, communication is a valuable skill and protective factor for military couples; this is also true for couple experiencing an injury. Hall (2011) mentions three components: stoicism, secrecy, and denial, which are effective for service members’ employment role, but not for intimate relationships or processing their

injury. Communication and expressing individual desires, fears, and goals are of upmost importance post-injury; however, military lifestyle does not support such level of disclosure and vulnerability, and this can be even more challenging if there are cognitive deficits from PTSD or TBI. PTSD is correlated with marital disruption, spousal abuse, reduced intimacy, sexual dysfunction, and lower marital satisfaction (Cameron et al., 2011). TBI can result in physical, communication, cognitive, emotion regulation, and sexual impairments, as well as decreased self-esteem, self-worth, and fulfillment of gender roles, all causing an increase in relationship stress and decrease in relationship satisfaction (Cameron et al., 2011).

Practical Applications for Providers

As the issues raised in this chapter suggest, understanding the complexities of military culture is key for healthcare providers to be effective in working with this population (Brim, 2013). The following sections review practical applications for providers to consider in their own practice. These are not meant to be proscriptive and all encompassing, but can provide a starting point in work with both patients and couples coping with combat injury and deployment.

Combat Wounded Couples

As with military couples without the experience of a traumatic injury, encouraging service members and their partners to have positive emotions and acceptance of their current situation is correlated with higher quality of life and positive self-worth (Connell, Coates, Doherty-Poirier, & Wood, 2013; Fincham & Beach, 2010; Jacobson et al., 2000). As mentioned, post-injury service members can struggle to feel self-worth secondary to limited perceived success at valued life roles. Often times, service members need encouragement to view their abilities more positively and identify everything they can still do or can do just differently than prior to the injury. Guiding

service members through redefining their valued roles and definitions of masculinity/femininity to be attainable given their new abilities is a helpful process of recovery (Guldin, 2000). Lastly, participation in sexual activity, intimacy, and communication can decrease secondary to injury or communication styles common of military personnel. Teaching service members and their partners' effective communication skills and intimacy building skills are imperative for this population, especially considering a typical high focus on the injured individual versus the couple. Regarding sexual activity, encouraging patients to be creative, use humor, and communicate sexual goals and desires is helpful to perceived success at role of sexual partner (Kaufman, Silverberg, & Odette, 2003).

Couples During Deployment

Although military couples face numerous challenges, deployments are often reported as one of the most taxing experiences. As of 2011, over 2.1 million service members were deployed in support of the Global War on Terror (GWOT) military operations (Department of Defense, 2011). These statistics indicate that a large percentage of service members and their spouses have experienced a deployment at least once in their lifetime. According to a 2008 Department of Defense report on health-related behaviors of military personnel, deployments were rated as one of the top stressors by service members (Bray et al., 2009). In a sample of 77 Army spouses, 85% rated deployments as the most stressful military experience and 44% of the military spouses reported moderate to severe symptoms of depression during the service member's deployment (Dimiceli, Steinhardt, & Smith, 2010). These findings highlight the need for healthcare professionals to understand the unique hardships members of this population experience and the importance of being well equipped to assist them.

It is important for healthcare providers to not view deployments as a single event of separation in the military couple's life but instead a period of distinct phases, where each stage poses different

challenges for the couple. Pincus, House, Christensen, and Adler (2001) propose that a deployment lasting more than 6 months has the following five phases: pre-deployment, deployment, sustainment, re-deployment, and post-deployment. Table 11.1 provides a brief description of the phases, common emotional and behavioral experiences within each phase, and recommendations for intervention during each of these phases.

Spouses' coping strategies can impact not only their ability to adjust following a deployment but can also disrupt their partners' coping strategy (Reddy, Meis, Erbes, Polusny, & Compton, 2011). Reddy et al. (2011) looked at experiential avoidance or a person's unwillingness to remain in tune

with negative private experiences (e.g., bodily sensations, emotions, thoughts, memories, and behavioral predispositions). They found that when men engaged in experiential avoidance, there tended to be lower relationship adjustment, greater use of physical aggression by men, and greater exposure to physical aggression by men's intimate partner as compared to men that did not avoid. However, when women engaged in experiential avoidance only their intimate partners tended to experience lower relationship adjustment. The authors of this study recommend treatment for these couples including decreasing experiential avoidance, increasing effective communication, and improving emotional regulation skills.

Table 11.1 Deployment phases, experiences, and recommended interventions

Deployment phase	Common couples' experiences during deployment phase	Recommended patient/couple interventions
<i>Pre-deployment:</i> notification – departure	Worry member will be harmed ^a Worry relationship will be negatively impacted ^b Fear of infidelity ^b	Normalize emotional/behavioral experiences ^b Increase quality time with partner ^c Discuss fears/concerns ^b Create plan for communicating during deployment ^b
<i>Deployment:</i> departure – first month	Mixed emotions: loneliness, sadness, anger, and anxiety ^d Deployed member adjusting to new time zone, work schedule, and dangerous environment ^d Non-deployed spouse adjusting to additional responsibilities ^d	Identify barriers to communication Identify ways to overcome barriers Encourage frequent communication
<i>Sustainment:</i> second month – 1 month prior to return	Both settled into routine ^b	Seek social support from family and friends ^{c,d,e} Consider utilization of military installation support resources Engage in physical activities ^c Establish goals and maintain routine ^d
<i>Re-deployment:</i> last month of deployment	Start to imagine reunion with spouse ^b	Establish realistic expectations for reunion
<i>Post-deployment:</i> lasts for 3–6 months after return	Re-negotiation of roles ^b Returning member may feel disconnected ^b	Raise awareness of normal post-deployment behaviors vs. maladaptive behaviors Encourage partners to share their deployment experiences with the goal of developing empathy toward each other ^f Assist couple in negotiating new roles ^f

^aWarner, Appenzeller, Warner, and Grieger (2009)

^bPincus et al. (2001)

^cAndres (2014)

^dPadden and Agazio (2013)

^eBlank, Adams, Kittelson, Connors, and Padden (2012)

^fBowling and Sherman (2008)

Ultimately, a “one-size-fits-all” approach to treatment of military couples and spouses during the deployment cycle is not recommended given the myriad factors potentially contributing to the clinical picture. Understanding the stages and challenges associated with the deployment cycle may provide a helpful framework for healthcare professionals to assist military couples.

Military Couples and Resilience Programs

For several decades, observing dynamics of conflict and problem solving has been the epicenter of couple’s research. However, current research has also begun to focus on a more positive aspect of marital relations, that of the marital friendship. The marital friendship is conceptualized as a relationship rooted in respect and enjoyment of each other’s company, and it is argued that without an understanding of optimal relationship functioning, our comprehension of marriage and romantic relationships will remain incomplete (Karney & Bradbury, 2005; Gottman & Silver, 1999; Fincham & Beach, 2010). Much like findings related to individual psychopathology, researchers and clinicians claim that the impact of negative events on couples will likely depend on the existence of certain strengths known to buffer that impact – otherwise known as resilience (Janicki, Kamarck, Shiffman, & Gwaltney, 2006; Lichter & Carmalt, 2009). Instead of focusing on losses and deficits, resilience demonstrates a strengths-based perspective. Relationship resilience is more than satisfaction and overall wellbeing; it is a dynamic rich in flexibility and emotional vitality. As the military has increased its focus on strengthening service members’ resilience, examining ways to build the relationship resilience of the military couple is equally important in promoting overall military readiness. In fact, given that relationship stressors are seen as a primary precursor to suicide (54% of Army suicides in 2005–2010; Logan et al., 2015) and other negative mental health outcomes in the deployed environment, new programs that include

family (and couple’s) skills as part of resilience programs, such as the Army’s Comprehensive Soldier Fitness program (Gottman et al., 2011), are essential. The military has embraced these principles in building many of its resiliency programs, including those aimed at military couples. Each military service branch has invested in promoting military couples resilience (Allen, Rhoades, Markman, & Stanley, 2015; Beardslee et al., 2013; Kotrla & Dyer, 2008; Stanley, Allen, Markman, Rhoades, & Prentice, 2010).

Many interventions tend to be spiritually-focused and affiliated with the Chaplain Corps, most notably the Prevention and Relationship Education Program (PREP) for Strong Bonds (Allen et al., 2015; Stanley et al., 2010). This Army-led program that has been found to not only improve marital quality, but was also associated with a 67% reduction in risk of divorce compared to couples receiving no intervention in a randomized control trial (Allen et al., 2015; Stanley et al., 2010). PREP for Strong Bonds is primarily psychoeducational, often delivered in a workshop format, and focuses on fostering good communication, promoting conflict management, problem solving, understanding expectations in the relationship, developing commitment, and encouraging friendship and fun (Allen et al., 2015). A similar Air Force chaplain-led program also showed promising results for improving marital satisfaction (Kotrla & Dyer, 2008).

The Navy’s Families Overcoming Under Stress (FOCUS), a family-centered evidence-informed program, utilizes a strength-based approach and public health model to deliver a range of services from prevention and outreach briefings to individualized family sessions. FOCUS emphasizes promoting the development of a “family narrative” for coping with trauma or loss reminders associated with military service, as well as enhancing communication, developing emotion regulation, promoting problem solving, and goal-setting that has been applied across a variety of military settings and families, including couples both with and without children (Beardslee et al., 2013).

Additionally, the US Air Force assessed the use of the Marriage Checkup, a brief intervention for enhancing marriage resiliency, in primary care clinics (Cigrang et al., 2016). Integrated primary care behavioral health consultants were trained to deliver three, 30 min interventions to military couples. The couples that participated reported high levels of satisfaction with the intervention immediately following the third visit and 1 month later. This approach provides a brief intervention to bolster relational wellbeing and detect areas of concern. The Air Force is currently conducting a full-scale randomized clinical trial to establish the clinical efficacy of the military-adapted version of the Marriage Checkup protocol.

Conclusions

While military couples face many unique challenges associated with military culture such as frequent relocation, extended periods of geographical separation, and combat exposure, military couples can mitigate the negative impact of these potentially challenging events by employing adaptive coping strategies. Positive factors such social support (Ozbay et al., 2007), positive emotions (Dolphin et al., 2015), perceived meaningfulness of military service (Bergmann et al., 2014), a sense of togetherness (Borelli et al., 2013), and effective communication (Gottman et al., 2011; Monson & Fredman, 2012) have all been found to positively impact military couples' relationship and enhance their ability to deal with adversity.

While there is limited research on dual-military couples, it is evident these couples face additional challenges in reaching their career and family goals (Smith, 2015). Military couples that face challenges in the form of combat injury and PTSD may benefit from emerging science on interventions which consider the positive role couples can play in the treatment of individual psychopathology (Borelli et al., 2014; Campbell, 2015; Fredman et al., 2015; Lebow et al., 2012; Monson et al., 2008; Zuccarini, 2010). Additionally, providers are encouraged to consider recommendations for treating couples with combat injuries or those coping with deployment. Lastly, the mili-

tary community has recognized the value of family wellbeing and offers several resilience and strengths-based programs for couples.

Future Directions

In examining stress and resilience in married military couples, multiple gaps in the literature were identified that warrant further exploration. Most notably, there is a lack of research on military couples over an extended period of time. Longitudinal studies that evaluate military couples before, during, and after military service are necessary to better understand the factors which contribute to their wellbeing and to the development of relational problems. Also, little is known about military couples once they leave the service, and how the health of their relationship is affected. Longitudinal studies that capture this period of transition could shed light on these couples' strengths and challenges, and how providers, the community, and the military can best support and assist them during this important time in their lives.

Additionally, given the importance of the relationship to a military member's overall wellbeing, early identification of relational problems and barriers to help-seeking are needed to maintain a ready force.

The military couple is a unique dyad that has received limited empirical attention and the research that exists has primarily focused on heterosexual couples. With the repeal of "Don't Ask, Don't Tell," research is needed to better understand factors unique to military couples within the lesbian, gay, bisexual, and transgender community (see also Glofelter et al., Chap. 20, this volume). Until July 2011, it was prohibited to be openly gay in the military. Now, same-sex couples within the military that present a valid marriage license are entitled to the same benefits provided to opposite sex couples. These recent policy changes allow a largely unrecognized community of couples to become part of the military family. Future research can help military leaders, as well as the general public, understand how to better support all military couples.

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Carroll H. Greene III and Mark A. Staal

The time is midafternoon in Anytown USA. A 17-year-old boy is walking toward the block where several military recruiting offices are located. He approaches one military member in a smart uniform and says “I’m interested in finding out about joining the military. Can you help me?” The recruiter replies: “Sure I can help. I’ll get you some pamphlets, and we can talk after you’ve had a chance to read them.” After collecting the pamphlets and leaving his contact information with the recruiter, the boy moves on to a second recruiting office. “I’d like to get some information about joining the military – can you help me?” The recruiter replies, “Well son – I guess I can – but, what makes you think you have what it takes? I’m not sure you have what we’re looking for.”

In this scenario, this second recruiter is applying a principle commonly used to screen individuals to detect certain qualities that are basic to resilience. He is placing a verbal challenge, a barrier, or a hurdle in front of the young man. Then he will watch and listen to see how this young man responds to the stress of this challenge. Although not necessarily a scientific approach toward divining resilience, it is purposeful and practical. It may also assist both the

recruiter and the potential recruit in developing an opinion as to whether military service is a good decision for him.

Military duties and missions require service personnel to be capable, stable, and motivated to perform to a high standard. Within the more selective military organizations, as in military special operations, personnel must be even more capable in mind, body, and spirit in order to carry out very demanding missions. These special duty service members must frequently perform optimally under extreme stress and fatigue and in the face of lethal threats, austere environmental conditions, and other challenges common to overt and clandestine military operations. Most importantly, they must have the ability to make wise decisions under such pressures as the situation changes and with little or no guidance from higher authorities. In the recruiting scenario above, the teenager’s response will help the recruiter form an initial judgment as to whether this young person is the kind of person who can achieve success in the face of demanding challenges. Alternatively, this individual’s makeup may be such that high stress may cause him to lose faith and become intimidated to the point where he succumbs to the fear of failure and loses his motivation to persevere.

Throughout the history of modern warfare, military forces have often combined the diverse capabilities of different units into one unique, usually temporary unit to achieve particular operational objectives. These small capable com-

C.H. Greene III (✉)
Marine Special Operations School,
Camp Lejeune, NC, USA
e-mail: cgreene64@charter.net

M.A. Staal
106 Selkirk Trail, Southern Pines, NC 28387, USA
e-mail: ethicalpsych@gmail.com

bined units were usually assigned “special” operational tasks that would be poorly suited for bigger, or less uniquely trained, forces. Later, after the conflicts ended, these units were disbanded, and the diverse elements went back to their original organizations. Therefore, the “special” combined capabilities of these units were lost. However, on April 24, 1980, the failed rescue attempt of American hostages being held in the Iranian embassy caused the US Congress to consider the permanent formation of such units. The failed attempt and the deaths of eight American servicemen resulted from a lack of command coordination and tactical interoperability. Congress later authorized formation and funding of a permanent command to develop and field these uniquely capable units. This organization was called the US Special Operations Command (USSOCOM or SOCOM). The intent was to create, support, and coordinate all the military service’s “special” units. SOCOM’s task was to develop and deploy “special operations” units with unique combinations and types of capabilities. Among the most important authorizations given to this command was the ability to select service members who would be uniquely capable, adaptable, and resilient despite fatigue, uncertainty, and volatile circumstances. We, the authors, will report on relevant findings and offer our professional observations that result from having served as psychologists in support to operations in several of these units of USSOCOM. Our focus will be on the detection and development of human resilience within these types of units and the related research.

For the purposes of this chapter, we define the term “resilience” as the capacity to quickly overcome the potentially performance-robbing effects of adversity, sacrifice, disappointment, setbacks, and associated stressors. We use the term “more resilient” to distinguish those people who retain significant capability and functionality even under high stress and significant adversity. We will use the term “less resilient” to distinguish those who lose significant capability under such conditions and may have trouble recovering quickly to normal functionality. Other terms such as hardiness and mental toughness have been used to describe

resilience. For the current purpose, we consider these terms synonymous with resilience. We will use the term “elite” to describe those military people and units that undergo the highest levels of scrutiny and challenge in the process of being selected and trained for their tasks.

Some people appear to be more resilient than others. However, our current understanding of the origins and ramifications of these differences is limited. Under what circumstances is resilience a teachable characteristic? Can resilience be enhanced in everyone or only in some people? We don’t know all the answers to such questions. However, we do know that there are certain personal behavioral characteristics that make some people more resilient than others (Maddi & Khoshaba, 2005). We also know that “stress inoculation,” a respected training technique, can produce enhanced resilience in people being trained for performance under high stress (Meichenbaum, 1996).

In an attempt to insure resilience in its members, the US military has implemented various screening and training efforts. There are efforts to identify personnel who are already quite resilient and other efforts to develop resiliency through properly sequenced graduated training. During military training, those people deemed resilient or having the proper resilience aptitude are exposed to progressively more challenging training demands and environments. This process, known as “stress inoculation,” further develops individual resiliency (Meichenbaum, 1996). Stress inoculation of the war-fighting ranks has long been accepted as a proven process. In the modern era, we have continued to develop our understanding of this process, and we are now studying it with scientific methodology to confirm its value in predicting or developing what we currently refer to as resilience.

The Nature of Stress

Stress, in its many forms, can impact performance and personal development in both enhancing and degrading ways. There are several models used to explain stress. The *stimulus-based model* treats stress as a function of external influence

(e.g., demanding workload, heat/cold, time constraint, relationship conflicts, etc.). Critics of the stimulus-based model argue that it ignores individual differences, does not adequately evaluate contextual circumstances, and neglects entirely the role of emotion (Stokes & Kite, 1994). By contrast, the *response-based model* asserts that stress is a composite of response patterns (behavioral, mental, and emotional) that result from exposure to a given stressor (Selye, 1956). Critics of the response-based model argue that there is a complex interaction between external stimuli and the many possible internal factors that interact to determine response. So, a third approach conceptualizes stress more broadly as an interaction between the complexities of the individual and his or her environment. This type of model is referred to as a *transactional model*. It emphasizes the role of the individual in appraising a situation and shaping responses to it (Lazarus & Folkman, 1984). For the purpose of this chapter, we view stress as the result of the interaction between three elements: perceived demand, perceived ability to cope, and the perceived importance of coping with the demand as explained by McGrath (1976). Note the central importance of individual perception in all three components.

The Effects of Stress on Human Performance

How individuals perform under stress is impacted by many different factors including individual differences and situational conditions. Many studies into the effects of stress on performance have revealed a generally curvilinear continuum of outcomes ranging from enhanced performance to degraded performance (Bourne & Yaroush, 2003; Driskell & Salas, 1996; Hancock & Desmond, 2001; Staal, 2004). However, the effects of stress on human performance can be very difficult to predict at the individual level. For example, changes to the intensity of a given stressor may result in a measurable difference in performance for one individual while not impacting the performance of another. These individual differences may result from dispositional factors,

differences in experience level, or both. Put simply, when it comes to the effects of stress on human performance, not all individuals are created equal. Training and experience have been identified as potential mitigation strategies when it comes to an individual's vulnerability to the degrading effects of stress on performance.

When analyzed quantitatively in the aggregate, stress effects on human performance conform to an inverted U-shaped function. This finding is commonly referred to as the Yerkes-Dodson law (Yerkes & Dodson, 1908), and the research literature is replete with examples that support its description. In general, it states that increasing stress (levels of arousal) in an organism results in an improvement in performance to a point. When that point or apex in optimal performance is reached, there begins a decline in performance due to overarousal or fatigue. The Yerkes-Dodson framework has been improved upon by Bourne and Yaroush (2003) who provide a more detailed examination of specific *stress states* along the inverted "U" curve. Figure 12.1 depicts this refinement and articulates various performance-related states such as facilitation, optimization, mobilization, degradation, "choking," and panic (Staal, Bolton, Yaroush, & Bourne, 2008). As shown by this figure, initial increases in stress are typically associated with improvement in performance. This phenomenon is known as *facilitation*, and it may be related to positive effects of increased arousal on cognitive function (Chappelow, 1988). In other words, a certain amount of stress-related arousal usually enhances performance for functions such as attention and memory. Once stress or arousal levels reach their optimal level of performance facilitation for a given task, adding further stress exerts a detrimental effect on performance. With sufficient motivation and resources, an individual may be able to maintain or even improve their performance beyond what would be considered their "optimal stress" level. Digging this deep into their resource capacity may not be optimal for long-term maintenance of performance but may be required to achieve success in a critical moment. Such events can be attributed to the individual's *mobilized* effort that is mentally

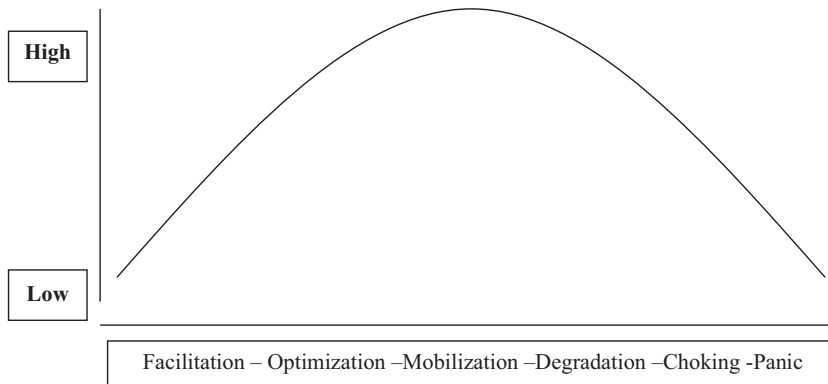


Fig. 12.1 The Yerkes-Dodson inverted “U” with articulated stress states

mediated. This *mobilization effect* is invoked when an individual’s performance level is recognized as insufficient. The mobilization of resources through increased mental effort will tend to maintain or improve performance at any level of stress (Kahneman, 1973).

As stress continues to increase, an unavoidable degradation in performance begins to occur. Initially, performance under stress degrades gradually (Norman & Bobrow, 1975). However, under increasing pressure and stress, performance may drop off dramatically resulting in catastrophic degradation and the feeling of “choking” or panic. There is a robust literature describing this phenomenon (Lehner, Seyed-Solorforough, O’Connor, Sak, & Mullin, 1997), and this process is known as “task shedding” (Sperandio, 1971).

When the research literature is examined across performance domains (attention, memory, and decision-making), it reveals that the quality of an individual’s performance relies largely on the extent to which mental resources are adequately preserved and/or managed. The ability to properly manage or preserve resources is directly related to the perception of the performer. Although modulated by the mobilization of resources, when resources are reduced (through task load), performance is concomitantly reduced as well. In contrast, when resources are managed well or additional mobilization occurs if possible, performance is preserved or facilitated. Experience and training influence the extent that well-learned tasks can be performed less deliberately, reducing

the demands on the mental resources required for performance (Staal et al., 2008). This training effect accounts for the fact that under extreme stress, special operations personnel have noted that training and conditioning will “take over” and they are often able to perform effectively – as if on “autopilot” – without significant conscious focus or awareness of the task elements.

Understanding the potential positive and negative impact of stress on performance is crucial to the effective understanding, and use, of the factors that mitigate negative stress effects and potentiate positive stress effects. Let’s examine the principles that can help the individual manage negative stress effects and optimize the positive elements of stress in order to facilitate high-quality performance under stress. Some candidates for special operations selection and training have a well-developed sense of these principles and use them intuitively. Others learn the principles and develop resilience skills through both experience and training. Both types can benefit even further from training in, and conscious examination of, the principles.

The Structure of Peak Performance

The Individual

For the purpose of understanding and discussing the elements that facilitate peak performance in military special operators, it can be useful to

posit four realms of function, action, and experience that underlie elite performance and the individual's understanding of human performance. These components are the physical, mental, emotional, and spiritual.

The Physical Component This refers to the realm of elements and variables that comprise the body and its actions and reactions. The skeleton, muscles, tendons, organs, blood, and hormones respond to and act in the internal and external world. The physical realm includes physiological, electrochemical, nerve impulse transmission and hormonal regulation required to energize and direct muscle action, movement, and strength adjustments. It regulates heart rate, blood pressure, and other physical parameters that potentiate effort in response to challenge levels and affect recovery during periods of relative inactivity.

The Mental Component This is the domain of one's knowledge and thought processes as produced in response to the surrounding world. The mental realm also includes our experiences and memories that shape cognition and inform our decision-making and behavior. More specifically, this realm incorporates the interpretive and analytical processes that define objectives and plans of actions.

The Emotional Component This refers to one's affective state and emotional feelings in reaction to the external world and internal thoughts. These feelings are largely a product of our mental processes but may often occur unaccompanied by conscious recognition of those origins. For example, under extreme stress, most individuals resort to fight or flight mechanisms that may be beyond the reach of higher-order cognitive appraisal. It is for this very reason that elite military units often prepare their members for optimally conditioned responses in the face of such stress in order to increase the likelihood of mission success.

The Spiritual Component Though somewhat more difficult to define, the spiritual component can be thought of as the thoughts, beliefs, and val-

ues one has developed about the nature and purpose of their life and the energy that arises from integration of these concepts with their situational goals and actions. It should be noted that this is not an intended reference to religion. Religions, for the most part, are characterized by diverse rituals that structure the development and expression of religious beliefs, usually in reference to a higher structure, power, or force. We are not referring to rituals or a particular type of ritual structure but rather to the element that energizes commitment and inspires endurance in pursuit of objectives that are synchronous with one's "spirit." Most people know one or more people who "love" their work. They say things like "I can't believe I get paid to do this!" or "My heart is in my work." Or "My job charges my batteries." When one asks special operators whether "spirit" is an important part of their success – almost all of them say yes. People who have been successful in high stress and demanding occupations realize that they need the inspiration and drive that come from the synchrony between their sense of purpose and the demands of their work. People, who are performing at an above-average level or higher in a demanding occupation, have a spirit or life energy that is expressed in, and fed by, the emotions, actions, and thoughts required by their work. A person's spirit interacts synergistically with their mental, physical, and emotional components to drive their actions and reactions to events. Some call it "drive," "motivation," or "commitment." But, whatever you call it – when examining candidates for the highly demanding work of special operations, it is clear that not everyone has it. In the world of special operations, the presence of this "spirit" is often the difference between success and failure. Often, it is one's spirit that integrates with work objectives, gives critical meaning to work behaviors, and energizes the passion required to achieve success during difficult and prolonged challenges.

Peak performance, for any individual, is developed through a shaping of the variables in these realms into a synergy of elements that support and facilitate desired performance. The strengths of physical capability and skill, inspirational thought, energizing emotion, and potenti-

ating values and beliefs are sculpted through experience and conditioning. Though they can be discussed individually, these four realms are intricately connected and constantly influencing each other with a complexity that in many ways surpasses our understanding.

Personal Components of Resilience

To populate their special operations organizations, the US military endeavors to select those who already possess a detectable degree of resilience in ways relevant to their projected mission responsibilities. They then further develop that resilience through systematic training/conditioning processes. Because of the potentially volatile, changing, and uncertain conditions associated with their missions, elite military teams must exercise sensitivity and astute judgment even during times of high stress. Resilience insures that even under high stress and adversity, the team will still perform at or near the highest level of their capabilities. When top performing special operations personnel are asked, “What factors make resilient people able to perform extremely well under great adversity?” their answers often include the following:

- The ability to stay focused on effective actions
- Faith based on past experiences and a higher-level perspective
- Positive thoughts that project positive outcomes and drive out worry
- The ability to calm oneself physically and mentally
- Stress hardiness built by gradually increasing increments of progressively harder training (stress inoculation)
- The ability to use the strengths of the team and share support among team members
- The ability to focus on positive goals and images that facilitate solutions
- Confidence in one’s physical capabilities

Maddi and Khoshaba (2005) provide a succinct description of five factors that may allow

some people to be more resilient than others when confronted by high stress and adversity.

- Control – They focus on the things they can control.
- Commitment – They commit a 100% effort to overcoming the challenge.
- Challenge – They expect life to be periodically difficult, so they are not surprised when difficulties arise.
- Social support – They turn to others for support and help others with similar difficulties.
- Transformational thought – They quickly develop a new positive future vision or goal while overcoming current challenges.

The first three of these factors – commitment, control, and challenge – belong to the personality style described as “hardiness” (Kobasa, 1979). Research has shown that persons high in hardiness maintain good health and performance even under high stress conditions. They also prefer active coping approaches and appear to be better at building and making use of social support networks (Bartone, 1989; Kobasa & Puccetti, 1983; Maddi & Kobasa, 1984).

While these attitudes and processes are valuable resources for anyone dealing with stress, they are critical components of resilience for individuals who will navigate the special operations selection processes and go on to perform effectively under highly stressful operational conditions. Selection processes are typically replete with opportunities for failure. Candidates must be able to pick themselves up mentally and emotionally from disappointment without dwelling on mistakes or siphoning away precious resources in their attempts to recover. They must be able to develop and focus on end point objectives, even when receiving no positive affirmation or feedback on their progress and performance. They must be able to control their “fight or flight” response under highly threatening conditions and control their emotional arousal in order to perform the required complex mental and/or social tasks. These attitudes and characteristics predispose individuals

to handle high stress without significant degradation of performance.

Personal Performance Management Tactics

Cognitive Appraisal: Self-Talk

Personnel who perform extremely well under high stress are more effective in developing and using positive self-talk. Research has provided consistent support for the fact that a person's cognitive evaluation of a threat and/or their level of perceived control are influenced by their subjective experience of stress and that positive cognitive evaluations may offer some level of protection from the negative, performance-robbing effects of such stress (Chang & Sanna, 2001). The basis for this idea is not new. Lazarus (1966) observed that when human subjects viewed a situation as negative or threatening, they experienced psychological stress as a direct result of their own negative appraisal (Lazarus & Folkman, 1984). As we have already discussed, there are different dispositions that affect our appraisal of life's challenges. Some individuals welcome competition and calculated risk taking, while others avoid such conditions opting for greater comfort and freedom from the "discomfort" of stress.

For those individuals who seek challenges and opportunities to test themselves, various phrases have emerged that capture the nature of their cognitive self-talk. Statements, such as "enduring the gauntlet," "facing the trial," "the valley of decision," "no pain/no gain," "pain is weakness leaving the body," "when the going gets tough, the tough get going," and, a recent version, "embrace the suck," have all developed as intuitive inspiring approaches to the cognitive appraisal and management of stress and adversity. These sayings have developed and endured because they help people think positively and cope effectively with adversity. The types of people who regularly seek difficult challenges to build personal strength usually find positive self-talk crucial to their success.

Psychophysiological Arousal Management

Elite performers have also developed effective ways to calm, or regulate, their physiological arousal as they respond to threats and significant stressors. Many methods have been developed and taught for the intentional adjustment of psychophysiological arousal. In his book, *The Relaxation Response* (1975), Dr. Herbert Benson gave simple prescriptive instructions for the development of a conditioned ability to produce a calmer internal state. Dave Grossman, in his book *On Combat* (2004), prescribed breathing techniques that help warriors train to regulate their physiological response to combat stress.

In general, most of these methods used for energy management and regulation of physiological processes act on the two branches of the human autonomic nervous system. The sympathetic branch reacts to compensate for and cope with perceptions of threat and external demand. The parasympathetic branch reacts to bring the system back to homeostasis or a calming and healing state of rest. These two branches work to balance the autonomic system's response to demands and to rest and heal the system when demands lessen.

Methods taught to purposefully regulate these systems and their arousal usually include a cognitive component and a physical component. The cognitive component usually encourages some way to focus thought into a neutral, nonemotional, path – in order to reduce cognitively mediated arousal. This focus may include self-talk, as described above, or more benign activities such as counting respirations, visualizing relaxing situations, an auditory focus on sound, or the repetition of some other sensory stimulus. The physical component of this regulatory process usually includes diaphragmatic breathing with concordant relaxation of abdominal and leg muscles, shoulders, facial, and jaw muscles. Whether consciously adopted as a performance enhancement tactic or intuitively developed, this strategy for autonomic regulation is a central tactic in the behavioral repertoire of most elite performers and, through conditioning, grows in effectiveness

as training sequences expose the member to progressively more stressful challenges.

Effective Goal Setting

Elite performers have learned to focus on goals that produce enhanced performance in the situation at hand. Elite performers set goals instrumentally – in a way that enhances performance and efficiency. Poor performers often set avoidant goals – “I don’t want to be the slowest” (negatively stated goal) and “I hope I can hold my breath that long” (fearful statement – not a goal). If the goal is to swim underwater for 30 yards, the performer should focus on form and efficiency in swim technique – the shape of the hands as they cup – and the path they take as they pull water to the rear. That is, the focus should be on technique and its application to the task – in each passing moment – not on past events or future possibilities. Latham and Locke, in their classic book *A Theory of Goal Setting and Task Performance* (1990), asserted the importance of specificity and detail in effective goal setting. In 1981, George T. Doran offered an acronym that has been used by many writers to specify the elements of effective goal setting, SMART. This acronym is intended to help performers establish goals that inspire specific performance and eliminate vague or irrelevant objectives. With some variations in wording, many performance experts have adopted this model.

Specific Goals should be very clear and precise. General goals or those that are ambiguous are more difficult to accomplish. Setting a goal to “improve running speed” may be too vague, whereas aiming to “run a 10K in less than 1 hour” is sufficiently clear.

Measurable Goals should be quantifiable or measurable. We will be more likely to accomplish our running goal if we embed time standards into our training and our race. For example, “I will train by running a 10K once a week and will run a 30-minute split during my race.” Setting intermediate or shorter goals in route to a

larger goal is known as “segmentation” and increases the likelihood of goal completion.

Achievable Goals should be within the realm of possibility and even more so probability. A goal to run a marathon scheduled in 1 month by a non-runner may be doomed to fail. However, the same non-runner might easily work up to the marathon over a longer period of time.

Relevant Goals should be related to something of value or interest to the goal setter. The goal to improve run times or to complete a race may be relevant to someone interested in running or physical fitness (PT) or perhaps who has a desire to improve cardiovascular fitness or to lose weight.

Time Limited Goals should have timely target completion expectations. Goals are more likely to be completed if a near-term timeline is identified and articulated. A goal to “increase my physical training (PT) PT score” absent of specific subgoals or segmented plans to increase running time or distance is less likely to be accomplished. Instead, the runner should declare, “I will add ten points to my next PT score during the test on March fifth.”

Imagery: Creating a Strong Motivational Target

Elite performers often use imagery, incorporating any or all of the five senses, to strengthen motivation and enhance the effectiveness of their focus. They might imagine the achievement of a goal they have set for themselves. They might see themselves accepting the award for this achievement, and this vision evokes a feeling of pride or excitement. This associative pairing of current state with a desirable future state along with a sense of pride propels the individual toward the achievement of their goal. Imagery can incorporate any or all of the five senses. One can imagine the sounds of a cheering crowd and the lights of the field during a championship football game, and these images

provide motivation for a player to push through difficult practices with an overbearing coach. For the elite military operator, visualizing a perfect performance during close-quarters battle (CQB) training may give greater confidence and lower anxiety or reaction times when performing the real task. Imagery allows for a virtual exposure and rehearsal for the task. It also is a time when positive self-talk can become integrated into the imagery as part of a performance-enhancing behavioral package. After virtual rehearsal and combining performance positive self-talk and imagery, the mind and body develop an additional degree of positive experience enabling an enhanced performance. Research has found virtual rehearsal to often be quite effective in improving performance (Hanshaw & Sukai, 2016).

Passion

Elite performers are usually driven by, and passionate about, the things that they value. Many people believe that military personnel, particularly in elite units, are not emotionally responsive or interpersonally sensitive. In fact, most of these individuals are very sensitive and emotionally attuned, but they are also very disciplined and conditioned to control their emotion. Some may not react as other people might in regard to upsetting events. Furthermore, they may not be as demonstrative even with more comfortable emotions or their reactions to welcomed events. Instead, this population tends to be more emotionally disciplined and controlled. They normally have an excellent capability for suppression of emotional reaction and compartmentalization of emotion in general. This disciplined control can be misinterpreted as a lack of emotion or connection to events. On the contrary, many special operations military personnel are instead, emotionally aware and adaptive. They value learning about things that increase their sense of mastery and control over factors that affect their lives, and this includes mastery over themselves and their emotional reactions to events. Similarly, their ability to suppress or direct emotion to ener-

gize and enable the accomplishment of objectives is usually well developed.

Temporal Focus

Elite performers effectively manage their temporal focus. In other words, they are able to direct their attention effectively to the past, present, or future time frame as appropriate for the task at hand. As an example, If I am struggling hard to win a hand-to-hand combat match, I should be focused on the present, moment to moment, and remain constantly aware of changing physical or visual cues. I should be thinking about techniques that will bring success in my current situation. I should NOT be thinking about the last match or future award ceremonies or having thoughts about the possible loss of the match. When elite performers finish a mission or challenge, they often engage in a self-critique or “hot wash” during which time they review their actions and analyze their performance to develop “lessons learned.” They usually spend time after a performance to plan future actions and strategies based on what they just learned. This process is so much a part of high-performance or elite organizations that it is routinely incorporated and called an after-action review (AAR). It is a dedicated time in which lessons learned are discussed and incorporated into planning for the next mission. This activity allows group members to discuss, critically consider, and summarize lessons learned in order to incorporate the group perspectives developed through discussion. Then, when it is time to perform again, the group is able to effectively move on mentally and focus their attention and effort to the task at hand, with minimal wasteful reflection spent on prior events. This means that, when it is time to act, peak performers are not wasting time and mental energy thinking about past failures, poor performances, or future goals. Instead, they are focused on the elements of top performance necessary for the task at hand. The self-discipline and focus required to direct this process take many behavioral forms but may include

combinations of imagery, self-talk, arousal management, and other tactics.

Such behavior aids in directing focus, mobilizing, and conserving resources. A current popular term that describes the ability to focus on the current moment is “mindfulness” or the ability to focus mental resources in a way that maintains current situational awareness and provides real-time adaptive information on performance-relevant internal and external conditions. Mindfulness has been shown to be positively related to performance under many conditions (Shao & Skarlicki, 2009). But, more research is needed for us to fully understand the dynamics through which mindfulness facilitates performance

Factors in the Resilient Predisposition

Discussed below are factors that we believe enhance resilience in most people and which are just as helpful for special operations personnel.

Predictability and Control

Perceived control and predictability are directly related to subjective distress and cognitive performance. When individuals perceive stressors as within their control, their experience of subjective stress is reduced (Lazarus, 1966). Similarly, when individuals perceive an ability to exert control over a given situation, they experience less anticipatory anxiety (Champion, 1950; Houston, 1972), and they experience a drop in arousal. Moreover, perceived situational control increases the belief that one can predict and anticipate stressors and this belief results in a reduction in perceived stress as well as an increase in objective performance. This finding has been illustrated by subjective self-report as well as objective physiological measures (Badia & Culbertson, 1970; Baum & Paulus, 1987; Bell & Greene, 1982; Burger & Arkin, 1980; D’Amato & Gumenik, 1970; Epstein, 1982; Evans &

Jacobs, 1982; Monat, Averill, & Lazarus, 1972; Weinberg & Levine, 1980).

Much of the perceived predictability of challenges and outcomes is a function of the individual’s past experience with similar challenges and the presence of feelings of success in these experiences. In other words, the greater the degree to which military members can anticipate and prepare for stressful conditions, the more likely they will be relaxed and properly managing their energy when performing. It is for this very reason that military trainers attempt to predict and create real-world mission conditions whenever possible.

Experience and Expertise

The highest standards of performance are often necessitated by demanding and/or high-risk situations, where the consequences of failure may be severe or even catastrophic. Individuals who work in such settings know well that training and experience are critical to job performance and may even be essential to survival. Research has shown that individuals who have more experience (experts) attend to and process task-relevant information differently, more efficiently, and with better results than do individuals with lesser experience (i.e., novices or beginners) (Callan & Naito, 2014; Cheng et al., 2015). This efficient processing can result in lowered cognitive demand and energy conservation.

The Presence of Others and Close Relationships

Although the mere presence of others can have variable effects on performance, the presence of supportive others generally facilitates resilience. Maddi and Khoshaba (2005) report that notably hardy individuals turn to others for social support during stressful times and derive strength from offering support to others during such times. This fact is particularly significant in the training of high-performance teams. When all team mem-

bers are capable of using and contributing to the support of other team members, the hardiness of the whole team benefits. It is just as certainly true that any member who does not, or cannot, contribute to and benefit from team support is often doomed to rejection from team cohesion. Many selection and training programs use peer reviews (performance/acceptability ratings by peer team members) to determine the extent to which individuals are accepted and valued by the team. In these team-oriented environments, any significant rejection by the majority of the team may bode poorly for selection or for successful training completion. Most elite military training challenges are undertaken in team-focused settings.

Selecting Resilient Special Operations Personnel

Detection and Assessment of Characteristics

The purpose of any personnel selection process, including those in the military special operations forces, is to identify individuals who are most likely to succeed in some specific job and setting. The initial development of any effective selection process usually entails an analysis of the projected job to identify the characteristics that are most critical to individual success in that type of mission. Then a series of physical and mental challenges, tests, and scenarios are designed to expose these required characteristics in a pool of candidates. Three types of psychological methods are often used to gather assessment information.

1. Background and demographic information is collected by candidate self-report and from existing records.
2. Standardized questions are used to collect motivational information and candidate perspectives that can provide information on relationships, stability, and maturity.
3. Psychological instruments such as the Minnesota Multi-Phasic Personality Inventory

(MMPI) or Milan Multi-Axial Clinical Inventory (MCMI) may be used to screen for candidate response patterns that can indicate detectable psychological disorders or other factors that are abnormal within the successful special operations population. Personality inventories such as the 16 Personality Factor Inventory (16 PF), California Psychological Inventory (CPI), or the NEO-PIR (NEO) may be used to detect personality patterns that are related to acceptable or unacceptable job performance.

For special operations personnel, the required characteristics usually include physical as well as cognitive, emotional, and social characteristics. During military missions, physical capabilities and skills must interact with a variety of intrapersonal and interpersonal capabilities to get the individual and their equipment to the scene of the required action and, then, to accomplish the mission objectives under frequently volatile and changing conditions. The presence or absence of spirit, as discussed earlier in this chapter, is not easily assessed in any formal way. But, it is often very evident through observation by experienced special operator cadre who evaluate candidate performance. Although spirit is subjectively assessed, it is not quantified. It does play a role in cadre ratings and voting on the suitability of candidates.

Common attributes that bode for success in special operations would include high stress tolerance and comfort operating under austere or uncertain conditions. High intelligence, integrity, adaptability, perseverance, and good social skills are also regularly required. In most cases, these personnel must operate as fully accepted and trusted team members. Under the high stress of combat and other mentally and emotionally intense mission situations, team members commonly develop an intense level of mutual trust and loyalty that generally does not exist outside the military. Assessment and selection (A&S) efforts usually focus on a series of target attributes and other criteria, as mentioned above, that are characteristic of candidates who succeed (“select-in” criteria) or do not succeed (“select-out” criteria) on the job.

Using Assessments to Inform Selection Decisions

The “Select-Out” Process The focus of the select-out process is to detect the candidates who display characteristics that have historically been predictive of unsatisfactory or unacceptable performance. Research on the relationship between assessed variables and later performance criteria is used to determine which variables predict performance. These select-out variables may be physical, mental, emotional, motivational, maturational, social, or other factors that historically bode failure of some type either in training or on the job. Typically, the A&S process will include task completion challenges that are designed to expose physical, mental, and social characteristics of candidates. Running, “rucking” (carrying heavy backpacked weight over distance for time), land navigation, swim challenges, and various types of team leadership challenges are commonly used to detect the physical and mental capabilities necessary for success in complex strenuous special operations tasks.

Some candidates will be eliminated for physical inability alone, and others will drop of their own accord (drop on request (DoR)) due to the physical difficulty and loss of positive motivational focus. Loss of positive motivational focus can also occur as a result of the candidate’s developing knowledge about the demands and rewards of the career field. Many candidates, who have the physical and mental capability for success in the assessment tasks, nevertheless choose to drop from assessment because of the subtle or clear realization that they are not well suited for the emotional, social, and/or spiritual aspects of the special operations lifestyle. Some candidates may also be eliminated for non-physical reasons such as inability to integrate well with the team due to too little or too much aggressiveness in leadership and decision-making.

The “Select-In” Process Response patterns on the above types of instruments can also be used for their screen-in implications. For example, generally low scores on the scales of the MMPI have been shown to correlate with stability and good social adjustment (Keiller & Graham, 1993).

Normally, work simulations and role-play exercises are also used to determine how candidates react to and manage complex or stressful tasks that are common to the special duty job. There are also a number of paper or electronic assessment instruments that measure constructs related to resiliency (e.g., scales of hardiness, locus of control, emotional intelligence, optimism, and self-efficacy). Many of these tools have been used as part of processes for the assessment and selection of special duty personnel. Bartone, Roland, Picano, and Williams (2008) found that Army Special Forces candidates who scored highly on the Dispositional Resilience Scale (DRS) were significantly more likely to graduate from Special Forces training than those who scored lower.

Effective selection programs require validation and typically compare assessment results for new candidates against the previously identified characteristics and scores of currently successful personnel. The assessment of the presence and level of desired characteristics can take place through the use of physical challenges, leadership/social challenge scenarios, academic knowledge and self-knowledge tests, background interviews, structured interviews, background record checks, peer assessments, and other evaluation processes.

The A&S Development and Validation Process

The first step in the development of resilient personnel and units is the selection of the right people for these demanding jobs. Proper data collection and analyses are required in order to determine whether an A&S process is doing what it is intended to do. During the initial developmental, theoretical phase of selection process development, the data that will ultimately prove most predictive of good performance is usually unknown. Therefore, the attributes and quantifiable standards used to assess and select are normally developed by subject-matter experts (SMEs) experienced in that field or similar fields. Their educated theoretical views give the initial process credibility and increase the probability of an effective process.

Later, when assessment and performance data are plentiful, the actual relationships between the assessment data and performance can be statistically analyzed, a process called validation. At that point, the research will show which variables are actually useful in predicting performance and which are not. The validation of such processes through statistical analyses that connect assessment data with later actual performance is critical to confidence in application and defensibility of all selection processes.

At some point after the initial development and implementation of the assessment and selection process, data will accumulate to such volume that it can be analyzed. At this point, a shift in the process can occur. Factor analysis of the data collected during assessments can show whether the critical attributes we believe we are detecting and rating are actually reflected in the data to be the discrete factors we projected they would be. This analysis informs the refinement of the critical attributes and the assessment process and allows the unit to defend their assessment processes against challenges to the validity of the process. Additionally, performance-related predictive analyses of the data can begin to show whether candidates who score well in the assessment process will actually perform well when they are trained and begin to populate operational units.¹

Conclusion and Future Directions

In the world of special operations units, stress inoculation type training has long been valued. As discussed previously, stress inoculation techniques involve relatively complex training under conditions that incorporate progressively more stressful contexts while regulating the challenge to produce sequential successful student performance outcomes. Realistic training scenarios that progress incrementally to approximate real-

world operational performance environments have been found to increase the positive performance effects of stress inoculation. And, because this type of training is more complex, expensive, and time consuming than more standard cognitive and academic instruction, it is used primarily in smaller organizations and with smaller groups. Additionally, because of the financial and time resources necessary to run effective assessment and selection processes, they too are usually authorized only for smaller special duty populations. Research has shown that it is very possible to inoculate individuals against the adverse influence of extreme stress (Meichenbaum, 1996). Beilock and Carr (2001) argued that training in an environment in which one is forced to attend to the immediate aspects of their performance (self-focus) from the outset can immunize the performer against negative effects of pressure on later performance. Put simply, training scenarios that are designed to necessitate a mindful performance focus can help mitigate “choking” behavior and promote resilience.

With the continued development and implementation of electronic simulations of real-world environments, it is easy to see that there will probably be an increase in the desire to incorporate more virtual simulation of such mission environments. Already, fairly realistic “combat simulation” games are widely available. Virtual environments (VEs) have certain advantages over live training exercises. They tend to provide a safer and more cost-effective context for learning operational skills. The distinct advantages offered by VEs also include the ability to manipulate performance requirements and environmental demands. As a result, trainees are exposed to a variety of stressful conditions. Many different VE practice opportunities would support the development of expertise and expand individual resource capacity (Atkinson & Shiffrin, 1968; Shiffrin & Schneider, 1977). Klein (1989) reports it may also help develop rapid recognition-primed decision-making. However, in regard to the critical element we call resilience, the value of training scenarios comes as a result of the pairing of physiological, emotional, and cognitive stress during task pro-

¹The details of these types of analyses are beyond the scope of this chapter. But they are explained in detail in *Principles for the Validation and Use of Personnel Selection Procedures* (Fourth Edition), Society for Industrial and Organizational Psychology, Inc., 2003, www.siop.org.

cessing and accomplishment. Therefore, the value of simulation-based training for resilience will depend on the degree to which high stress can be realistically, physiologically, and experientially created during training.

We have discussed a variety of factors that weigh heavily on the development of resilience in special operations forces. These factors can have both enhancing and degrading influences on performance and must be managed carefully to produce the enhancing effects we desire in performance development. Included in this list are positive cognitive appraisal or self-talk, the use of proper goal setting, positive imagery, training that promotes stress inoculation, and the use of cognitive tools such as emotional compartmentalization and energy management. Situational components such as predictability and control or the presence of others also have mediating influences on performance and can be embedded in military training and member preparation in order to improve performance outcomes.

Task performance under stress depends heavily on the effective preservation, allocation, or management of cognitive and physiological resources. States of mindfulness, situational awareness, and control of physiological processes during performance must be held in constant balance. The experienced military special operator develops expertise and mastery over himself and these conditions in order to maintain a balance between physiological reactivity and optimal cognitive performance states. Such balance is achieved through graduated exposure to stepwise challenges during training that provide sequential successful experiences.

In the selection and training of elite forces, the ultimate goal is to be able to identify the basic elements of these capabilities and characteristics in potential candidates for elite training processes and to enhance these capabilities during training after selection. Our ability to fully understand and implement this process is still evolving, but we do understand what resilience, in particular mission settings, looks like when we see it. Furthermore, we are gaining understanding of the factors that contribute to resilience in individuals

in the military. Although the military special operations environment is rich with opportunities to detect and develop resilience – civilian organizations can also benefit from application of these principles. In fact, many civilian organizations already use “assessment centers” where employees take part in exercises and tasks to assess their abilities or characteristics for advancement to managerial or specialized positions. Kraut (1972) and Thornton (2015) provide an excellent critical analysis of the effectiveness of assessment center methods for selection. They found the methods to be effective and valid and project that the use of this approach for selection in organizations will continue to grow. Whether military or civilian, organizations tend to value employees who are adaptable, persevering, and resilient.

However, we need to know more about how resilience develops in a given individual and what precursors to this development are most salient. The urgency to develop screening instruments and training methodologies that can identify and develop elite performing military members has never been greater. As the quest to select and train the next generation of elite performers presses forward, the use of virtual technologies and human-system integration platforms will probably become increasingly common and complex. But, success in the enhancement of human resilience will rely most heavily on processes that balance the learner’s task focus and actions with stepwise increases in mental, physical, spiritual, and emotional stress – each punctuated by incrementally phased task success feedback. We recommend research to explore these relationships further. Despite the growing presence of simulations and standardized methods in selection and training, we contend that the following SOF truth will always be preeminent: That “humans are more important than hardware.”

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The Use of Mindfulness and Acupuncture in the American Military

Stephen V. Bowles, Jeffrey Millegan, Kevin G. Berry, Christopher W. Bunt, John Byron Gassaway, Ross H. Pastel, Deborah O. Norris, Corey Christopherson, Jeffrey C. Leggit, Cindy Crawford, Aidan Schmitt, and Jeremy Howick

The American Psychological Association's (APA) survey on "Stress in America" recently reported that 65% of Americans rated work as their top source of stress (APA, 2016). Although work is stressful for many American civilians, American's military personnel experience the additional stress of involvement in worldwide operations, making theirs one of the most stressful occupations (careercast.com, 2014, 2015, 2016). In 2013, the

US Army's Mental Health Advisory Team—9 (MHAT-9) for Operation Enduring Freedom (OEF) in Afghanistan reported that approximately 10% of soldiers have experienced psychological distress. MHAT-9 (2013) identified several areas of concern for service members, including symptoms of depression, anxiety, post-traumatic stress disorder (PTSD), sleep, suicidal ideation, and concussive events. Many service members experience

S.V. Bowles (✉)

National Defense University, Institute for National Strategic Studies, Center for Technology and National Security Policy, Washington, DC, USA
e-mail: dr.stephen.bowles@gmail.com

J. Millegan

Naval Center for Combat & Operational Stress Control, San Diego, CA, USA

K.G. Berry

Thought Leadership & Innovation Foundation, McLean VA, USA

C.W. Bunt

Medical University of South Carolina, Charleston, SC, USA

J.B. Gassaway

Luke Air Force Base - Luke, AFB AZ, USA

R.H. Pastel

Adjunct Professor at the Department of Medical and Clinical Psychology at the Uniformed Services University of the Health Sciences, Bethesda MD, USA

D.O. Norris

American University, Washington, D.C., USA

The Mindfulness Center, Bethesda, MD, USA

C. Christopherson

Private Practice, Peoria, AZ, USA

J.C. Leggit

Department of Family Medicine at the Uniformed Services University of the Health Science, Bethesda, MD, USA

C. Crawford

Thought Leadership & Innovation Foundation, McLean, VA, USA

A. Schmitt

Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

J. Howick

University of Oxford, Oxford, England, UK

stress even though they are not clinically diagnosed with a psychiatric disorder. MHAT-9 (2013) reported that service members experience stress due to uncertain redeployment dates, lack of time off, insufficient sleep, separation from family, and long periods of deployment. Combat missions and training injuries can also result in acute and chronic pain conditions, which are additional causes of the ongoing stress experienced by service members. Reservists who juggle between two jobs in the civilian and military worlds have additional stress in trying to bring equipoise to both their work and their home life.

Military service members face several obstacles to obtaining the mental health care that they need to support their recovery from the stress and traumas incurred during their service. Due to the stigma associated with mental health concerns in the military, service members may be less likely to seek behavioral health care. An unwillingness to participate in mental health programs combined with increasing health care costs suggest a need for additional approaches for addressing stress-related conditions in the military. Establishing more accessible, effective, and low-cost, evidence-based self-care interventions could help to address the behavioral health concerns of our service members and performance and readiness issues in the military.

Fortunately, the body of evidence is growing, and systematic reviews of the self-management literature are showing the breadth of the strategies being used, as well as the implementation of multiple modalities in combinations. When practiced properly, self-care stress management and stress-relieving practices appear to be of low risk with fewer adverse effects (Bellanti et al., 2016; Crawford et al., 2013).

The high incidence of stress in military jobs coupled with the need for nonstigmatizing approaches to build resilience suggests the opportunity for mind–body practices. Mind–body practices introduced through training, coaching, or therapy can be used as ancillary approaches to conventional medical practices to aid service members in reducing stress. Practitioners could both assist and refer patients for treatments with behavioral health professionals while also consulting

with leaders and their unit master to implement these performance enhancement approaches. Developing self-care stress management and resilience practices through training, coaching, or consultation for service and family members into the military direct care system or into the operational care environment will require innovations to the military business-practice models. These new business-practice models will affect how workload, costs, and outcomes are measured and valued. This chapter examines the effects of military work stress, the body's response to stress, resilience in the military, research self-care complementary and integrative health (CIH) approaches (e.g. mindfulness approaches, acupuncture), application in military operations, and future directions for the use of mind–body practices in the military.

Psychological Distress in the Military

Military personnel representing a small portion of the American population make large sacrifices on behalf of the nation through combat deployments and separation from family and/or friends. For some service members and their families, military service may require the ultimate sacrifice of injury or death in combat. According to the Defense Casualty Analysis System (2017), 6896 service members have been killed, and 52,527 service members have been wounded in action since the start of OEF and continuing with Operation Iraqi Freedom (OIF), Operation New Dawn (OND), and the currently active Operation Inherent Resolve (OIR) and Operation Freedom's Sentinel (OFS). These include injuries received during both hostile and nonhostile conditions. The impact of these tragedies on service members, their family, and community, as well as the nation at large, can no longer be viewed as simply a cause of disease (i.e. caffeine and nicotine addiction, substance abuse, obesity, pulmonary deployment disease), a psychological health condition (i.e., PTSD, depression), or merely personal or social distress (i.e., loss of purpose, unemployment, homelessness, suicide). The enormity of suffering by our service members who have completed their

tours of duty must be taken as a call-to-action for improving military programs that can build resilience, readiness, hardiness, and well-being. This programming cannot be delayed or avoided. Sufficient evidence currently exists demonstrating the potential of mind–body programs to enable successful adaptability to psychological challenges faced by our military. Programming should focus on the implementation of these mind–body strategies for service members at all levels, from initial training programs to recovery and reintegration. The hope is that by integrating evidence-based mind–body programs into resiliency training at the outset, our military behavioral health care programs will find fewer incidences of trauma, PTSD, suicide, and other stress-related and mental health conditions to manage in ensuing years. Service members with greater resilience will experience fewer behavioral health challenges and improved overall well-being.

While psychological and physical health is a requirement for optimal human performance, the psychological health of military personnel must be considered when evaluating their overall well-being. Addressing the psychological health of military personnel presents a unique challenge. This is particularly true because some mental health problems may be under-addressed due to stigmatization. Because of the stigma associated with a lack of mental resilience in the military, service members are reluctant to seek help or take a proactive approach to addressing emotional trauma.

The US Department of Veteran Affairs National Center for PTSD has reported that approximately 11–20% of military personnel who served in Afghanistan and Iraq have PTSD (USDVA, 2016). Past research by RAND researchers has suggested the probable percentages of these conditions as follows: PTSD (13.8%), major depression (13.7%), and traumatic brain injury (TBI) (19.5%) (Schell & Marshall, 2008). Combat veterans may also suffer from other physical and psychological problems such as chronic pain and addiction. Research has shown that more than 45% of returning veterans report experiencing some pain (Girona, Clark, Massengale, & Walker, 2006; Toblin, Quartana, Riviere, Walper, & Hoge, 2014). Approximately 7% percent of returning veterans met the criteria

for substance abuse during 2004–2006 (Substance Abuse and Mental Health Services Administration, 2014). Just under half (47.3%) of the service members returning from Iraq and Afghanistan who have PTSD or depression have sought help for these conditions (Schell & Marshall, 2008). Those who did not seek care for mental health provided the following top reasons for not seeking behavioral health services: side effects of medication, possible harm to career, loss of security clearance, preference to rely on friends and/or family, and concerns that coworkers would have less confidence in the service member (Schell & Marshall, 2008). More than half of the service members needing treatment reported seeing a health professional regarding mental health conditions in the previous 12 months. However, almost half the service members who did present their condition to a health professional reported that they did not receive adequate treatment (e.g., receiving fewer than eight sessions of psychotherapy or insufficient pharmacological treatment) (Schell & Marshall, 2008).

In 2010, to address the health of the military armed forces, the Chairman of the Joint Chiefs of Staff established the Total Force Fitness Framework as the new paradigm to promote and maintain health, readiness, and performance in the Department of Defense (DoD). Total Force Fitness encompasses eight integral domains of fitness: social, behavioral, physical, environmental, medical, spiritual, nutritional, and psychological. While residing as the Chairman of the Joint Chiefs of Staff, Admiral Mullen stated that “...the secret to optimal fitness lies in the constant awareness of the changing environment and the continuous pursuit of flexible adaptation to the inevitable shifts.” The application of the new paradigm continues to be a work in progress. This holistic view of fitness, set on building mind and body capacity, endurance, prevention or resistance to disease or personal/social distress, has been described in the Chairman’s instruction on the Total Force Fitness Framework (CJCSI, 2011; Mullen, 2010). The uses of mindfulness and acupuncture CIH programs for psychological distress are unlikely to stigmatize service members and are considered alternative or ancillary self-care

approaches to traditional treatments. We propose that CIH programs (mind–body approaches such as meditation, yoga, tai chi, and acupuncture) (Lang et al., 2012; Hempel et al., 2014; Staples, Hamilton, & Uddo, 2013; Hempel, Taylor, Solloway, Miake-Lye, Beroes, Shanman, & Shekelle, 2014; Hempel, Taylor, Solloway, Miake-Lye, Beroes, Shanman, Booth, et al., 2014) may serve as both treatments for those presenting with mental health symptoms and as practices for self-awareness and other awareness and/or performance skills, while enhancing resilience, well-being, and readiness for service members and family members.

The Body's Response to Stress: Physiological Results of Chronic Psychological Distress

Stress can be defined as the state in which the demands of life (i.e., a person's interaction with the physical and psychosocial environment) exceed one's coping skills, resulting in psychophysiological consequences (Lazarus & Folkman, 1986; McEwen, 2007). While stress can have vast mental repercussions, chronic stress can also significantly alter the body's biological processes. When a stressor is present, the body is designed to effectively manage this short-term (acute) stressor by altering its physiological mechanisms to respond with a flight, fight, or freeze response. However, persistent (chronic) stressors, such as a stressful work environment or deployment, may cause negative structural and biochemical changes to the brain, as well as other areas within the body, that can lead to disease and disability (McEwen, 2007).

The sympathetic nervous system responds immediately to perceived acute stressors through activation of the sympathoadrenomedullary (SAM) pathway resulting in increased activity of the sympathetic nervous system (SNS; e.g., increased heart rate and blood pressure, opened airways, dilated pupils). The SNS also stimulates secretion of epinephrine (adrenaline) from the adrenal medulla (Karlamangla, Singer, McEwen, Rowe, & Seeman, 2002). The perception of environmental and psychosocial stressors also activates a neuroendocrine response cascade through the hypothalamic–pitu-

itary–adrenal (HPA) axis. The hypothalamus releases corticotrophin-releasing hormone (CRH) and vasopressin (De Kloet, Joëls, & Holsboer, 2005; Tafet & Bernardini, 2003). These two hormones help to coordinate behavioral and metabolic responses throughout the body. CRH induces the release of adrenocorticotropin (ACTH) from the anterior pituitary, which then induces the release of glucocorticoids (e.g., cortisol) from the adrenal cortex (De Kloet et al., 2005). When the stressor is no longer perceived, negative feedback loops within the HPA return the body to baseline.

Chronic stress leads to chronically elevated glucocorticoid levels and contributes to the development of conditions such as obesity, cognitive impairment, hypertension, diabetes, lipid imbalance, brain aging, loss of bone minerals, and immune system dysfunction (Karlamangla et al., 2002). Studies have found that prolonged stress also has consequences for brain functioning, related to changes in glucocorticoid and mineralocorticoid receptors in the brain, especially within the limbic system (McEwen, 1999). If stress becomes chronic, the hippocampus, which has a role in memory formation and modulation of emotional control and self-regulation, may atrophy due to glucocorticoid effects on neurogenesis. Hippocampal atrophy, in turn, can significantly impair memory functioning (McEwen, 1999) and the capacity for self-regulation (Hölzel et al., 2011). Repeated stress can also enhance activity of the amygdala, leading to heightened emotional reactivity; and decrease activity of the prefrontal cortex, leading to impairment in executive function, inhibitory control, and cognitive flexibility (McEwen, 2007). By considering the research on the physiology of stress, and the mechanisms and biomarkers of resilience to stress, we may be able to develop more effective mental health and performance enhancement approaches for our military who serve in stressful environments.

Resilience Biomarkers

Scientists have identified several possible biomarkers for resilience (Charney, 2004). One of these biomarkers is the ratio of dehydroepiandrosterone sulfate (DHEA-S) to cortisol. Cortisol and DHEA-S are both adrenal steroid hormones

that are released as part of the HPA axis activation in response to stress. DHEA-S is a precursor to anabolic steroids and has both peripheral and central (i.e., brain) effects. Animal studies have suggested that DHEA-S plays a beneficial role in stressful conditions (Charney, 2004). This may, in part, be due to antiglucocorticoid effects, both peripherally and centrally (Morgan et al., 2004). A study on service members found that those who performed better under intense stress had higher DHEA-S to cortisol ratios during Survival, Evasion, Resistance, and Escape (SERE) training (Morgan et al., 2004).

Another potential biomarker of resilience is Neuropeptide Y (NPY) (Yehuda, Brand, & Yang, 2006). NPY has an anxiolytic effect and may help to mitigate the negative consequences of stress on the body. A variety of animal and human studies have suggested a role for NPY in the regulation of stress, anxiety, fear, learning, memory, and cardiovascular function (Schmeltzer, Herman, & Sah, 2016). Human studies have found decreased levels of NPY in patients with post-traumatic stress disorder (PTSD; summarized in Schmeltzer et al., 2016). A recent study by Yehuda et al. (2014) found that pretreatment DHEA-S/cortisol ratio and NPY levels were predictors of PTSD treatment response in combat veterans. In another relevant study, Norwegian navy cadets who were high in hardiness-challenge as well as commitment and control showed higher levels of NPY compared to those low in hardiness-challenge (Sandvik, Bartone, Hystad, Phillips, Thayer & Johnsen, 2013). As research on resilience biomarkers advances, we may find better ways to address resiliency through mind-body interventions.

Mind-Body Approaches: Complementary and Integrative Health Resilience Programs

The military must establish more psychological, couples, and family fitness programs to help service members and their families develop the knowledge, skills, abilities, and attitudes they need to effectively prepare for, and recover from, the severe stressors they inevitably encounter (Bates et al., 2010;

Bowles et al., 2015). Military services and related organizations have separately adopted principles of the Total Force Fitness framework. This framework promotes concentration, self-awareness, and self-modulation to ultimately improve the fitness, resilience, and well-being of service members. Research in meditation, yoga, acupuncture, and perhaps tai chi and qigong shows that these CIH techniques could be beneficial for building behavioral fitness, resilience, and well-being.

Service members have already shown great interest in CIH therapies. Data collected from the Millennium Cohort Study from 2004 to 2006 found that 30% of active duty and reserve military personnel reported the use of a practitioner-assisted CIH therapy program, while 27% reported the use of a self-administered CIH therapy program (Jacobson et al., 2009). Among a civilian sample, Park (2013) found that 38.3% of adults had used a mind-body program within the last year. More recently, Clarke, Black, Stussman, Barnes, and Nahin (2015) found yoga to be the leading mind-body approach and meditation to be the third most often used approach.

Large portions of the military population who struggle with mental health problems underuse behavioral health clinics due to stigma (Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Sharp et al., 2015). Given that many military personnel are and will engage with CIH, these mind-body therapies provided in nonmedical settings like gyms, classrooms, or homes may serve as effective additional approaches for ancillary mental health treatment.

In 2010, the Office of The Army Surgeon General published its Pain Management Task Force final report. The report recommended Tier I nondrug complementary and integrative modalities be included as Tier 1 TRICARE benefits, and that these modalities be delivered in an interdisciplinary and multimodal approach. The Tier I modalities include acupuncture, yoga/yoga nidra, nonallopathic chiropractic care, biofeedback, and mind-body therapies (mediation, mindfulness). A patient could receive these modalities from a provider passively, or they could be taught to the patient as part of an active individualized self-care plan. The report lists Tier II nondrug modalities as movement therapy (tai chi, qigong, and

martial arts), art, music, and aroma therapies, monochromatic near-infrared (MIRE) treatments, and cranial electrical stimulation (Office of The Army Surgeon General, 2010). In the mid-2010s tai chi and qigong were not considered medical therapies and were not covered benefits under the TRICARE program. However, tai chi and qigong were available within some parts of the Veterans Health Administration system of care and could be found in military medical care facilities.

Crawford et al. (2013) conducted a systematic review of multimodal training programs that could be applied to military populations that incorporated complementary and alternative self-management techniques as one component of interventions to reduce emotional stress. Their review focused only on RCTs, limiting their review to 116 trials. This review showed evidence of potential benefit of a multimodal approach for addressing anxiety, distress, and overall coping mechanisms in a broad spectrum of psychological and medical conditions such as cancer, HIV, chronic pain, heart disease, PTSD, and schizophrenia.

CIH approaches are offered to service members at locations such as the Malcolm Grow Military Medical Center, National Intrepid Center of Excellence, Naval Medical Center San Diego (NMCSD), Walter Reed National Military Medical Center (WRNMMC), the Deployment Health Clinical Center, Fort Hood Resiliency Campus, and Fort Bliss Restoration and Resilience Center for Returning Service. CIH approaches are also being used throughout the Department of Veterans Affairs Medical Centers. Service members who are looking for techniques to improve their well-being, productivity at work, and work–life satisfaction can be prompted to take advantage of these programs. CIH programs provide a combination of mind–body skills of interest to service and family members, as well as skills that they may have already practiced within the military community. Many of these programs are easily taught, are easy to practice, can be done in any environment, are cost-effective, and can be individualized to the service member based on acceptability and personal choice.

The Relaxation Response and Meditation

A growing body of evidence demonstrates predictable and potential health and wellness benefits of a regular meditation practice. Meditation is a term encompassing a wide variety of practices and has been broadly defined to include any activity that will elicit the relaxation response—a mind–body state characterized as incompatible with the stress response (Benson & Proctor, 2010). The relaxation response is a mind–body state that allows the individual to decrease cognitive and somatic arousal, thus modifying the HPA axis and the autonomic nervous system (ANS; Khalsa, 2004a). Regular meditative practice leads to improved ANS regulation (Benson, Dryer, & Hartley, 1978; Benson, Greenwood, & Klemchuk, 1975; Wallace, Benson, & Wilson, 1971), attention and focus (Brefcynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007), social connection (Bob et al., 2012; Van Leeuwen, Singer, & Melloni, 2012), emotional regulation (Jazaieri et al., 2014), pain reduction (Khusid & Vythilingam, 2016b), and immune and inflammatory function associated with changes in genetic expression (Bhasin et al., 2013; Dusek et al., 2008). Mindfulness practices have also been shown to produce positive effects on psychological well-being (Carmody & Baer, 2008), reduce symptoms of depression and/or PTSD (Banks, Newman, & Saleem, 2015; Khusid & Vythilingam, 2016a), and enhance cognitive functioning (Jha, Krompinger, & Baime, 2007; Ortner, Kilner, & Zelazo, 2007; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010).

Multiple meditative modalities, including transcendental meditation, mindfulness, guided imagery, progressive muscle relaxation, autogenic training, body scan, tai chi, qigong, loving kindness meditation, and yoga can successfully elicit the relaxation response (Benson & Proctor, 2010). Two main factors appear to link these diverse practices:

1. A repetitive mental focusing tool. This can involve focus on an external stimulus or on one's breath, a thought, or other bodily sensation such as physical movement.

2. A quiet, aware, nonjudgmental attitude toward sensations that arise during the meditative practice. This practice involves trust in the process and freedom from worry, and allows the mind to drift to other areas of focus and simply acknowledge this shift and gently redirect the attention to the chosen mental focusing tool without giving the momentary distraction another thought (Benson, Beary, & Carol, 1974; Park et al., 2013).

Goyal and colleagues (2014) recently published a systematic review and meta-analysis evaluating the evidence regarding the benefit of meditation programs for psychological stress and well-being. Movement-based meditation programs, such as yoga and tai chi, were excluded. The review only evaluated randomized controlled trials (RCT) of structured meditation programs that used control groups where the time and attention provided to participants were comparable to the meditation group. The analysis was separated into nonspecific active controls and specific active controls that included interventions such as exercise and progressive muscle relaxation. The research team reviewed over 18,000 studies and found 46 trials totaling 3515 participants who met their strict criteria. The study found that meditation programs have moderate evidence for improvement in anxiety, depression, and pain, and low evidence for improvement in stress/distress, negative affect, and quality of life. Meditation interventions have been found to have comparable results to antidepressant interventions, with the added benefit that meditation lacks the adverse effects associated with antidepressants, and may be especially useful for patients who do not want to take medications. According to Goyal et al. (2014), the body of evidence remains insufficient to determine the effects of meditation on positive affect, attention, sleep, and substance use. One significant weakness in the studies evaluated was the short period of follow up, typically no more than a few months after the intervention. Meditation is based on regular practice, and much like regular exercise, the positive effects of meditation on psychological and physical health may continue to expand

over time. When meditation practice becomes a long-term habit, there is the possibility for a profound benefit. More studies are needed to evaluate the potential clinical benefits of long-term practice on military health concerns (Millegan, Morrison, Bhakta, & Ram, 2014).

Resilience is strongly associated with cognitive reappraisal or the ability to monitor and assess negative thoughts and replace them with more positive ones (McRae, Ciesielski, & Gross, 2012). Reappraisal as a strategy for emotion regulation and resilience involves changing the way one views events or situations (Gross, 2002). Mindfulness practices have been shown to change self-perspectives associated with resilience. Hölzel et al. (2011) proposed a mechanism of action by which mindfulness meditation works to enhance the capacity for self-regulation. Specifically, Hölzel suggests that mindfulness practices focused on interoceptive awareness are associated with neuroplasticity in the brain, specifically within the anterior cingulate cortex, insula, temporoparietal junction, and frontolimbic network. Hölzel asserts that interoceptive awareness enhances the capacity for self-regulation and self-control, through a process of reappraisal, exposure, extinction, and reconsolidation, resulting in changes in self-perception. Mindfulness practices involving focused interoceptive awareness may work through these mechanisms of enhanced self-regulation and reappraisal to enhance resilience.

Although these two studies focused exclusively on meditation, many programs include meditation as part of a multimodal intervention combined with other biopsychosocial modalities such as movement-based mindfulness, cognitive behavioral therapy, positive psychology, sleep hygiene, and the promotion of social connection. The combination of multiple practices to improve stress management and resilience may produce synergistic benefits beyond any single-modality effort on its own, and should be evaluated in clinical trials.

Programs such as the Mind–Body Medicine program at the Naval Medical Center in San Diego (NMCS), California, are developing innovative ways to integrate meditation and other resiliency self-care modalities into health care plans. Mind–body practices are now part of the

treatment protocol for emotional stress, chronic pain, and pregnancy, and are taught to assist in improving the resiliency of health care providers themselves. The core program lasts for 7 weeks and consists of weekly two-hour sessions. The program focuses on establishing a regular meditation practice, integrating sleep hygiene habits, cognitive restructuring, and positive psychology techniques, and strengthening social connections. An internal program evaluation (by the US Navy) of participants in a Mind–Body Medicine program at NMCS D showed that those who completed the program greatly value the experience, internalized the material, created a regular meditation habit, and demonstrated statistically significant improvement in depression, anxiety, overall functioning, and quality of life compared to controls (Millegan et al., 2016). The program was awarded the 2015 Military Health System Trailblazer Award, which recognizes the most promising novel initiatives that demonstrate a positive impact on health and readiness throughout the Armed Forces. Meditation programs at Departments of Veterans Affairs also show promise for reducing PTSD symptoms in veterans (Heffner, Crean, & Kemp, 2016).

The case of a US Marine suffering chronic pain from combat injuries and with no prior exposure to meditation illustrates how these principles can be effective. Four months after completing the meditation program, the Marine had sustained a daily meditation practice. He also reported that, even though the pain intensity remained the same, he experienced substantial improvements in emotional health, perceived disability, and quality of life (Millegan et al., 2014).

Nassif et al. (2015) also explored the effectiveness of meditation for relief of chronic pain in veterans. This study found that veterans with moderate traumatic brain injury (TBI) reported medium to large effects on reductions in pain intensity, and large effects on reducing the extent to which pain interfered with their daily life activities (walking, sleep, interpersonal relationship, and general enjoyment of life). This study concluded that meditation is a promising self-management approach for chronic pain in veterans, even those with moderate TBI.

CIH offers a wide variety of beneficial mind–body practices that offer service members a range of options, thus allowing service members to find the modalities they prefer and are most likely to incorporate into their self-care routines. Several DoD-sponsored websites have been created to offer mindfulness approaches. Examples of these include the Relax–Relax and the NMCS D Mind Body Medicine site (Navy and Marine Corps, n.d.; Naval Medical Center San Diego, 2016). The National Center for Telehealth & Technology (T2) has created multiple DoD-sponsored applications such as Breathe2Relax, Mindfulness Coach, and the Virtual Hope Box (See also Campise et al., Chap. 26, this volume). These resources have been developed to aid service members in gaining exposure to multiple modalities to provide assistance with maintaining a practice through recorded guided meditations and to download an electronic means of tracking progress while developing a habit.

The Use of Yoga

Yoga is a multidimensional system of practices, including physical exercises, breathing techniques, visualization techniques, and meditation/relaxation practices. The physical exercises and postures of yoga emphasize flexibility, strength, and endurance, and facilitate breathing techniques that can result in relaxing psychological and physiological changes.

Extensive research conducted outside the United States indicates that individuals who practice yoga experience many health benefits, including muscle endurance, flexibility, and maximal oxygen consumption (Tran, Holly, Lashbrook, & Amsterdam, 2001). Research on yoga practitioners has also reported positive results for the reduction of stress activation within the ANS (e.g., lowered secretion of cortisol and catecholamines; Khalsa, 2004b). The physiological counterbalance to stress is the relaxation response—a form of meditation (previously described) that results from practicing yoga. This response allows the individual to decrease cognitive and somatic arousal, thus modifying the HPA axis and the ANS.

In the civilian population, yoga interventions have been shown to produce many psychological and physiological benefits. A review study examining multiple schools of yoga from nine different countries found that 12 out of 17 studies reported positive psychological or physiological changes, and that yoga was a promising modality for stress reduction (Sharma, 2014). Reports have also shown that yoga can reduce stress for people who work in high-stress occupations, such as school employees (Nosaka & Okamura, 2015) and hospital staff (Bernstein et al., 2015). Studies have found yoga to be effective in improving sleep quality (Khalsa, 2004a), mood, psychological adjustment, physical and emotional awareness, trust (Dale et al., 2009), quality of life (Chung, Brooks, Rai, Balk, & Raie, 2012), flexibility (Chen et al., 2010), and physical health (Chung et al., 2012). Additionally, yoga has been found to decrease the symptoms of eating disorders (Dale et al., 2009), depression (Coeytaux et al., 2014; John, Sharma, Sharma, & Kankane, 2007; Vedamurthachar et al., 2006), anxiety (Bonadies, 2004; Chung et al., 2012; Stoller, Greuel, Cimini, Fowler, & Koomar, 2012), and migraines (John et al., 2007). Studies of patients with breast cancer found yoga reduced symptoms of depression, anxiety, and postchemotherapy nausea frequency when compared against a control or comparison group (Rao, Nagarathna et al., 2007; Rao, Raghuram, Nagendra, Gopinath et al., 2009; Rao, Raghuram, Nagendra, Usharani et al., 2015). Researchers who evaluated the effects of yoga on patients with breast cancer undergoing radiotherapy found that the yoga group reported decreases in anxiety and perceived stress. These patients had lower salivary cortisol levels, suggesting lower levels of stress (Vadiraja et al., 2009). Yoga practices may also be helpful to civilian adults who have suffered from traumatic brain injuries. After participating in weekly yoga classes for several months, adults with TBI showed improvements in respiratory functioning, and reported increases in physical and psychological well-being (Silverthorne, Khalsa, Gueth, DeAvilla, & Pansini, 2012). Importantly, researchers are exploring the effects of yoga in military and veteran populations who experience high levels of stress.

Results of civilian programs have influenced the implementation of yoga programs for active

duty, reservists, and veterans. Several studies have shown the benefits of various types of yoga on active duty and veteran populations. One study, which supported the use of hatha yoga for proactive health, evaluated the effects of a 3-week yoga intervention on Air Force and Army service members deployed in a forward-operating base in Iraq. This study concluded that the yoga treatment program resulted in decreased state and trait anxiety below already normal pretest scores, suggesting a positive effect on stress reduction in a particularly stressful operating area. The practice of yoga in this population also resulted in higher overall quality-of-life levels when compared to a control group (Stoller et al., 2012).

Yoga may also be an effective therapy for the reduction of PTSD symptoms. In a pilot study, veterans attended a yoga program twice a week for 6 weeks totaling 12 one-hour sessions. In this study, veterans experience a significant decrease in PTSD hyperarousal symptoms and aspects of sleep quality, though not total PTSD scores. (Staples et al., 2013). Military combat veterans who participated in weekly yoga nidra meditation (a deep relaxed state between awake and sleep, in which one remains conscious) reported decreased rage, emotional reactivity, and anxiety. They also reported increased self-efficacy, self-awareness, and relaxation (Stankovic, 2011). A study involving a yoga intervention for 12 subjects who were either current or former military personnel with PTSD found reduced PTSD symptoms for participants (Johnston et al., 2015). In a comprehensive 2014 review of nondrug pain care modalities, the authors concluded the literature supports a weak recommendation of yoga to treat chronic low back pain, osteoarthritis pain, fibromyalgia, chronic migraine, and tension headaches. Yoga was demonstrated to be a safe and variably effective practice (Lee, Crawford, & Schoemaker, 2014).

The Use of Tai Chi and Qigong

“Tai chi and qigong are centuries-old, related mind and body practices. They involve certain postures and gentle movements with mental focus, breathing, and relaxation. The movements can be adapted or practiced while walking, standing, or sitting.

In contrast to qigong, tai chi movements, if practiced quickly, can be a form of combat or self-defense” (National Center for Complementary and Integrative Health, 2016). The Department of Veterans Affairs Health Services Research and Development Services, Evidence-based Synthesis Program, Quality Enhancement Research Institute (QUERI), published its *Evidence Map of Tai Chi* in September 2014 (Hempel, Taylor, Solloway, Miake-Lye, Beroes, Shanman & Shekelle, 2014). The report by Hempel, Taylor, Solloway, Miake-Lye, Beroes, Shanman, & Shekelle (2014) synthesizes information from 107 systematic reviews published in peer-reviewed literature to inform VA leaders during policy deliberations. As a practice, tai chi is designed to incorporate low-impact movements with a focus on the breath and mind to achieve greater awareness, inner peace, and well-being (Hempel et al. 2014). The authors report statistical significance for health effects for COPD, pain, balance, confidence, depression, and muscle strength—but caution—there are few high-quality, randomized control trials. To date, no research has been published on the effects of tai chi or qigong on a military population.

The report by Hempel et al. (2014) found no evidence to support tai chi as an effective treatment for diabetes, aerobic capacity, falls in institutions, or life participation. In a comprehensive 2014 systematic review, 3145 RCTs were identified for self-care movement therapies for chronic pain. After screening, seven qigong and ten tai chi RCTs were detailed by the authors and then accessed by a panel of experts. The experts gave tai chi a weak recommendation in its application in chronic low back pain, osteoarthritis pain, fibromyalgia, chronic migraine, and tension headaches. For qigong, the expert panel concluded the quantity and quality of the evidence was insufficient to make a recommendation for its use in chronic pain syndromes studied: neck pain, fibromyalgia, and complex regional pain syndrome (Lee et al., 2014).

In a 2015 RAND Corporation report, Ayer et al. noted tai chi was an alternative care modality offered to patients referred for problems associated with post-traumatic stress disorder and trau-

matic brain injury at the National Intrepid Center of Excellence, Bethesda, MD. In 2016, tai chi was offered within the Integrative Health and Wellness Program at the Washington DC Veterans Affairs Medical Center (Integrative Health and Wellness Program, 2016). Clinician advisory bodies and administrators there, in coordination with the VA National Credentialing Office, approved procedures by which the credentials of tai chi practitioners could be reviewed so that these modalities could be offered to medical center beneficiaries receiving wellness program services (Integrative Health and Wellness Program, 2016). The US Military installations that host Morale, Welfare, and Recreation (MWR) programs can offer tai chi on military bases. In 2014, Air Force policy categorized tai chi as a “fitness program beyond core” that can be made available at the squadron or flight commander’s discretion for a fee (Air Force Fitness and Sports Programs, 2014).

The Use of Acupuncture for Pain and PTSD

While Western medicine emphasizes medication in most medical settings as the mainstay of treatment for pain, patients increasingly request CIH therapies when traditional therapies fail. Though the evidence for acupuncture is mixed due to limitations in methodology and feasibility, it is a popular CIH therapy in the United States for both acute and chronic pain (Acupuncture: EBM Guidelines, 2014; NIH Consensus Development Panel, 1998). A recent evidence-based synthesis review reported that back pain, headaches, and chronic pain had the most literature supporting acupuncture therapy. In addition, acupuncture therapy also positively affected pain, overall wellness, and mental health (Hempel et al., 2014). An extensive meta-analysis compiled in 2010 also found compelling evidence that acupuncture is useful in treating chronic back and neck pain, and recommends acupuncture as a reasonable referral option” (Vickers et al., 2010). In the past, the American Pain Society and the American College of Physicians (ACP) had issued clinical practice

guidelines recommending acupuncture as one of several CIH approaches that physicians should consider when patients with chronic low back pain do not respond to pain medication or other standard approaches (Chou & Huffman, 2007). The newest clinical practice guideline from the ACP now recommends nonpharmacological therapies (including acupuncture, massage, and osteopathic manipulation) as first-line for acute, subacute, and chronic low back pain (Qaseem, Wilt, McLean, & Forciea, 2017). The US Department of Veterans Affairs Opioid Safety Initiative recommends the use of acupuncture as a first-tier approach to treatment of chronic pain syndromes as part of an initiative to reduce the use of addictive opioids in treating pain (U.S. Department of Veterans Affairs, 2014).

Auriculotherapy (ear acupuncture) uses somatotopic representations of the human body (homunculus) via corresponding points on the ear. Auricular acupuncture, coined “Battlefield Acupuncture” because of its effective use in combat, has been studied for its use in treating both acute and chronic pain. This type of acupuncture is being used by a growing number of clinicians to treat pain conditions in both combat and non-combat environments (Niemtzow, 2007).

Research has been limited in the field of auriculotherapy. A small, randomized controlled trial (RCT) of 94 female patients with acute migraines demonstrated that auriculotherapy provided short-term pain relief when specific auricular acupoints were used (Allais et al., 2011). Interestingly, the therapeutic efficacy of somatic acupuncture (acupuncture done on the body itself) was not increased with the addition of auriculotherapy in a study of cervical myofascial pain (Ceccherelli et al., 2006). In addition, evidence from Cochrane reviews concerning the use of acupuncture for lower back pain and neck disorders illustrates that acupuncture has a moderate effect at best for short-term results (Furlan et al., 2005; Trinh, Graham, Irnich, Cameron, & Forget, 2016). Auriculotherapy has also proven to be effective for chronic pain in patients with cancer who report pain intensity decreasing by 36% from baseline after 2 months versus placebo (Hinman et al., 2014). In addition

to auriculotherapy, patients have also used somatic acupuncture to treat chronic pain. According to Vickers et al. (2012), when compared with placebo, acupuncture demonstrated larger decreases in osteoarthritis pain, chronic headaches, and back and neck pain. Additional RCTs reinforced these findings (Berman et al., 2004; Khusid, 2015; Vickers et al., 2004).

The use of acupuncture has expanded to include treatment for psychiatric disorders, such as post-traumatic stress disorder (PTSD). Moderate evidence supports acupuncture use for PTSD treatment. A large systematic review of RCTs in 2013 stated that the evidence for using acupuncture as a treatment for PTSD is “encouraging” but not fully formed (Hempel, Taylor, Solloway, Miake-Lye, Beroes, Shanman, Booth, et al., 2014). However, as early as 2007, a RCT with three arms (acupuncture versus cognitive behavioral therapy (CBT) versus wait-list controls) yielded a large treatment effect in favor of acupuncture over control. Furthermore, both acupuncture and CBT maintained symptom reduction at a 3-month follow-up (Kim et al., 2013). A 2007 study illustrated that manual stimulation of acupuncture points (acupoint tapping) combined with psychological exposure resulted in rapid attenuation of threat responses to innocuous stimuli (Hollifield, Sinclair-Lian, Warner, & Hammerschlag, 2007). More recently, a 2014 randomized effectiveness trial examining 55 service members found that a brief course of acupuncture reduced symptoms of PTSD (Engel et al., 2014).

Acupuncture, in both somatic and auriculotherapy forms, is widely used throughout the United States and the world for various ailments and diagnoses. Given its relative safety and low cost, acupuncture is widely accepted as an adjunct treatment for pain and has become an emerging option for PTSD. Acupuncture may be a form of treatment that behavioral health providers could add to their skill sets. Initial evidence is promising and supports the current use of acupuncture as standard-of-care treatment in the military. Rigorous studies are needed to further define the mechanisms of action and clinical benefits of acupuncture for pain and PTSD.

Feasibility and Relevance of Meditation in an Operational Setting

Although evidence exists regarding health benefits of meditation for people coping with chronic stress and numerous health conditions (Crawford et al., 2013; Goyal et al., 2014; Samuelson et al., 2010), questions remain as to whether mind–body programs can have a positive impact in an operational setting among healthy, young service members, and whether it is possible to convince young service members to begin and sustain a meditation practice. A research team from Georgetown University set out to answer these questions (Johnson et al., 2014). They implemented Mindfulness-Based Mind Fitness Training (MMFT) among infantry Marines undergoing precombat deployment training with evaluation specifically focused on the Marines' response to the high-intensity Infantry Immersive Trainer (IIT). MMFT is an 8-week course administered through eight 2-hour sessions and a 4-hour workshop. The course refines mindfulness skills in order to emphasize the developments of introspective awareness, attentional control, and tolerance of present-moment experiences. Participants were expected to practice 30 min of mindfulness exercises daily throughout the program (Johnson et al., 2014). In this MMFT study, eight Marine infantry platoons were randomly selected and further randomized to receive either MMFT along with predeployment training or training as usual. The sample was tested at baseline, 8 weeks after baseline, during the IIT, and after its completion. The results showed that those who participated in MMFT exhibited greater heart rate reactivity during combat drills and enhanced recovery of heart rate and breathing rate after stressful training. Those who participated in MMFT had lower plasma NPY levels after training, suggesting more efficient self-regulation. They also demonstrated attenuated blood oxygen level dependent signal in the right insula and anterior cingulate on fMRI, suggesting that MMFT Marines did not need to expend as much cognitive effort to down-regulate negative emotions and control impulsive actions (Johnson et al., 2014).

A later study demonstrated that MMFT participants could sustain performance on the Sustained Attention to Response Task (SART) after participating in high-demand training compared to controls (Jha et al., 2015). Military service members have a strong tradition of valuing physical fitness to maintain a ready fighting force. The experience of MMFT suggests that emphasizing meditation as a form of “mental fitness” may be a particularly powerful strategy for engaging this population in mindfulness practice.

Mindfulness, Sports Psychology, CBT Multimodal Application with Fighter Pilots and EOD Technicians

Integrating mindfulness and sport psychology skills into military populations who rely on skills related to processing information flow and prioritizing decision-making in milliseconds is essential for optimal performance. Such mental skills are vital tools in preparing for and strengthening physical and psychological recovery from challenges, traumatic experiences, exertion, stress, anxiety, and a number of other experiences. Furthermore, when talent, skills, athleticism, and physical fitness become uniform at the master level, mental skills will separate the elite. In developing and enhancing mental skills to prepare for high stress environments, fighter pilots and explosive ordnance disposal (EOD) technicians can become more elite in their confidence to face challenges and overcome struggles.

A variety of exercises can aid in enhancing mental skills. According to Janelle and Hatfield (2008), arousal regulation, as well as more acute focus and attention, can enhance both military and sport performance. Training such mental skills enhances and maximizes perceptual–cognitive autonomous decision-making in duty training, thus eliciting an increase in the level of performance (Ward et al., 2008). When fighter pilots and EOD technicians master their decision and reaction times with information available, they must also remain calm, poised, and extremely focused.

Multimindfulness-based approaches are being used for performance enhancement within military operations. Such training has already been established for professional athletes (Lavallee, Kremer, Moran, & Williams, 2004). It has also been established for a unique military population in a program called the Performance Improvement Program (PIP; Gassaway & Christopherson, 2014). PIP specifically targeted the needs of F-16 fighter pilots and Explosive Ordnance Disposal (EOD) technicians who tend to work in higher stress and more technologically saturated environments than most military members. PIP was created at Luke Air Force Base to develop better functioning, resilience, and mission readiness. This training is an integration of mindfulness, sports psychology, and cognitive-behavioral therapy. PIP participants met for 60–90 min sessions once or twice a week for 8–12 weeks.

Participation in PIP resulted in improvements in test scores for instructor pilots, despite baseline scores already being in the 90th percentile on the Trail Making Test—Forms A & B. The student pilots who attended PIP training improved their reaction time, ability to divide attention, and motor dexterity. Additionally, anecdotal reports from the student pilots included improvements in sleep, daily stress, and confidence (Gassaway & Christopherson, 2014).

EOD technicians who completed the program were tested using an EOD acuity test specifically designed for mission/duty-simulated tasks in addition to the Trail Making Test—Forms A & B. PIP participants made less mental errors and performed with greater efficiency than their control group peers in the EOD acuity test. Results also showed significant improvement in motor dexterity, visual scanning, divided attention, and processing speed (Gassaway & Christopherson, 2014). Processing speed is particularly important, in an occupation such as EOD and fighter pilots, where a split second can mean the difference between life and death.

Performance Improvement Program training was associated with better capabilities of: overcoming stress, diversifying skills across domains, regulating arousal level, increasing confidence and physical and psychological awareness, improving

goal-setting skills, more positive self-talk, imagery for performance improvement, improving focus and attention skills, and decreasing reaction time (Gassaway & Christopherson, 2014). Using the skills (Mindfulness, Sport Psychology, Cognitive Behavioral Therapy) from PIP training, fighter pilots and EOD technicians enhanced their performance, demonstrated resiliency, and outperformed their colleagues. Programs such as PIP may benefit military personnel across a variety of well-being dimensions (See also Bowles et al., Chap 14, this volume).

Future Directions and Conclusion

Mindfulness techniques and related alternative approaches continue to grow in popularity of use in both military and civilian sectors of the population, with promising research supporting their use. Mindfulness approaches, and their utilization of the relaxation response and other such skills, would potentially benefit service members and their families. Mindfulness approaches may provide stress reduction and performance improvements by mitigating prolonged negative stress that can reduce physical and psychological effectiveness. Service members, veterans, and their families, who are adversely impacted by OEF, OIF, OND, OIR, and OFS, may not desire mental health treatments due to stigmatization or not having access to treatment. In the case of individuals who do not desire mental health treatment, evidence-based alternative treatment options such as meditation, yoga, acupuncture, etc. may offer immense benefits as resilience-building tools. These mind-body practices may also prove useful for those who are receiving treatment provided by mental health care providers. To date, research has been done in a variety of populations and shows varying degrees of improvements in perceived stress, physiological stress, sleep assessment, and mood states after participation in yoga, meditation, acupuncture, tai chi, and qigong. Both meditation and yoga research studies suggest promising results in the field of mindfulness. When provided in conjunction

with traditional mental health treatment, yoga and meditation interventions offer a unique self-management approach for a military population. While less research has been conducted in tai chi and qigong, Chinese medical approaches such as acupuncture have been found to be an effective alternative approach to treat pain and PTSD in veterans.

Questions remain about translating research findings into practice, whether it is in military clinical practice aimed at mitigating symptoms of disease or condition, or if it is in programs aimed at improving performance, or building strength through hardiness, resilience resulting in greater well-being capacity. The future application of mind–body modalities perhaps bifurcates into two interdependent pathways—clinical practice and military life.

In clinical practice, translational research requires participation by clinicians who understand the nature of military populations, their problems, their resources, constraints, and limitations of the operational and Garrison clinical settings. These clinicians will be qualified to make good decisions about indications for the use of mind–body modalities, dosing, methods of delivery, and the measures of cost, patient satisfaction, and effectiveness.

Additionally, in the military life space, translational research requires the participation of the military leaders, military family members, and community leaders who understand the nature of the population and operational circumstances. This understanding would include this population's state of fitness and the essential capabilities needed in garrison (home base/home port), field, deployment settings, and mobilized situations. Further understanding of military life space limitations, opportunities, constraints, and priorities is also significant to ensure proper allocation of resources to programs that deliver and train mind–body practices to support and improve the performance of the total force effectively.

Because military service may require prolonged exposure to high stress environments, military leadership must continue searching for strategies to mitigate this stress for mission effec-

tiveness and long-term health of service members. We advocate for the greater use of mindfulness approaches in the US DoD, VA, intelligence community, and other parts of the government and civilian community to function as ancillary treatments for behavioral health and performance enhancement in operational settings. Acupuncture should continue to be expanded for use across medical treatment facilities with training for behavioral health providers for pain reduction and PTSD. Tai chi and qigong should continue to be encouraged as alternative cross-training for military and government fitness programs.

Further research is needed for the complementary and integrative health approaches addressed in this chapter. Most existing studies were conducted in specific populations, under unique controlled conditions, and without the use of a randomized control group, and more research has probably been performed outside the United States. Future research interventions should be designed to be practical and employ easy-to-learn mindfulness practices or examine alternative approaches that are realistic to practice or administer by a practitioner.

Policy changes need to be made to provide service members with nonclinical and/or clinical practitioners, as suggested in the following recommendations:

- Leaders and providers can encourage service members to attend mindfulness resilience-building education as a first option to reduce stress and/or to improve performance. Training should be held in locations outside of behavioral health such as performance enhancement centers or inside their organization with the unit master resilience trainer or master mindfulness trainer (trained in mindfulness).
- Leaders can establish locations for service members to recharge through mindfulness resilience-building techniques in their established operating areas, during regular training cycles, and in military schools. We need to establish these programs in standard settings to build fitness, resilience, and well-being to enable successful adaptability and prevention

of physical and psychological conditions as well as social conditions.

- Behavioral health care providers and nonclinical providers such as master mindfulness trainers need to be co-located at these centers to reduce stigmatization, and to determine if a behavioral health condition warrants further treatment.
- Behavioral health care providers in primary care settings can offer effective CIH approaches to service and family members in this and other medical settings. With this innovative approach, business practices for workload can be applied to assure these CIH practices are offered in military medicine.

Mindfulness approaches need to be designed so that components of such interventions can be practiced virtually any time to mitigate stressors. While conducting mindfulness research, the intervention should use a self-management approach, which allows individuals to use the treatment to maintain a desired mental and physical fitness state when faced with future stressors. Mind-body practices can provide both the benefit of relaxation and increased ability to manage stress, with less, if any, stigmatization. These approaches can also have a positive impact on almost all members of the military who are open to these techniques by enhancing performance, resilience, and overall well-being.

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Stephen V. Bowles, Paul T. Bartone, David Ross,
Marissa Berman, Yaron Rabinowitz, Sarah Hawley,
Denise M. Zona, Margaret Talbot,
and Mark J. Bates

Well-being is vital to the success of military operations and to the health and fitness of service members and their families. The armed forces demand a physical and emotional capacity from service members that is distinct from other occupations. Service members receive

extensive physical and mental training before being employed to assure that they can successfully contribute to operations. Even with this training, service members and their families face unique threats to well-being. Some of the most important distinctions between military personnel and their civilian counterparts involve the stress associated with deployments, extended periods away from home, additional workload (deployed service members' duties) while in Garrison, and frequent moves. For service members, stressors include combat exposure, deployments, and poor marital quality, all of which can impact well-being (MHAT-9). For spouses, factors that negatively impact well-being include moving to and living in foreign residences, family separations, and the risk of service member death or injury (Burrell, Adams, Durand, & Castro, 2006). We have organized these stressors into three domains of well-being. On conceptual grounds, we categorize well-being into three broad domains (*Work*, *Life*, and *Work–Life* overlap), under which 19 dimensions are subsumed. Stressors in the *Work* domain for well-being are risk of injury or death, negative leadership, repeated deployments, and/or separations from family. Stressful demands in the *Life* domain are partner violence, divorce, and financial difficulties. Demands in the *Work–Life* domain are work–family conflict, household moves, post-deployment reintegration, and psychological and

S.V. Bowles • P.T. Bartone (✉)
National Defense University, Institute for National
Strategic Studies, Center for Technology and
National Security Policy, Washington, DC, USA
e-mail: dr.stephen.bowles@gmail.com

D. Ross
10th Special Forces Group (Airborne),
Fort Carson, CO, USA

M. Berman
VHA National Center for Organization Development,
Cincinnati, OH, USA

Y. Rabinowitz
United States Navy, Camp Lejeune, NC, USA

S. Hawley
Uniformed Services University of the Health
Sciences, Bethesda, MD, USA

D.M. Zona
Ramstein Air Base, Ramstein-Miesenbach, Germany

M. Talbot
University of Colorado, Colorado Springs,
Colorado Springs, CO, USA

M.J. Bates
Deployment Health Clinical Center, Defense Centers
of Excellence for Psychological Health and
Traumatic Brain Injury, Silver Spring, MD, USA

physical combat injuries. In this chapter, we describe the three domains and identify the 19 dimensions that compose service member well-being. Additionally, we provide recommendations for five resources that can mitigate demands of the service member.

The Work dimensions of well-being include positive work environment and positive leader support, coworker support, trust in the leader and organization, negative supervision, job stress, realistic work demands, motivation, and job satisfaction. Life dimensions of well-being include friendship support, satisfaction with medical services, personal development, marital strength and family support, financial stability, and satisfaction in community. The Work–Life domain includes general well-being factors that cross over the Work and Life domains to include: emotional well-being; satisfaction with work, family, and leisure time; personal development; healthy habits; spirituality; leader and organization supporting the family; and community family support. This three-domain model delineates the well-being dimensions that can enrich the lives of service members. The five resources that can mitigate stressful demands and buffer against threats for service member are: the service member, the service member’s family, various

care providers (e.g., behavioral health provider, primary care practitioners, chaplain), trainer-educators, and leaders who educate and/or coach service members and their families. Each of these resources provides a critical role in helping the service member maximize well-being and reap specific adaptive outcomes. Figure 14.1 provides a visual depiction of the demands, resources, well-being domains, and adaptive outcome for the service member. Within this framework, the dimensions of well-being can also at times be resources or demands.

Well-being is critical for high-demand occupations like the military. Other high-demand occupations in the government and public sector, including federal intelligence agencies, police and firefighters, emergency medical services, and industry sectors, face some similar demands, challenges, and limitations. Service members and workers in high-demand occupations are routinely involved in complicated, time-consuming, and dangerous around-the-clock operations that are inherently stressful and can significantly impact well-being. Moreover, military personnel can be required to relocate to remote locations, may be restricted in the ability to resign from their positions, and are prevented from joining unions that negotiate in favor of their workplace rights. Due

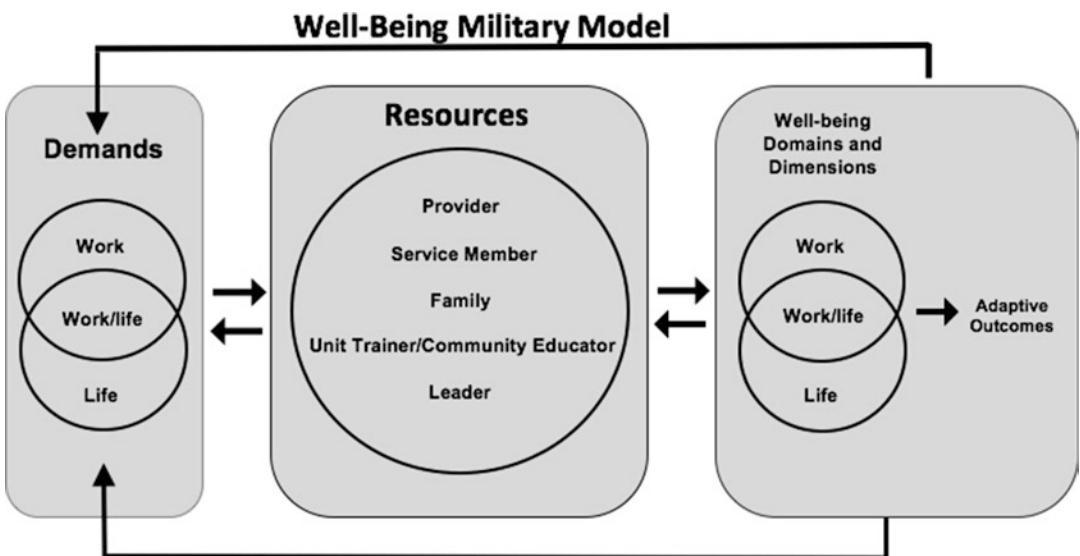


Fig. 14.1 A model of well-being in the military

to the high-risk nature of military operations in both peacetime and wartime, it is of special importance that providers, leaders, and other sources of support understand how best to promote well-being in service members and their families.

Well-Being: History, Definitions, and Dimensions

There is no consensual definition for well-being. As a construct, well-being overlaps with quality of life and wellness. Well-being has historically been approached in two distinct ways (Bates & Bowles, 2011). In the hedonic tradition, well-being is identified primarily with pleasure, happiness, and satisfaction in life. In contrast, the eudemonic approach associates well-being with the pursuit and realization of purpose and meaning in life (Dodge, Daly, Huyton, & Sanders, 2012). Although the two approaches appear separate, they both involve an interrelated process wherein feelings and thinking reciprocally affect one another and influence how people react in certain situations (Moore, Bates, Brierley-Bowers, Taaffe, & Clymer, 2012). Dodge and colleagues (2012) note that several researchers now believe well-being is multidimensional. Gallup researchers describe well-being as

... the combination of our love for what we do each day, the quality of our relationships (career and social well-being), the security of our finances, the vibrancy of our physical health, and the pride we take in what we have contributed to our communities. Most importantly, it's about how these five elements interact. (Rath & Harter, 2010, p. 4).

Rath and Harter's dimensions of well-being are also found in the well-being military model. Similarly, this multidimensional approach is found in Seligman's book, *Flourish*, in which he identifies five dimensions of well-being that include positive emotion, engagement, meaning, accomplishment/achievement, and positive relationships (2011). The military well-being model dimensions listed in parentheses are next to Seligman's five dimensions and can be found or inferred for the well-being model elements of positive emotion (emotional well-being), engage-

ment (motivation and job satisfaction, trust in leadership), meaning (personal development), accomplishment/achievement (motivation and job satisfaction, healthy habits), and positive relationships (marital and family strength, friendship, coworkers, trust in leadership).

We define well-being as an ongoing integration process of the level of happiness, meaning, and/or satisfaction experienced in the dimension(s) of life and/or work being engaged (Bowles, 2014). This chapter examines well-being in military service members and their families, and suggests that well-being can be conceptualized using the aforementioned Work, Life, and Work-Life domains. These dimensions were developed through focus groups with soldiers, additional research conducted on well-being (Bowles, 2014; Bowles, Cunningham & Jex, 2008; Jex, Cunningham, Bartone, Bates & Bowles, 2011), and literature reviews. These dimensions were developed earlier as part of the Work-Life Well-Being Inventory, designed specifically to assess service member well-being and have been conceptualized into different domains previously as well (Bowles, 2014; Bowles et al., 2008; Jex et al., 2011). The leader and organization supporting the family dimension was the only dimension theoretically derived for this model. The 19 dimensions that influence well-being are divided into three domains, which are listed in Fig. 14.2. These dimensions in the Work-Life Well-being Inventory look at the positive functioning of individuals. Joseph and Wood (2010) called for psychologists to use this type of positive approach to assessment as opposed to focusing on negative functioning.

In what follows, we describe the dimensions in each well-being domain and discuss the relevant supporting literature. Based on this literature, we provide recommendations for providers, educators, and leaders for ways to enhance the well-being of military members and families. We also suggest self-management approaches that can help service members preserve and increase their well-being. Self-management tools such as books, Internet, phone application for areas such as mindfulness, finances, stress management, and sleep, to mention a few, can promote behavioral changes and good life decisions. Readers may

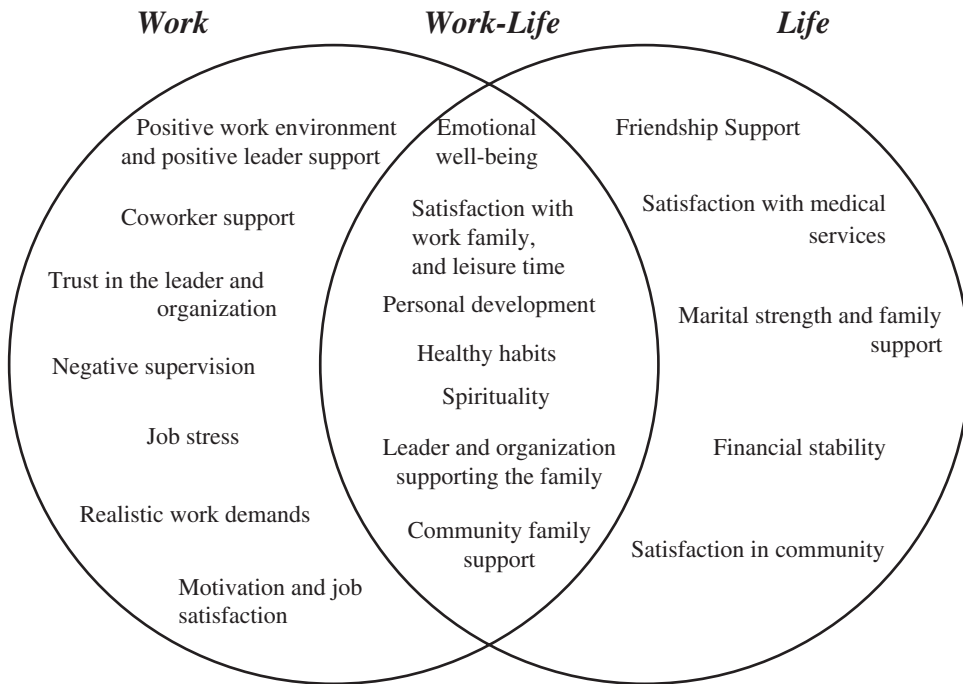


Fig. 14.2 The three domains of well-being and their interface

find more self-management tools at Military One Source, a free resource that offers health and wellness coaches to help service members accomplish goals and improve their well-being (Military One Source, 2017).

Work Domain: 7 Dimensions of Work Well-Being

Positive Work Environment and Positive Leader Support

Positive leader support in a positive work environment is an environment with a competent supportive leader that strives to enhance morale and culture at work (Bowles, 2014). The literature on well-being in professional environments highlights several factors relating well-being to positive work environment and positive leader support. There is moderate evidence that employee work well-being, as demonstrated through employee sick leave and disability pensions, is related to positive relationships with

leadership (Kuoppala, Lamminpää, Liira, & Vainio, 2008). Research has found that leaders with active and supportive styles can positively impact employee well-being (Van Dierendonck, Haynes, Borrill, & Stride, 2004). Research has also found that employees reported lower burn-out in work environments in which supervisors rated high on consideration (Seltzer & Numerof, 1988). This research suggests a relationship between positive interactions with an organizational leader and employee well-being.

Transformational leadership may be a key element for leaders to maximize well-being among employees. It has been defined as that which “emphasizes satisfying basic needs and meeting higher desires through inspiring followers to provide newer solutions and create a better workplace” (Ghasabeh, Soosay, & Reaiche, 2015, p. 462). A longitudinal study found a relationship between managers trained in transformational leadership and positive employee sleep quality (Munir & Nielson, 2009). This study indicates that transformational leadership may influence well-being by creating a productive

relationship between employees and leaders and by supporting healthy habits such as sleep.

Research has shown that good leadership, along with the individual tendency to find benefits in adversity, may serve to buffer the potential ill effects of combat exposure, as evidenced by fewer PTSD symptoms (Wood, Foran, Britt, & Wright, 2012). In a study examining unit cohesion and PTSD in deployed UK service members, perceived interest of leaders in their service member thoughts or actions was associated with a reduced probability of PTSD (Du Preez, Sundin, Wessely, & Fear, 2012). The study suggests that positive leader support impacts the well-being of deployed service members in a military environment.

It is clear that supervisors and leaders influence the broader workplace dynamic and stressors that may threaten employee well-being. However, a more nuanced view of the research is appropriate to understand the positive leadership support dimension. For example, when examining military recruiters, a positive work environment is correlated with certain aspects of emotional intelligence: flexibility in adapting to new circumstances and environments, emotional awareness, happiness, empathy, and interpersonal relationships as well as agreeableness, adaptiveness, extroversion, and conscientiousness (Bowles, 2014). Thus, individual-level personality traits and emotional intelligence skills of soldiers also appear to have an impact on their experiences of the work environment.

Coworker Support

Another important factor in the cultivation of well-being among service members is coworker social support. Coworker support is feeling supported, respected, and valued as a team member by one's coworkers (Bowles, 2014). Generally, workplace social support can protect individuals from the harmful effects of stressors, such as work overload or job strain. Research on a random sample of Swedish workers found that employees who were socially isolated at work showed higher incidences of morbidity and mor-

tality, and had a higher risk for cardiovascular disease when compared with employees who worked alongside others (Johnson, Hall, & Theorell, 1989). A military study found that peer support was negatively correlated with turnover intention and positively related to job satisfaction in an Air Force military law enforcement agency (Sachau, Gertz, Matsch, Johnson Palmer, & Englert, 2012).

Cohesive unit culture describes units that are bonded and emotionally supportive of their members. In a sample of over 4000 male regular and reserve United Kingdom military members from all the services, researchers found that unit cohesion was correlated with a lower risk of PTSD and other common mental disorders for service members (Du Preez et al., 2012). As discussed, support of coworkers can lessen job strain and risks of associated illnesses, including heart disease, PTSD, and other mental disorders.

Trust in the Leader and Organization

Trusting a leader and organization means that a subordinate confidently relies on the leader to do what he says he will do, and experiences their organization's culture as consistent with standards. In general, greater trust has been related to greater well-being (conceptualized as health, happiness, and life satisfaction) especially among older adult populations when examining individuals from 83 countries (Poulin & Haase, 2015). In their study of trust and leadership in the People's Republic of China, Liu and colleagues described trust as it relates to leadership as a "positive perception or belief that followers are 'willing/obligated to be vulnerable' to their leaders" (Liu, Siu, & Shi, 2010). These researchers found that workers' trust in their leaders and perceived self-efficacy partially mediated the relationship between transformational leadership and employee satisfaction. Trust in the leaders and perceived self-efficacy also mediated the influence of transformational leadership on employee-perceived job-stress and stress symptoms (Liu et al., 2010). Similarly, in a sample of

Canadian forces, Tremblay (2010) found that employees' perceptions of leader fairness and trust in leaders were related to unit commitment (suggestive of work well-being). These findings suggest that trust plays a central role in the impact transformational leadership has on employee well-being.

In looking at the role of trust in the supervisor–trainee accountant relationship, Chughtai, Byrne, and Flood (2015) found that trust mediated the impact of ethical leadership on work engagement and emotional exhaustion. Ethical leadership describes when leaders exhibit and promote appropriate conduct in the workplace through their individual actions and interpersonal relationships. Chughtai et al. (2015) found ethical leadership fostered employees' feelings of trust toward their supervisors, which encouraged employees' work engagement and decreased their emotional exhaustion. In another study of trust among Spanish employees, researchers indicated that interpersonal trust was positively associated with job satisfaction, and work stress partially mediated this relationship (Guinot, Chiva, & Roca Puig, 2013). Thus, trust may serve as an important component of employee health and well-being that fosters positive relationships between leaders and their subordinates as part of a positive work environment.

Negative Supervision

Negative supervision describes instances in which a supervisor, superior, or leader is critical of an employee's work, engages in micromanagement, or sets unrealistic expectations of workers (Bowles, 2014). Mathieu (2012) examined literature on the role of managers' traits associated with personality disorder (psychopathic, narcissistic, and obsessive–compulsive) and found that behaviors such as dishonesty, unpredictability, and abusiveness could be toxic to employee well-being. Employees working for a supervisor whom they perceive to be abusive have reported reduced well-being in the form of general life dissatisfaction, job dissatisfaction, psychological distress, family and work–life con-

flict, and reduced organizational commitment (Tepper, 2000). The first four conditions are more pronounced for employees with less mobility to leave their jobs.

Finally, Kelloway and Barling (2010) conducted a review of the existing studies on the impact that leadership has on general occupational health and well-being. Generally, they found that abusive supervision was related to outcomes that hinder employee well-being, specifically manifesting as burnout, decreased self-esteem, increased employee stress, and decreased self-efficacy (Kelloway & Barling 2010).

Job Stress

Job stress refers to work demands that exceed one's resources and negatively impact the person and/or organization. Research has documented a significant relationship between job stress and adverse outcomes. Military job stress in particular has been observed to have a longitudinal impact on service members. Vinokur, Pierce, Lewandowski-Romps, Hofboll, and Galea (2011) found that exposure to combat trauma increased the likelihood of developing post-traumatic stress symptoms which, in turn, predicted reduction in adaptive resources, and perceived health and functioning. Just as an increase in job stress can have a detrimental impact on current and future well-being, reduction in job stress can also have a beneficial effect. In a study, low job stress among Army recruiters was found to be positively correlated with greater openness (Bowles, 2014).

In a review of psychological detachment (mentally separating oneself from work during nonwork time) by Sonnentag and Fritz (2015), those with a lack of psychological detachment were generally found to report greater stress symptoms, lower life satisfaction, and less work engagement. The authors did acknowledge that this "lack of detachment" may sometimes serve a positive purpose (such as when reflecting on positive work events or outcomes). In a study examining work well-being in a medical laboratory,

researchers identified four distinct factors to be related to work well-being: job satisfaction, burnout, work engagement, and job stress (Narainsamy & Van Der Westhuizen, 2013). In this work setting, the strongest component of well-being is job satisfaction. These studies indicate that well-being in the area of job stress is important for the workforce.

How stress is addressed by leaders has the potential to foster either a more positive or negative work environment, and in turn can affect stress levels of workers (Bartone, 2017). Gurt, Schwennen, and Elke (2011) sought to determine whether health-specific leadership practices, which can be thought of as a leader's explicit thoughts and actions to address the health of his or her employees, influenced employee well-being. They found that sound general leadership practices lowered job stress of employees of the German tax administration by reducing role ambiguity and producing a better climate for employees' health and job satisfaction (Gurt et al., 2011). The study shows that a leader's awareness of employees not only creates a more welcoming and positive work environment, but may also reduce job stress and enhance well-being.

Realistic Work Demands

Realistic work demands refers to the presence of clear, achievable, and reasonable work assignments (Bowles, 2014). The military has distinct and demanding work expectations to include service members taking on long hours and new leadership roles. Additionally, service members are expected to offer (unless they feel it is unethical or immoral) loyalty to a new leader, despite his or her ability, or inability, to lead. Within any given job assignment, being a valued member of the team is often based on how quickly you learn your new mission and contribute to the success of the operation. Over the course of a military career, technical abilities are expected initially on the job, with a subsequent expectation that a service member will be a generalist, capable of holding managerial

positions at successively higher levels of responsibility.

Despite these high expectations, the presence of unreasonable work demands has affected job performance and led to the creation of policies to mitigate such demands. Research has shown that working long hours during a week results in reduced performance on psychophysiological tests and increased likelihood of physical injuries. This occurs increasingly with 12-h shifts combined with more than 40-h work weeks (U.S. Department of Health and Human Service [DHHS], 2004). Military members who work 12-h shifts, such as military police or security forces, are often required to show up 1-h early and remain up to an hour later to complete paperwork, meaning their 12-h shift actually lasts 14-h.

Factors have been identified that can mitigate the negative impact of long or irregular work shifts on worker well-being. In a sample of German middle-aged adults, Obschonka and Silbereisen (2015) found that job autonomy, or the ability to make decisions about work, buffered the impact working nonstandard hours had on job satisfaction positively. The implication is that autonomous and independent military work roles may help offset the potential impact of long hours on service member well-being.

Motivation and Job Satisfaction

Motivation and job satisfaction engender determination and sense of accomplishment at work (previously Motivation and Pride; Bowles, 2014). Several hypotheses have been proposed to explain the role of military service on the life of service members. The "military-as-turning point" hypothesis conceptualizes military service as affording opportunities for growth and development, whereas the "life-course-disruption" hypothesis views service as undermining relationships and social connectivity (Segal & Lane, 2016). Motivation and job satisfaction may help to explain these dramatically divergent conceptualizations of military service, and demonstrate that both may be plausible. Chambel, Castanheira, Oliveira-Cruz,

and Lopes (2015), in a study of Portuguese soldiers, found that autonomous work motivation was positively related to work engagement and negatively related to burnout, whereas extrinsic (controlled) motivation was negatively associated with the same patterns (Chambel et al., 2015). Moreover, autonomous work motivation was identified as a mediator between both contextual (perceived organizational support and leader support) factors and workplace well-being (Chambel et al., 2015). Thus, individuals who are autonomously motivated to work are more likely to experience enhanced well-being and greater satisfaction in their work. Researchers also found that hardiness, which consists of control, challenge, and commitment in life, was associated with job satisfaction (Eschleman, Bowling, & Alarcon, 2010).

Life Domain: 5 Dimensions of Life Well-Being

Friendship Support

Friendship support involves being listened to, understood, supported emotionally, and supported in problem-solving by a friend network (Bowles, 2014). A study on same-gender friendships among college students differentiated between the types of support a friend gives and overall well-being. Morelli, Lee, Arnn, and Zaki (2015) conducted a study in which participants kept a daily diary documenting support received from close friends. Researchers discovered emotional support (e.g., empathy) was strongly associated with well-being in the individual providing the support. Findings also showed that one friend's instrumental support (e.g., tangible assistance) of another friend served to enhance the well-being of both giver and receiver. Other researchers have found that an increased number of friendships and relationships buffer stress (Cohen & Willis, 1985).

Satisfaction with Medical Services

Satisfaction with medical services relates to medical and dental care that is adequate, acces-

sible, and affordable for the entire family (Bowles, 2014). Apart from relationships and social support, access to adequate health services also impacts well-being, albeit in interesting ways. Having ready access to health care within the military system (which is also free to military members and their families) may contribute to service member well-being. For example, a RAND study of health care for veterans found that easy access to quality health care was related to improved quality-of-life enjoyment and satisfaction (Eberhart et al., 2016). A study of active duty Army recruiters also found that satisfaction with medical services was positively related to emotional well-being (Bowles, 2014). However, access to specialty care in medicine and dentistry is sometimes limited or delayed, which could have a negative impact on well-being. Additionally, when service members or veterans are based in communities that are distant from military treatment facilities, they are restricted to using health care providers who accept Tricare insurance. This limitation could result in greater difficulties obtaining needed health care, and in turn negatively affect satisfaction and well-being. A comprehensive NATO study of military recruitment and retention found that medical benefits are often an important source of satisfaction and well-being for service members, and influence retention (NATO, 2007). Thus, medical services are significant benefits for military members and their families, and can impact well-being in a number of ways.

Marital Strength and Family Support

Marital strength and family support involve the service member feeling supported by his/her significant other, immediate family, and extended family (Bowles, 2014). Marital strength and family support have been associated with more positive interpersonal relationships (Bowles, 2014). Marital strength and family support are also related to lower levels of service member neuroticism or resilience, and greater emotional intelligence in the areas of problem-solving, happiness, flexibility, self-regard, emotional

awareness, and interpersonal skills (Bowles, 2014). Skomorovsky, Hujaleh, and Wolejszo (2015) found that military demands on family life for Canadian armed forces personnel may impact marital satisfaction in that intimate partner violence was related to decreased psychological well-being (depressive symptoms). Pietrzak et al. (2010) found that the social support a service member receives from family (as well as friends, coworkers, employers, and community) served as a mediator in the relation between PTSD and psychosocial functioning. This suggests that family and other support may also affect the emotional well-being of Reserve and National Guard service members who generally spend more time with civilian coworkers and employers than with military coworkers. For severely injured wounded warriors, family support was related to emotional well-being and also predicted fewer sleep problems (Bowles, Bartone, Seidler, & Legner, 2014).

Financial Stability

Bowles (2014) identified financial stability as the presence of a savings plan and individual satisfaction with one's financial situation. Gallup conducted a study on 1000 US citizens and determined that there is no improvement in well-being beyond earning \$75,000 annually. While more money was not suggestive of emotional happiness, less money appeared to be associated with more emotional pain (Kahneman & Deaton, 2010). Lower income, contrastingly, was correlated with threats to well-being, including divorce, being alone, and health problems such as asthma (Kahneman & Deaton, 2010). Lower earnings of more junior service members may cause additional stress on the family, particularly if living in a high cost area.

Other researchers recognized the financial difficulties service members and veterans encounter post deployment. A study conducted on Iraq and Afghanistan war veterans found that a lack of financial well-being was associated with psychological disorders (post-traumatic stress disorder, major depressive disorder,

and traumatic brain injury) (Elbogen, Johnson, Wagner, Newton, & Beckham, 2012). While most military families achieve financial stability, spouses' earnings may be reduced, and some junior enlisted service members and their family may even receive food stamps to support themselves (Hosek & Wadsworth, 2013). In another study of the military population, researchers found that financial debt was related to lower psychological well-being, while soldiers with larger emergency saving accounts (a marker of better financial well-being) had greater psychological well-being (Bell et al., 2014). Similarly, in the civilian population, Pereira and Coelho (2013) looked at the European Social Survey data of 24 countries and found that perceived income adequacy was positively related to subjective well-being. Specifically, they found subjective well-being was associated with perceived access to credit, and that access to credit, in turn, mediates the influence of income on well-being (Pereira & Coelho, 2013). These findings lend further confirmation to the importance of financial stability for healthy well-being. Most large US military installations provide financial services with financial specialists who can advise service members on financial matters at no cost to the service member (Bowles et al., 2012).

Satisfaction in Community

Family Satisfaction in Community (was previously Community Supports Family) is support to family and service member from the community, to include parent and children satisfaction of the school system, spouse's employability, and family recreation resources (Bowles, 2014). The regular moves to new locations, service member deployments, and exposure to trauma could influence academic and well-being outcomes for children (Palmer, 2008). Another determinant of well-being is the spouse's ability to find employment. Avoiding boredom and personal fulfillment are some of the reasons spouses want to be employed (Castaneda & Harrell, 2008). Careers for spouses are regularly inter-

rupted due to frequent and disruptive moves to new locations, service members' deployment or training exercises, and child care challenges (Castaneda & Harrell, 2008; Hosek & MacDermid Wadsworth, 2013). For these reasons, employers may develop employment stigmatization, and, consequently, hesitate to hire military spouses (Castaneda & Harrell, 2008; Hosek & MacDermid Wadsworth, 2013). Further, Hosek and MacDermid Wadsworth (2013) state that military spouses, when compared to similar civilian spouses, work fewer hours or are unemployed. In addition, military spouses often earn less than their civilian counterparts (Hosek & MacDermid Wadsworth, 2013). Wang, Nyutu, Tran, and Spears (2015) attempted to identify protective factors that promote well-being in military spouses. They discovered that the social support military spouses received from their friends was associated with a sense of community and increased well-being (Wang et al., 2015).

Work-Life Domain: 7 Dimensions of Work–Life Well-Being

Emotional Well-Being

Emotional well-being has been defined as feeling good about oneself and maintaining a spirit of optimism and positivity toward life and its challenges (Bowles, 2014). Past research on North American adults has found that the emotional intelligence areas of happiness, self-actualization, and self-regard are related to subjective well-being (Bar-on, 2012). In a study in the Chinese population, students with high levels of resilience had more positive cognitions and higher emotional well-being (high life satisfaction and low depression levels) (Mak, Ng, & Wong, 2011). Additionally, hardiness has been found to be associated with the well-being areas to include job satisfaction, life satisfaction, positive state affect, personal growth, engagement, happiness, and quality of life (Eschleman et al., 2010). Emotional well-being is important for service members in sus-

taining and maintaining positive emotional states for performance levels both during and after combat operations.

The Battlemind program has instituted interventions with service members and found positive emotional well-being effects (reduced PTSD symptoms and depression symptoms) when compared against a control or comparison group (Adler, Bliese, McGurk, Hoge, & Castro, 2009; Castro, Adler, McGurk, & Bliese, 2012). Other simple interventions may also have an impact on greater well-being for service members. In a study examining mindfulness-based practice with 174 adults, participants reported greater mindfulness, stress symptom reduction, and improved well-being (Carmody & Baer, 2008). Researchers examining gratitude found that appreciative behaviors led to higher perceived social support, as well as lower levels of depression and stress (Wood, Maltby, Gillett, Linley, & Joseph, 2008). A survey on forgiveness, using a sample of over 1500 persons over the age of 66, found that being able to forgive others was associated with fewer depressive symptoms (Krause & Ellison, 2003). In another research related to emotional well-being, young adults reported greater emotional well-being (positive affect and flourishing) on days of greater creative activity (Conner, DeYoung & Silvia 2016). Volunteerism was yet another activity that was reported to improve personal well-being (happiness, life satisfaction, self-esteem, sense of control over life, physical health, and reduced depression) (Thoits & Hewitt, 2001).

Duvall and Kaplan (2014) studied the effects of outdoor recreation on the emotional well-being (positive and negative affect), social functioning, and overall outlook of veterans. After a week of outdoor recreation, veterans were found to have improvements in all of these areas (decrease in negative affect and increases in all others), which continued for 3–4 weeks. Finally, an online automated mental fitness self-help intervention for adults significantly improved well-being by reducing mild-to-moderate depression and anxiety symptoms when compared to a waiting list control group (Bolier et al., 2013).

Satisfaction with Work, Family, and Leisure Time

This is an effort to achieve work–life satisfaction with work, family, and leisure time well-being (Bowles, 2014). There can often be a tension between the needs of the family and work that plays a major role in military couples' work–life conflict. Researchers found work–family conflict for service members was moderately related to workload (hours of sleep and training in the past 6 months) (Britt & Dawson, 2005), which can be mediated by the leader and service member. In a qualitative study, some deployed mothers reported difficulty with perceived command non-support relating to family care plans in managing issues with at-home caretakers (Goodman et al., 2013). Work-to-family conflict (disruptions that occur in the family because of workplace responsibilities) and family-to-work conflict (disruptions that occur in the workplace because of family responsibilities) were related to low job satisfaction and job turnover intention for service members in a military security organization (Sachau et al., 2012).

A study of leisure time among combat veterans with PTSD found that a recreational trip (3-night fly fishing trip) was effective in reducing negative mood, depression, anxiety, and somatic stress. The veterans' sleep quality also improved, and PTSD symptoms lessened in severity at the 6-week follow-up (Vella, Milligan, & Bennett, 2013). This speaks to the importance of leisure time in improving overall well-being and overall work–life satisfaction for service members and their families.

Personal Development

The well-being dimension of personal development is the level of satisfaction with continued education, opportunities for personal growth, and purposeful activities in life (Bowles, 2014). Personal growth and life purpose have long been recognized as important for well-being (Ryff, 1989). Research with United States Army recruiters found that those who were satisfied

with their personal development also reported being more open and adaptive (Bowles, 2014). A recent study finds that among Mexican adults, subjective (emotional) well-being, personal growth, and purpose in life are all related to perceived quality of life (González-Celis, Chávez-Becerra, Maldonado-Saucedo, Vidaña-Gaytán, & Magallanes-Rodríguez, 2016). Similarly, researchers in Norway examined two separate dimensions of well-being: life satisfaction and personal growth. In a sample of health care workers, life satisfaction was associated with reduced sick leave. On the other hand, personal growth showed a small but positive correlation with sick leave (Straume & Vitteroso, 2012). The authors suggest that workers who are higher in personal growth, which includes curiosity, competence, and complexity, may simply be more willing to admit when they are sick and stay home from work, especially if the work is perceived as boring or uninteresting. This implies work that is meaningful and provides personal growth and development opportunities will lead to greater engagement and well-being in the workforce.

Healthy Habits

Healthy habits of service members include the amount of satisfaction with diet, exercise, and sleep behavior. Various barriers may preclude healthy habits in areas such as diet, exercise, and sleep. In one relevant study, researchers conducted a 10-week wellness intervention based on the disconnected values model (DVM; when there is a disconnect between one's values and one's behavior regarding exercise; Brinthaup, Kang, & Anshel, 2010). Following the intervention, which included exercise coaching and discussion of discordant values, participants showed increased exercise and health, as well as more happiness and health satisfaction.

Diet is another health area that can influence health and well-being. Individuals who eat a well-balanced diet report feeling healthier overall. Blanchflower, Oswald, and Stewart-Brown (2012) found that fruit and vegetable consump-

tion was positively linked with well-being (happiness and mental health) based on health surveys from 2007 to 2010 in the United Kingdom. In another survey study of food consumption conducted in 2007 and 2009 of the Australian population, researchers found that greater fruit and vegetable intake was associated with increased well-being (happiness and life satisfaction) (Mujcic & Oswald, 2016). Food choices that service members make may therefore affect their overall well-being as well. Service members completing a well-being program (healthy eating and exercise) and successfully losing weight reported perceived improvements in physical well-being, material well-being (income and living situation), and vacationing behavior (Bowles, Picano, Epperly, & Myers, 2006).

Other studies have identified exercise as a factor that impacts well-being. Researchers at a Turkish university examined the effect of a 13-week tennis exercise program. The students in this program played tennis for 90 min once a week. Participants had a significant decrease in their Symptoms Checklist-90 anxiety and depression scores, and Beck Anxiety Inventory and Beck Depression Inventory post-test scores (Yazici, Gul, Yazici, & Gul, 2016). Another study posited that the relationship between exercise and well-being is more complicated. For example, motivation has been shown to moderate the relationship between exercise habits and well-being. Research has shown that undergraduate students who exercised for 6 months or more and were intrinsically motivated generally benefited from better psychological well-being, while those who exercised for less than 6 months and were extrinsically motivated suffered from a lack of psychological well-being (Maltby & Day, 2001). The study is applicable to service members because the exercise, strength, and conditioning required within military life may impact the well-being of service members differently, depending on whether they are intrinsically or extrinsically motivated.

Sleep among service members can have a direct impact on individual and collective work productivity. Research has demonstrated shorter sleep cycle duration and poor sleep quality are

correlated with lower unit readiness in combat operations in Iraq and Afghanistan (Troxel et al., 2015). Sleep cycles of service members can be influenced by various challenges, one of which is staffing. Understaffing may affect both acute and chronic fatigue levels by increasing the probability of extended duty hours, shortened sleep opportunities, inconsistent work–rest cycles, and circadian disruption. Unfortunately, most schedulers and/or leaders do not receive formal training in shiftwork scheduling or lack a true understanding of the physiological effects induced by schedules and changes in work schedules. Poorly designed shift schedules cause excessive disruption to shift workers' circadian rhythms. In many cases, service members are asked to make significant changes to their lifestyle to obtain adequate sleep (see also Campbell et al., Chap. 15, this volume).

Spirituality

Spirituality has to do with the satisfaction level of spiritual and/or religious practices and resources available (Bowles, 2014). Studies of spirituality and emotional well-being of individuals with cancer have found mixed results (Visser, Garssen, & Vingerhoets, 2010). Research examining college students' spiritual well-being found that students scoring high on spiritual health had better psychosocial outcome scores when examining hopelessness, loneliness, and self-esteem (Hammermeister & Peterson, 2001). In another study with college students, researchers found personal spirituality served as a moderator of the relationship between stressors and life satisfaction (Fabricatore, Handal, & Fenzel, 2000).

In a study conducted with a veteran population with war-related PTSD, researchers (Bormann, Liu, Thorp, & Lang, 2012) tested a mantram (i.e. repeating a sacred word or phrase) intervention with other support skills in which veterans attended six weekly classes for 90 min a week. Findings showed that veterans who received the mantram intervention experienced a reduction in PTSD symptoms and that emotional well-being was a mediator in this pathway. In

other words, the intervention was associated with an increase in well-being, which in turn was correlated to a decrease in PTSD. Treatment approaches that make use of spiritualized meditation techniques show promise for increasing well-being and reducing stress-related symptoms in military personnel.

Leader and Organization Supporting the Family

Leader and Organization Supporting the family is the service members' perception of and satisfaction with the individual and family support offered by leaders and the organization. Demands on the families of service members make the military a workplace with a unique set of stressors and challenges. Supervisors' support of families can be important to the well-being of subordinates and employees. According to a civilian study, subordinates who reported less work–family conflict, more job satisfaction, and greater compliance with the work safety program considered their supervisors to be family-supportive (Kossek & Hammer, 2008).

Unit support is another organizational component that can serve to support military families and thus contribute to service members' well-being. Researchers found that organizational support had a stronger relationship than supervisor and peer support with low work-to-family conflict, turnover intention, and job satisfaction in an Air Force security agency (Sachau et al., 2012).

Community Family Support

Satisfaction in the community, previously Satisfaction with Community, describes the military family's overall satisfaction with housing, neighborhood, and support from their community (Bowles, 2014). Researchers conducting a survey with military personnel in all services found that the majority of military personnel reported being satisfied with their quality of neighborhood (77%), residence (71%), and affordability (55%) (Bissell, Crosslin, &

Hathaway, 2010). In a study on US Air Force personnel, researchers' findings suggest social networks and unit support were related to families' abilities to adapt to their community (Bowen, Mancini, Martin, Ware, & Nelson, 2003). Researchers have noted that family support, specifically for spouses, through community members (nonmilitary friends), as well as family and military spouses, positively affected psychological well-being with deployed partners in the Canadian armed forces (Skomorovsky, 2014). Each distinct source of social support received by the family provides unique contributions to well-being, including community support.

In a military study, Han et al. (2014) assessed service members' perceived social support (community, family, and coworker) at post-deployment and found that active duty service members with lower levels of PTSD symptoms had higher social support systems. This suggests that social support may serve as a buffer against PTSD and other disorders (Han et al., 2014). Such a finding shows that the community component of social support can play an integral factor in well-being for active duty service members and underscores the importance of the community in mitigating stress.

To summarize, these sections have offered dimensions that are components for service member well-being, conceptualized under Work, Life, and Work–Life domains. The dimensions have been supported by research in both the military and civilian populations. When these well-being dimensions are present, positive adaptive outcomes can be the result for the service member.

Adaptive Outcomes for Service Members

Based on the research reviewed, there are a number of outcomes that can be the result of service members having positive well-being dimensions. In the Work domain, well-being dimensions are adaptive in several ways. Adaptive work well-being outcomes include job satisfaction, optimal performance, work safety, unit commitment, and

positive work climate. For the Work–Life domain, the adaptive outcomes that occur for an individual are positive affect, appropriate sleep, lower stress and resilience, and physical and psychological health. Interpersonally, at work and home, there is greater social connectedness and low work–life conflict. For the Life domain, marital and family satisfaction, financial stability, and detachment from work are important outcomes to well-being.

In the following sections, the application of these dimensions of service member well-being based on the previously reviewed literature is provided. Adaptive outcomes for well-being were identified for service members when well-being is occurring in many of the dimensions. The previous research described to support the well-being dimensions for service members is now translated for providers working with five resources to promote service member well-being. These five resources are providers, service members, families, educators, and/or trainers and leaders.

Five Resources for Enhancing Service Member Well-Being

Providers

Well-being ultimately comes from within. However, there are resources that can facilitate, develop, and evolve personal happiness, meaning, and satisfaction in life. Various providers (e.g., psychologists, primary care physicians, psychiatrists, chaplains, social workers, psychiatric nurses, marriage and family counselors, and military family life counselor) are often in a position to serve as a coach and or consultant, able to influence the individual to achieve greater well-being. Providers can also serve as an organizing force and direct service members to other resource influencers such as leadership, the family, unit trainers, and community educators. The domains and their dimensions offer a helpful framework for resources to assess and influence well-being.

Providers can offer clinical and community strength-based well-being psychology (focusing on a person’s positive well-being outcomes) through direct contact or other supporting means (i.e., people, organizations, websites, bibliotherapy) for service and family members, unit trainers, community educators, and leaders that support well-being in the military. It is important to note that the practical strategies listed below can be applied to individuals (e.g., in provider–patient interactions or coaching) and groups (e.g., if a leader requests a particular subject-matter expert to provide preventive education to an entire team). This section explores the three domains of well-being and how providers can

Table 14.1 Provider impact on well-being

Work	Life	Work–Life
Teach interpersonal skills and encourage service members to develop their friend networks to increase overall well-being through social support and provided by coworkers	Encourage formation of social support networks of friends outside of the military	Teach psychological strength building, skill development in areas such as creativity, emotional intelligence, forgiveness, gratitude, and hardiness in service members
Teach stress management and mindfulness techniques as ways to reduce stress and better engage with coworkers and supervisors	Influence service members and their families to utilize community resources, such as financial advisors	Support emotional well-being by encouraging purposeful life, personal growth activities, spiritual health, and/or volunteerism
Provide career guidance to foster intrinsic motivations for work and align goals with the organization to offering improve work satisfaction		Advocate for healthy habits, including adequate sleep, healthy eating, and exercise. Teach skills to service members on how to satisfy work, family, and leisure time needs

serve as a resource and influencer to support healthy well-being (see Table 14.1).

In the Work domain of well-being providers can help develop hardiness and resilience-building skills, which have been associated with job satisfaction well-being. Providers may also encourage service members to develop their social friend networks to increase overall well-being through social support provided by coworkers. In addition, they can also teach and coach interpersonal mindfulness and stress management techniques to the service member for better managing relationships. Providers may also play a role in assisting service members in developing intrinsic motivation, and may help to identify alternative career paths as they strive toward their personal and military goals.

In the Life domain, providers may encourage the formation of support networks of friends outside the military in order to sustain general well-being. Providers may influence community well-being of service members and their families by teaching them how to integrate and utilize their community resources, such as financial specialists that are provided within the military for life financial planning.

In the combined Work–Life domain, providers can support emotional well-being of service members by encouraging purposeful life and personal growth activities. Providers can foster well-being by advocating for healthy habits, including

adequate sleep, healthy eating, exercise, and spiritual or attitudinal health. Providers can also have an impact in the Work–Life domain by conveying skills to service members and their families about how to satisfy work, family, and leisure time needs. For psychological strength building, providers can look at skill development in areas such as creativity, forgiveness, gratitude, and hardiness in service members. Service members may also develop their emotional intelligence in the areas of self-regard, happiness, and self-actualization for subjective well-being by working with the provider. Well-being can further be developed through technological approaches, such as web-based mental fitness self-help interventions or technology applications (see also Campise et al., Chap. 26, this volume). Providers can be coaches and consultants in developing service members, leaders, unit trainers, families, and/or community educators to influence service members toward greater well-being. Focusing on well-being destigmatizes behavioral health conditions, and fosters positive growth approaches in well-being in clinics, units, and educational training centers.

Service Members

The provider can encourage the service member to be self-sufficient in well-being whenever

Table 14.2 Service member impact on well-being

Work	Life	Work–Life
Provide SM reading material to develop interpersonal skills, self-management tools, and characteristics that facilitate coworker support that may be related to job satisfaction	Provide SM reading material to develop positive influencers of well-being like friendships	Provide reading material to develop characteristics and personal attributes, such as hardiness, resilience, emotional intelligence, gratitude, happiness, forgiveness, and creativity
	Encourage SM to leverage financial specialists to increase overall knowledge and make more effective financial decisions	Encourage practices like stress-reduction and mindfulness techniques
	Encourage service member to engage in community to garner more social support for their spouse during deployment	Educate on the importance of recreational sports and vacation activities Encourage healthy habits of exercise, eating, and sleep, as well as spiritual/philosophical, and positive attitude practices

they interact (see Table 14.2). Service members can gain self-management skills through all the resources mentioned. Service members can enhance their well-being outside a therapeutic setting. In the work well-being area, reading material on self-management tools may help service members further enhance well-being. Hardiness and resilience are valuable attributes within the military population, and any opportunity to build these will pay dividends in both mission effectiveness and in personal well-being. Building interpersonal skills through professional organizations would be another wise time investment, as it may facilitate coworker relationships that are related to job satisfaction.

In the Life domain, friendship is a consistent positive influencer of well-being, specifically when those friends listen and provide support when solving problems. Service members need to become educated on financial resources available through the military and self-sufficient with developing financial wealth, emergency savings, and crisis situations. In addition, service members need to cultivate marital strength and family support, which are related to more positive interpersonal relationships and greater happiness. Having family support is also related to emotional well-being. Service members can engage in the community to garner more social support for their spouses, which would benefit the family during deployments.

The service member can self-educate and practice ways to manage the work–life well-being through stress-reduction techniques, outdoor recreation and vacations, and other healthy behaviors. Service members can be educated in practices of mindfulness, gratitude, and forgiveness, which may reduce stress and promote attributes like emotional intelligence and hardiness. Additionally, creative activity may foster well-being, positive affect, and a sense of flourishing. Recreational sports and vacation activities are also positive ways to further develop well-being. In addition, the service member can be supported in healthy eating by consuming fruits and vegetables, which has been related to happiness. For those inclined to the spiritual

life, they can also be educated on the benefits of spirituality on well-being and referred to a Chaplain for additional support or to improve self-practice.

Families

Family members have access to providers as well as a number of helpful resources that can support well-being (see Table 14.3). Family members can also serve as a well-being resource in several areas to the service member. However, providers should be aware of red flags that can cause families distress (such as relational problems and child discipline challenges). These restrict the family from being a resource and instead create stress. For the Work Well-being domain, spouses and family members should be

Table 14.3 Family impact on well-being

Work	Life	Work–life
Assist the family to support service members during the deployment cycle and become prepared through various groups and centers to develop and build family resilience and well-being	Support the family in providing social support to service member to mediate traumatic stress and family deployment cycle adjustment	When the service member is away or home, encourage work–family satisfaction by engaging in leisure and healthy habits to limit work–life family conflict
	Support and make the family aware of resources such as financial specialists and importance to work together toward financial stability	
	Encourage spouse and service member to develop a good support system in their community, which can positively affect deployed service member’s psychological well-being	

supportive of service members when separated during training exercises and deployments. Spouses and family members can utilize resilience and family support skills, obtained from various military service support groups or centers during the entire deployment cycle, to sustain the family. Some of the entities that support service members' work, effort, and family readiness during these times are Family Readiness Groups, Army Community Service Center, Fleet and Family Support Center, Airmen and Family Readiness Center, Marine Corps Community Services, or Work Life Office. Family support and other types of support during the deployment cycle should be leveraged by providers working with the service member and/or family.

In the Life Well-being domain, social support (e.g., emotional support and instrumental assistance) provided by the family, coworkers, and community systems may mediate traumatic stress and psychosocial adjustment for service members. As previously reported, the strength of marriage and family is related to more positive interpersonal relationships, more adaptability, and greater happiness and emotional well-being for service members. Thus, family support can play an integral role for the returning service member's well-being, particularly if they have a psychological or physical injury. Service members should also support their spouses in developing their nonmilitary support networks, as this has been found to contribute to the deployed member's psychological well-being.

Financial stability, a component of the Life Well-being domain, may be impacted by the demands of the service member's career. While a service member's income is stable, a spouse's income may be reduced or eliminated with each move. Enlisted couples with children may be particularly at risk for reduced financial well-being. As discussed earlier, some junior enlisted members and their families have needed to access food stamps. Financial debt has been related to lower psychological well-being, while larger emergency saving accounts have been linked to greater psychological well-being for service members. To support financial stability, families can meet with financial specialists, provided by

the military, and come to a consensus on family budget and spending. Providers should also assess the family financial well-being and recommend the appropriate support services.

In the work–family well-being, the family should encourage a satisfactory work family environment by encouraging time for leisure activities and practicing healthy habits. Employing these behaviors during family time should promote work–life well-being and limit struggles with work and family time, thereby reducing stress for the service member in both environments. The provider and others should encourage work–life satisfaction strategies with the family if needed.

Unit Trainers/Community Educators

Unit trainers provide and coordinate training for a unit/squadron, while community educators provide family and financial resources. It is important for the providers to recognize the role the unit trainer and community educator resources can play in the service members' life (see Table 14.4). Providers serve as consultants and perhaps guest speakers to units or community education events. It is important for providers to develop relationships with unit trainers to serve in multiple roles of providing support through unit mental health, enhance unit performance, and serve as presenter to unit training events or a community resilience seminar. Both unit trainers and community educators may serve as referral sources of clients to providers and help providers track relevant trends within the military community. Unit trainers and service members have mutual access to each other, and service members can seek out community education as well.

There are multiple different unit training and community educator roles and services that can support well-being. The unit trainer can provide training in a variety of areas, including professional training, sexual harassment, suicide education, safety on the job, and well-being and hardiness training, among other areas. The community educator in the military or civilian community may provide training and information on

Table 14.4 Unit trainer/community educator impact on well-being

Work	Life	Work–life
Provide unit team building, education and encouragement in unit cohesion dimensions, cohesion skills, and assess unit well-being for mission readiness	Provide workshops and/or seminars on developing a network of friends and support organizations in and outside the military	Promote volunteerism and other contributions to society
Training SM in how to develop professional networks to enhance social support systems and coworker relationships that may contribute to overall well-being	Teach and support service members and their families to utilize community education resources, such as the financial specialist, family resilience-building programs, and support systems when leaving the military	Serve as referral resources to behavioral health, fitness programs, military life counselors, medical and spiritual support
Unit trainers can teach effective and positive transformational leadership skills to advance positive leadership		Provide workshops on healthy life behavior, relationship development, and medical health awareness to reduce stress, build resilience, and promote well-being
Teach stress management techniques		Convey skills to service members and their families about how to satisfy work and family conflicts and encourage service members' recreation opportunities

family resources, financial planning, transition/retirement planning, and other community education topics. In the area of work well-being, unit trainers can teach the importance of unit cohesion and coworker social support. They can also provide specific training such as unit cohesion education (e.g., trust within unit, superordinate unit goals) or team-building exercises, and monitor unit well-being for mission readiness. Military and civilian community education may offer workshops and seminars to teach service members how to develop their professional networks and coworker relationships to enhance their social support systems. Trainers can teach effective and positive transformational leadership skills in an attempt to promote positive leadership and improve well-being. They can also teach stress management and resilience-building skills which are also linked to improved well-being.

In the Life domain, community educators may provide workshops and/or seminars with a focus on developing a network of friends and support systems in and outside the military, through in-person meetings or social media interactions to sustain general well-being. Community educators may teach about financial stability, family

resilience, and well-being, continuing to assist with the network building as service members and their family leave the military.

In the Work–Life domain, unit trainers and community educators can promote volunteerism and other civic contributions that have improved well-being. Community centers and educators can serve as resources to the service member for fitness programs, behavioral health and military life counselors, and medical support activities and religious events, as well as recommend spiritual support. They can also provide workshops on healthy life behavior, relationship development, and medical health awareness to reduce stress, develop well-being and resilience, and promote life satisfaction. Educators can also have an impact on the Work–Life domain by conveying skills to service members and their families about how to satisfy work and family conflicts and refer to Morale, Welfare, and Recreation for leisure opportunities to maximize well-being.

Leaders

Providers can serve as coaches and consultants to leaders to help them develop well-being within

Table 14.5 Leader impact on well-being

Work	Life	Work–Life
Be active and supportive and look out for the welfare of employees	Ensure adequate access to health care for SM and their family	Be mindful of the bidirectional relationship of work–life conflict that can create service member dissatisfaction and impact retention
Practice transformational leadership by creating productive work relationships and a good work environment	Encourage organization members with PTS/PTSD to find support network within and outside the military community	Encourage healthy behavior in both work and life settings, such as eating, sleeping, exercise, recreation, and vacation
Provide social support to subordinates	Promote financial well-being	
Practice ethical and trustworthy behavior to foster trust	Ensure that there are adequate support systems for new families joining the organization	
Provide supportive networks to create a climate where employees are satisfied and more inclined to stay with the organization		
Promote positive leadership, job autonomy, and safety		

their organizations (see Table 14.5). Leaders have a direct and continuous influence on the well-being of service members under their direction. Leaders from civilian and military sectors may employ these approaches when considering how to best foster well-being.

The domain of Work Well-being is likely to be especially relevant for leaders. Based on examining the various dimensions in this domain, the following influencers in no particular order were found to have a positive impact on work well-being dimensions and can be modeled by leaders. Leaders that have demonstrated consideration of, or looking out for the welfare of, the employee have translated to lower burnout for employees. Active and supportive leaders have had a positive impact on the well-being of their personnel. Transformational leadership promotes such things as positive work environment and productive relationships that promote well-being. Leaders that provide social support (good information flow, employee improvement, and mitigate unnecessary job risks) can buffer subordinates' traumatic stress. Leaders that practice ethical and trustworthy behavior can create trust, reduce emotional fatigue, and promote work engagement among employees. Leaders that create an environment of peer supportive networks create a climate

where employees are satisfied and more inclined to stay with the organization. Leadership practices that are participatory and objective-focused that provide feedback help the psychological health climate in the work environment. This climate is also associated with lower role ambiguity and higher job satisfaction. Leaders and organizations that can create job autonomy and intrinsically motivate employees may mitigate the impact of working nonstandard hours and may reduce burnout, increase engagement, and enhance overall satisfaction. Leaders should constantly be aware of the level of responsibility they have with their personnel and the stewardship of promoting positive leadership. Negative leadership may create stress, burnout, family and work–life conflict, life and work dissatisfaction, and increased stress, impacting work negatively with less organizational commitment. Leaders must stay mindful of increasing employees' hours beyond normal limits that may result in degraded performance and injuries as well as assessing employees that are working in isolated environments and operations that may reduce well-being.

In considering life well-being, leaders need to assure that service members and their families have adequate access to health care resources. To support members with PTS/PTSD, leaders may

encourage support networks within and outside the military community as their subordinates return from deployment. Leaders need to continue to promote financial well-being for service members. Those that have large emergency saving funds have greater psychological well-being than those in financial debt. Finally, with new families joining the organization, leaders need to assure that there are adequate support systems and identified social networks in place for new members, as this is related to their adaptation into the community.

Finally, there are several work–life well-being dimensions that leaders may positively influence. Leaders may increase retention by being mindful of the bidirectional relationship of work–life conflict that can create tension for the service member and may decrease job dissatisfaction. Leaders encouraging healthy work safety practices are viewed as more family-supportive. Encouraging healthy habits such as healthy eating, sleep, recreation, and vacation are related to well-being, and improve both work and home environments. Proper sleep has been related to performance and unit readiness.

Conclusions

The military is a highly demanding occupation that presents service members with unique challenges requiring intense participation, focus, and stamina. Given the well-documented research on the harmful impact of operational stressors, including family separation and deployment, identifying resources that can mitigate adverse outcomes in service members is a vitally important undertaking. This chapter focused on critical well-being dimensions and five resources that can serve as protective factors for service members who face stressors in this inherently challenging career. Recommendations for preserving and enhancing well-being are framed in terms of three overarching domains: Work, Life, and Work–Life. These domains are further divided into 19 critical well-being dimensions that can influence a range of adaptive outcomes for military service members.

Given the stressful nature of military service, it is essential that service members experience a satisfactory number of these dimensions and positive resources in their lives. However, it is important to consider that well-being is a systemic process influenced by numerous environmental conditions. Outside forces will almost always have an impact on well-being. Well-being is often specific to unique aspects of the individual in addition to the operational context. Based on the service members' individual resources and the other four resources, they will respond better to certain initiatives or intrinsically be engaged in some well-being dimensions more than others. Service member well-being can be viewed as a balance between competing factors with the primary objective being to stabilize, strengthen, and sustain as many critical well-being dimensions as possible.

The key dimensions of well-being discussed in this chapter are based on a focus group and a review of the current research on well-being. There are certain limitations to the extant literature. Given the breadth of conceptualizations of well-being, there is a lack of systematic reviews and randomized control studies. Even among the completed studies, unique samples and methodological challenges limit the generalizability of the research. Additionally, it is likely that there are other dimensions of well-being not identified in our literature reviews and military focus groups. It is anticipated that our military well-being model will evolve based on more rigorous and comprehensive research. For example, the Millennium Cohort Family Study may help explain how military service impacts service members and their families long-term, and may offer insights into well-being.

Based on the authors' professional observations and experience, each domain has one to three factors that are most important, and may be impacted through practical approaches. In the Work domain, positive leader support, personal motivation, and coworker support carry the most weight in overall well-being. Ideally, all dimensions are present and actively working in concert, including positive relationships with both superiors and coworkers, as well as a positive motiva-

tion and attitude resulting in an overall healthy work environment. Even when these relationships are not in perfect harmony, strength in one dimension might compensate for relative weakness in another. There are countless examples of coworkers bonding together and encouraging each other through negative leadership experiences. Similarly, a meaningful relationship with an inspirational supervisor and personal motivation can outweigh absent or contentious relationships with coworkers, such that employees are able to maintain their well-being at work despite not having many friends in the office. As noted above, training on transformational leadership may be the best practical strategy, and in this case, may help to align organization and service member motivation into superordinate goals and develop a climate of unit cohesion. This can enhance both individual well-being and relationships between employees, which can further improve individual well-being.

The Life domain may differ for married versus single service members. For married and single service members, marital strength and/or family support and friendship are the most important dimensions. Many single members still consider their mother, father, siblings, and friends as important well-being dimensions, and the most important will vary by service members. For married service members, while family would be expected to be more important, friendship also plays an important role in the Life domain. Most leaders and other professionals would likely agree that marital satisfaction is highly correlated with individual well-being and overall mission effectiveness, a term that reflects an individual's ability to perform his or her intended duties within the organization. Many marriage-focused and family-focused programs are already available in most organizations. This includes counseling through Military and Family Life Consultants and traditional Behavioral Health resources, as well as Strong Bonds and other Chaplain-led initiatives. To foster well-being in this domain, leaders can increase awareness of these resources and ensure adequate opportunity (i.e., breaks from the mission) for service members to access them. As noted, marital strength is

not relevant for single service members, though meaningful relationships with their family of origin and significant other (as applicable) may impact their individual well-being. As with the married service members, the resources for the single service member already exist and must simply be leveraged more efficiently. Social connectedness can be improved through any number of programs such as "Better Opportunities for Single Soldiers," which facilitate fun off-post activities to help build new friendships. Further, much of the research on the other Life dimensions (i.e., satisfaction with medical services and satisfaction in community) demonstrated particular relevance for spouses or other immediately affected family members, and have a secondary impact on the service member. The remaining dimension, financial stability, may be equally meaningful, and leaders or other concerned friends and coworkers would be wise to recognize and educate service members who struggle in this area. Financial support is available through various Garrison resources, such as Army Community Services, which can educate service members to increase financial stability, or offer various loan options for those who find themselves in debt.

Behavior change and habit sustainment of healthy habits may be the most important dimensions in the Work-Life domain. Sleep, diet, and exercise have been dubbed the "Performance Triad" in some circles. Sleep has an impact on all aspects of our lives. Service members' sleep habits impacted by temporary circumstances (such as a deployment or shift change) can morph into long-standing unhealthy sleep patterns or clinical insomnia. Two other important areas of the work-life well-being domain are emotional well-being (e.g., how one feels or one's attitude toward life), and work and life satisfaction. The practical approach to these dimensions will nearly always include a combination of educational messaging and opportunities to guide behavior change.

The well-being dimensions can be positive or negative influencers. Our review and experience revealed that some of the most important dimensions that positively influence well-being are the family, marital relationship, and friendship. The

second most important area was the positive leader and work environment, and last was the healthy habits of the service member. These same dimensions, when present in a qualitatively negative manner or when altogether absent, can also have the strongest negative influence on well-being. In terms of negative influencers, unsupportive, demanding, or even abusive leaders, along with poor relationships or social support within the marriage, family, and/or friendships, lead to work–family dissatisfaction. The other significant negative influencer is poor service member’s physical and emotional health habits.

When thinking in terms of the five resources that impact well-being, although the service member is ultimately responsible for his or her behaviors, other external resources can be very important influencers. The next greatest influencer of the service member’s well-being is the family, particularly in the Life and Work–Life domains. The leader may be equally as important as the family in this hierarchy of influence, playing a fundamental role in creating a military work environment that emphasizes the importance of the Work domain of well-being. The influence of the provider, unit trainer, and community educators may be limited due to irregular contact or because they lack the authority inherent in chain of command. Knowing this, the provider must make the most of any given encounter with service members to help each person develop effective tools to enhance well-being. They must find ways to leverage evidence-based strategies to effectively impact leadership’s understanding and support of well-being. Additionally, providers must support the family through identified resources and communicate effective messages regarding well-being with the community educators and unit trainers.

Further research on service members, leaders, and work–family well-being adaptive outcomes is warranted. Based on our examination of the literature, several dimensions of well-being were identified and documented that can be reinforced by the provider, family, educator-trainer, and leader for the benefit of the service member. These four resources should support service member development and practice well-being through the three significant

influencers we identified (family, leadership, and service member healthy behavior). Researchers can also focus on better understanding the role of these four resources in supporting the development of service member self-management techniques for healthy habits, relationship skills (with spouse, children, significant other, or friends), and leadership/followership skills.

Work, Life, and Work–Life domains of well-being are interconnected domains and therefore should be conceptualized as influencing and overlapping with one another. A service member’s well-being relies on how well he or she can manage or satisfy the two demanding and highly involved arenas of work and family. Using the information presented in this chapter, providers can understand and recognize the dimensions that most positively or negatively influence a service member’s well-being and recognize gaps in service members’ well-being. Promoting well-being does not necessarily require special equipment, extensive resources, or considerable amounts of time. Well-being can be promoted and improved through simple interventions and can be used for example in the context of military health promotion frameworks like the Chairman of the Joint Chiefs of Staff Total Force Fitness (see also Bowles et al., Chap. 13, this volume). Finally, influencing leaders’ awareness of and commitment to fostering an environment in which a service member can achieve optimal work–life satisfaction will improve the well-being of service members. Support for well-being by leadership can lead to a more engaged, healthy, fit and productive military workforce.

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Justin S. Campbell, Rachel Markwald,
Evan D. Chinoy, Anne Germain, Emily Grieser,
Ingrid Lim, and Stephen V. Bowles

If you are a psychologist working with the military, there will likely come a time when you must address the issue of sleep. Problems with falling asleep or daytime sleepiness affect approximately 35–40% of the US adult population annually and are a significant cause of morbidity and mortality (Hossain & Shapiro, 2002). To what extent does the US military mirror the civilian prevalence rates? A comprehensive study of sleep in the military conducted by the RAND Corporation sampled 1,851 service members across all branches of the military, excluding only the Navy Reserve (Troxel et al., 2015). The results of this survey indicated that 31.4% of the respondents were in

the “extreme short sleeper category” (five or fewer hours of sleep per night). This level of sleep duration has been associated with increased comorbidity with a host of other physiological and psychological maladies (Troxel et al., 2015). In this same study, 48.6% of the respondents scored above the cut score associated with clinically significant sleep problems (i.e., 5 or higher) on the Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). With the exception of disturbing dreams of a traumatic or stressful experience, there were no significant differences between deployment status and high and low combat exposure (self-reported) in the RAND sample with respect to the PSQI scores, nor for self-reported hours of sleep per night. This latter finding counters the popular notion that poor sleep is primarily due to the

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J.S. Campbell (✉)
Naval Medical Center San Diego,
1062 Law ST. #1, San Diego, CA 92109, USA
e-mail: justin.s.campbell.phd@gmail.com

R. Markwald • E.D. Chinoy
Warfighter Performance, Naval Health Research
Center, 53690 Tomahawk Dr, BLDG 74, San Diego,
CA 92147, USA
e-mail: Rachel.r.markwald.civ@mail.mil;
evan.d.chinoy.ctr@mail.mil

A. Germain
Department of Psychiatry, University of Pittsburgh,
3811 O'Hara Street, Clovis, NM 15217, USA
e-mail: germax@upmc.edu

E. Grieser
26 Special Tactics Squadron, ACU,
133 Raider Loop, Clovis, NM 88101, USA
e-mail: emily.grieser.1@us.af.mil

I. Lim
Institution: Health and Wellness Directorate, Office
of the Surgeon General, Defense Health,
7700 Arlington Blvd, Falls Church, VA 22042, USA
e-mail: ingrid.c.lim.mil@mail.mil

S.V. Bowles
National Defense University, Institute for National
Strategic Studies, Center for Technology and
National Security Policy, Washington, DC, USA
e-mail: dr.stephen.bowles@gmail.com

stressors of combat, as it is at near epidemic levels across the entire military (Troxel et al., 2015).

Another study of sleep, utilizing data from a large joint-service sample (Seelig et al., 2010), tracked sleep over time (up to 5 years) in three subsamples: a baseline sample that had never deployed ($n = 30,190$), a sample that submitted a follow-up survey within 2 weeks of returning from deployment ($n = 1,771$), and a sample that submitted their follow-up survey at least 2 weeks after deployment ($n = 9,224$). It should be noted that this study failed to describe whether or not the deployment was to an active combat zone or represented regularly scheduled support deployments such as those on-board ships. The average sleep times did not differ between these three samples, respectively (6.56, 6.46, and 6.47 h); however, predeployment symptoms of psychiatric disorders such as post-traumatic stress disorder (PTSD), depression, anxiety, and panic were the strongest predictors of sleep problems in samples that had returned from deployment. This finding is consistent with a diathesis–stress interpretation: preexisting vulnerabilities (i.e., psychiatric conditions) interact with environmental stressors (i.e., deployment) to increase the odds for sleep problems rather than a simple causal model in which deployment alone is the causal factor irrespective of preexisting vulnerabilities. Based on these two studies, it appears that sleep quantity is less than ideal in the military as a whole, regardless of deployment.

Despite the clear need for military mental health providers to be trained in sleep medicine, psychology as a profession has not taken a leading role. The authors are not aware of a documented history of sleep health programs in the US military that actively involve psychologists which precedes the post-9/11 era. Unfortunately, one reason is that graduate programs in psychology provide little or no training to prepare psychologists to assess or treat sleep problems. Results from a survey of 212 American Psychological Association approved clinical psychology programs indicated that just 6% of the programs offered formal coursework in sleep, with 41% of respondents not offering any clinical training in the assessment, diagnosis, or treat-

ment of sleep disorders (Meltzer, Phillips, & Mindell, 2009). While postgraduate training is available for an individual to become certified in behavioral sleep medicine, in 2009, there were only 93 psychologists who had attained this credential by attending one of the nine accredited programs, passing an exam administered by the American Academy of Sleep Medicine, and completing 1,000 h of supervised training (Peachey & Zelman, 2012). The degree to which other psychological disciplines outside the clinical domain (e.g., cognitive, educational, industrial/organizational, neuropsychology) offer formal training related to the assessment, diagnosis, mitigation, and study of sleep is also unclear. Considering the paucity of military psychologists with formal education and training in sleep, this chapter is designed to provide an overview of the different milieus in which psychologists working with military populations might encounter sleep issues in their patients.

Overview of Sleep Regulation

Despite the limited scope of this chapter, it is nevertheless important for psychologists working with the military to have a basic understanding of key physiological processes that control the sleep/wake cycle in humans. Multiple subcortical brain areas are involved in the generation of sleep and wakefulness states. Complex and coordinated patterns of activity within and between these brain areas are under the control of two distinct biological processes, called the two-process model of sleep regulation, and regulate the many aspects of sleep including its timing, duration, stages, and quality (Borbély, 1982; Harrington & Lee-Chiong, 2012; Saper, Scammell, & Lu, 2005). One of these biological processes, called sleep homeostasis, is a drive for sleep that increases with time awake and dissipates with time asleep. An individual will normally feel tired and struggle to stay awake when the buildup of homeostatic sleep drive reaches high enough levels, such as on a typical day after 16 or more hours spent awake or even sooner if prior sleep was insufficient. Greater homeostatic sleep drive

is reflected by slowed brain activity, and can therefore be measured by the levels of synchronized and slow-frequency activity present in cortical electroencephalography (EEG) signals. The other process in the two-process model of sleep regulation is the circadian rhythm, which is the endogenously driven ~24-hour biological clock that synchronizes the timing of sleep and wakefulness (and associated physiology and behavior) to occur with regular changes in our environment. Various hormones (most notably melatonin) and core body temperature are direct physiological outputs of the circadian clock and can be measured to indicate internal timing. Thus, though these two processes are physiologically distinct, when aligned the processes interact to promote consolidated periods of sleep during darkness at night and wakefulness during the day (see Fig. 15.1).

As displayed in Fig. 15.1, the propensity to sleep at a given time is regulated by the interaction of two physiological processes, the homeostatic sleep drive and the circadian rhythm. The homeostatic sleep drive reflects the amount of

time an individual has been awake, with the propensity (or drive) to sleep increasing with accumulated time spent awake. Once homeostatic sleep drive reaches high enough levels (e.g., typically after being awake for 16 or more hours, depicted at 22:00), sleep is more easily initiated. Sleep then dissipates the homeostatic sleep drive to lower baseline levels by the beginning of the following day (e.g., after 8 or more hours of sleep, depicted at 06:00). Homeostatic sleep drive will remain high and not be fully dissipated when an individual is awake for extended durations and/or when sleep is insufficient (which affects daytime alertness). The circadian rhythm is an endogenously driven near-24-hour rhythm that regulates internal timing of various biological processes and cycles, such as hormone release and core body temperature. Sleep and wakefulness have higher propensities at certain times within the circadian rhythm; sleep is promoted during the “biological nighttime” which normally occurs during environmental nighttime, when melatonin is secreted and core body temperature is lowest. Sleep is best achieved when

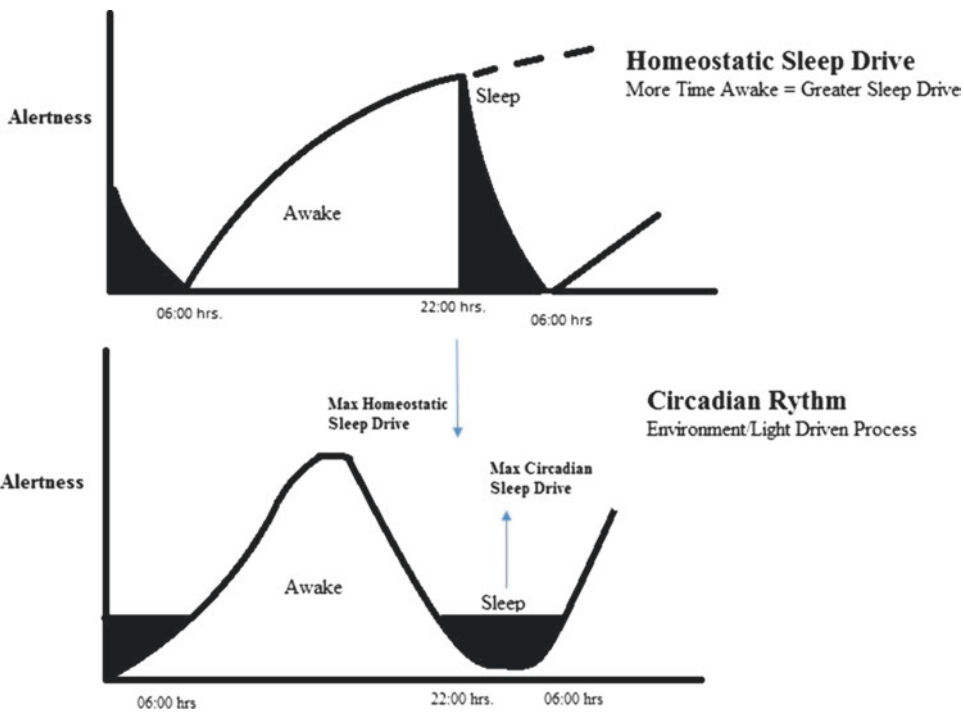


Fig. 15.1 The two-process model of sleep regulation

the two processes are aligned to promote sleep at the same time, as in Fig. 15.1. The regulation of the two processes can also be affected by various stimuli, such as light exposure; however, effects will depend on the stimulus type, timing, intensity, and duration.

A number of factors can impact the homeostatic and circadian processes and consequently affect regulation of sleep patterns. As mentioned above, environmental light has the largest effect on circadian rhythm timing, and light exposures timed very early or very late will input into the circadian clock, causing circadian timing to shift and become out of sync with one's environment and habitual sleep pattern (Khalsa, Jewett, Cajochen, & Czeisler, 2003; Wright, Bogan, & Wyatt, 2013). This is termed circadian misalignment, and it disrupts sleep regulation. A simple example of this is demonstrated by jet lag, where there is a mismatch in internal circadian timing of sleep promotion with the environmental light/dark pattern in the new time zone. Initially, this causes difficulty sleeping; however, with each successive day of light exposure in the new environment, the circadian clock uses the light input to adjust internal circadian timing to match that of the new environment and subsequently improve sleep regulation. Also, napping and irregular sleep and wake times associated with shift work can disrupt both sleep homeostasis and the circadian clock (Wright et al., 2013).

Although the exact function(s) of sleep is debated in the field, sleep is known to play a vital role in a number of physiological and psychological domains that have implications for health, behavior, and performance. The functional roles of sleep are often exposed after examining how disrupted sleep patterns affect one or more such domains. Findings from experimental and epidemiological studies have shown that acute or chronic sleep loss causes impairments in domains such as learning and memory (Stickgold & Walker, 2007), neurobehavioral performance (Banks & Dinges, 2007), emotion regulation (Gruber & Cassoff, 2014), quality of life (Taylor, Bramoweth, Grieser, Tatum, & Roane, 2013), energy metabolism (Knutson, Spiegel, Penev, &

Van Cauter, 2007), and immune function (Opp & Krueger, 2015). Thus, healthy sleep is necessary to maintaining optimal health and functioning and will be discussed later in the chapter.

Sleep Assessment and Stages

Sleep is a state that is generated by the brain, and thus a technique that records the electrical activity from the brain provides the most direct assessment of sleep. The gold standard in sleep research and clinical practice is a technique termed polysomnography (PSG), which incorporates brain and muscle electrical activity signals from electrodes placed on the scalp and face, in order to determine sleep and sleep stages. For suspected sleep disorders such as sleep apnea, narcolepsy, and periodic limb movement disorder, additional diagnostic sensors are placed on the body (e.g., to measure respiration, limb movements, oxygen saturation levels (Kushida et al., 2005)). Clinical practice guidelines, however, dictate that PSG is not necessary for the diagnosis of other sleep disorders such as insomnia, nightmares, and restless legs syndrome which can be reliably diagnosed through clinical interviews.

In clinical situations where PSG is not indicated, however, objective information on sleep summary outcomes and overall sleep patterns is helpful, and a technique termed actigraphy is often used. Actigraphy consists of a device worn on the wrist that contains a triaxial accelerometer which provides behavioral information on inactivity/activity patterns derived from body movements (Sadeh, 2011). This technique is capable of multiple night recordings and requires less technical expertise than PSG. Although not capable of discerning sleep stages, the actigraph can provide important information on sleep timing and light exposure (in some models), and provides reliable estimates of sleep summary endpoints (e.g. onset and offset of rest periods (including naps), total sleep time, sleep onset latency, and sleep efficiency). This information can be used to support psychologists and physicians in the diagnosis of insomnia and circadian rhythm sleep disorders. Actigraphy is also a reli-

able way to provide an objective measure of adherence to treatment recommendations.

Sleep is categorized into stages of nonrapid eye movement (NREM) sleep and rapid eye movement (REM) sleep (Harrington & Lee-Chiong, 2012). NREM sleep is further subdivided into three stages, based on the aspects of the EEG signal in the PSG that reflect the level of slowed and synchronized brain activity: N1 (transitional/light sleep), and N3 (deep sleep). N2 (loss of conscious awareness, short bursts of brain activity, sleep spindles and K-complex EEG signals). REM sleep is a state of relatively active brain activity when vivid dreams occur and is also determined by certain aspects of the PSG signals. Several ~90 min cycles of alternating NREM and REM stages occur during a typical overnight sleep episode; however, the composition of stages is not the same in all sleep cycles. Cycles toward the beginning of the night contain more N3 (deep) sleep while cycles toward the end of the night contain more REM sleep. The different sleep stages are generated through activity changes in distinct and complex neural networks. All sleep stages generally serve important restoration and recovery functions for the brain and body, and individual stages likely play distinct roles to aid in those functions such as memory consolidation (Stickgold & Walker, 2007). Although there may be individual differences based on age, sex, medications, and health status, the average percentage of time spent in each sleep stage over a typical overnight sleep episode is termed sleep architecture, and for a healthy, nonmedicated adult, it is as follows: N1 (5%), N2 (45%), N3 (25%), and REM (25%) (Harrington & Lee-Chiong, 2012). Large and sudden unexplainable changes in sleep stage architecture may reflect an underlying sleep, medical, or psychiatric disorder.

Sleep Impacts on Physiological and Mental Health

This section reviews research that has consistently found that inadequate duration and/or disrupted sleep (poor sleep quality) has adverse

effects on our physical and mental health. This is relevant to psychologists who practice within and provide care for the military community where sleep cannot always be prioritized and sleep disruption is often a consequence of operational engagement.

Physiological Health

The American Academy of Sleep Medicine and Sleep Research Society recently published a consensus report recommending that adults obtain 7–9 h of sleep per night (Watson et al., 2015). Sleep durations below the recommended amount, and/or poor sleep quality, have been associated with a range of negative health consequences. Inadequate sleep is linked to metabolic disruption. For instance, in epidemiological studies, shorter durations (below the recommended amount) are consistently shown to be associated with an increased risk of obesity and diabetes when compared to sleep durations within the recommended range (Patel & Hu, 2008; Tobaldini et al., 2017). These well-described associations are supported with laboratory findings from controlled experiments showing continuous days of short sleep resulting in dysregulated food intake (Brondel, Romer, Nougues, Touyarou, & Davenne, 2010; Calvin et al., 2013; Markwald et al., 2013; Nedeltcheva et al., 2009), weight gain (Markwald et al., 2013), and insulin resistance (Buxton et al., 2010; Rao et al., 2015; Spiegel, Leproult, & Van Cauter, 1999).

Sleep is important to cardiovascular health. Sleep disturbances, such as sleep apnea and insomnia, are consistently associated with an increased risk of heart failure and coronary artery disease (Gottlieb et al., 2010; Sofi et al., 2014). In a meta-analysis that examined the relationship between sleep duration and morbidity and mortality from coronary artery disease, stroke, and total cardiovascular disease, it was found that short sleep duration (independent of sleep disturbances) is a predictor of cardiovascular outcomes (Cappuccio, Cooper, D'Elia, Strazzullo, & Miller, 2011).

Sleep is involved in the health and reactivity of the immune system. Disrupted sleep increases levels of proinflammatory cytokines, increases cortisol levels in the evening before bed, and increases susceptibility to the common cold. In separate studies, people were administered nasal drops containing a rhinovirus and were then monitored for the presence of illness. In both cases, those sleeping below the recommended quantity were 3–4.5 times more likely to develop the cold, even after controlling for other mediating factors (Cohen, Doyle, Alper, Janicki-Deverts, & Turner, 2009; Prather, Janicki-Deverts, Hall, & Cohen, 2015). Clearly, insufficient sleep is a stressor to the body, exacerbating pathways that have negative effects on our physiological health.

Mental Health and Well-being

Sleep disorders encompass a wide variety of issues including dyssomnias (such as insomnia), parasomnias (such as sleepwalking), and sleep disorders comorbid with mental health conditions, physical conditions, and substance-induced conditions (American Psychiatric Association, 2013). One of the more comprehensive studies to date regarding the various sleep disorders encountered in military medicine examined the medical records of 725 active duty service members who were seen in a military medical treatment facility for diagnostic polysomnography after referral from primary care or behavioral health specialists (Mysliwiec et al., 2013). The most commonly occurring sleep disorders, in order of prevalence, were: mild obstructive sleep apnea (OSA; 27.2%), insomnia (24.7%), moderate-to-severe OSA (24%), behaviorally induced insufficient sleep syndrome (8.9%), snoring (5.3%), and paradoxical insomnia (5.1%). The most relevant psychological comorbidities in this sample were depression (22.6%), anxiety (16.8%), PTSD (13.2%), and mild traumatic brain injury (12.8%). With respect to PTSD, some studies have noted that 70–91% of patients diagnosed with PTSD subjectively report sleep disturbances (Maher, Rego, & Asnis, 2006).

Sleep disturbances are associated with depression, as well. Multiple studies have found that insomnia at baseline predicts depression risk 1–3 years later (Riemann & Voderholzer, 2003). Importantly, sleep issues can similarly be a consequence of depression (Baglioni, Spiegelhalter, Lombardo, & Riemann, 2010) and should be considered an indicator of depression. Anxiety is similarly associated with sleep disturbances. One study reported that an anxiety disorder preceded insomnia in 73% of the cases (Johnson, Roth, & Breslau, 2006). In the general public, sleep disturbances are commonly reported in individuals with post-traumatic stress disorder (PTSD) (Lamarche & De Koninck, 2007). In military contexts, service members who endorse symptoms of PTSD, depression, or anxiety are more likely to have sleep difficulties (Plumb, Peachey, & Zelman, 2014). Although they are best managed as comorbid, rather than “secondary” syndromes, sleep problems are a symptom of anxiety, PTSD, and depression (American Psychiatric Association, 2013).

Several research studies have demonstrated that sleep disruption is associated with mood state. For instance, greater positive affect has been associated with higher quality sleep (Steptoe, Dockray, & Wardle, 2009). Further, the trait of positive affect has been associated with better sleep (morning rest and overall quality), but greater variations in positive affect (reactivity) are detrimental to sleep (Ong et al., 2013). Among military personnel, poor sleepers are 23 times more likely to have scored in the lowest quartile for emotional health, as measured by the Army’s Global Assessment Tool (Lentino, Purvis, Murphy, & Deuster, 2013) compared to healthy sleepers. Poor sleepers were also more likely than their healthy sleep counterparts to have scored in the lowest quartile for family and social health (Lentino et al., 2013). In another study, the relationship between deployment status and reported sleep issues were in part mediated by mental health symptoms (Seelig et al., 2010) calling attention to the importance of monitoring both behavioral health and sleep within the context of deployment. Collectively, these study findings may have implications for mental health treat-

ment of service members, as sleep complaints may be both an antecedent and a consequence of other psychosocial concerns and may also be military-relevant, making them, therefore, a high-value target for intervention.

Psychological Treatment of Insomnia

Pruiksma et al. (2016) studied PTSD symptom prevalence before and after mental health treatment for 108 active duty US Army veterans of Iraq and Afghanistan. Of that sample, 92% reported insomnia at the beginning of treatment, and 74–80% reported insomnia after treatment, making insomnia the most frequently reported PTSD symptom both before and after treatment in that study population. Insomnia, especially as it relates to treatment for PTSD, is quite persistent and may require specialized interventions above and beyond general psychotherapy and psychopharmacological intervention.

There are several treatment options for disrupted sleep such as insomnia. Although pharmaceuticals may be indicated for short-term use, nonpharmacological interventions, namely, cognitive behavioral therapy for insomnia (CBT-I), are now recommended as the first-line treatment (Qaseem, Kansagara, Forcica, Cooke, & Denberg, 2016). CBT-I incorporates a structured program with several individual components that assist with identifying and replacing thoughts and behaviors that cause or worsen sleep problems with habits that promote sound sleep. The behavioral intervention aspect of CBT-I alone, including components of sleep restriction and stimulus control therapies, has been shown to be effective in addressing insomnia (Troxel, Germain, & Buysse, 2012). Although few military psychologists may have had graduate-level training in behavioral sleep medicine, the dissemination of these behavioral therapies for insomnia to nonsleep specialists is feasible (Koffel & Farrell-Carnahan, 2014; Manber et al., 2012). In terms of the expansion of clinical treatment modalities, stepped care approaches seem to show promise in terms of both effectiveness

and compatibility with primary care settings, where most military members and veterans initially seek care for sleep concerns (Germain et al., 2014). With the publication of the RAND report on sleep in the military (Troxel et al., 2015) and the increasing number of studies demonstrating a link between sleep and psychopathology such as PTSD, there is reason to believe that psychologists will begin to play a greater role in identifying sleep disorders and elevate the level of care when necessary.

An approach to understanding and treating insomnia developed within psychology is based on Harvey's cognitive model of insomnia (Harvey, 2002), which postulates that insomnia is the result of cognitive beliefs and safety-seeking behaviors. In this model, beliefs and behaviors generate excessive negative cognitions that engender physiological arousal and cognitive distress that in turn lead to selective attention and monitoring of confirmatory sensory input, and ultimately a distorted perception of sleep deficits. At least two of these cognitive processes are reciprocal in that both selective attention/monitoring and distorted perceptions of sleep debt reinforce excessive negative cognitions and safety behaviors. The end result of this process is an increase in psychological and physiological reactivity, which prevents individuals from falling or staying asleep, leading to serious sleep deficits. Harvey's cognitive model for the maintenance of insomnia has influenced cognitive behavioral therapy for insomnia (CBT-I) which has been widely disseminated by the Veterans Administration (Manber et al., 2012). A thorough review of psychometric assessments to support the evaluation of the various cognitive processes in Harvey's model, as well as a review of the evidence which supports this model, was provided by Hiller, Johnston, Dohnt, Lovato, and Gradisar (2015). Some initial pilot studies regarding the use of CBT-I in the treatment of sleep problems for patients diagnosed with PTSD indicate subjective increases in sleep time and reductions in sleep latency and time awake after sleep onset, but a failure to replicate those findings in the same sample when measured with actigraphy (Gellis & Gehrman, 2011).

Sleep Problems and Deployment to Iraq and Afghanistan

Despite the prevalence of sleep problems in the military as a whole, there is abundant evidence that deployments to Iraq (OIF) or Afghanistan (OEF) exacerbate the situation. According to Peterson, Goodie, Satterfield, and Brim (2008), 74% of deployed military personnel in Afghanistan rated their quality of sleep as significantly worse during deployment than at home. A survey of Navy Sailors serving on the ground in OEF reported that 56% of service members were considered to be sleep-deficient (Taylor et al., 2014). Plumb et al. (2014) studied the self-reported sleep and mental health outcomes of 375 service members who had previously deployed to OIF/OEF. They found that 21.4% of the sample slept less than 4.5 h a night, and 89% scored higher than 5 on the PSQI, indicative of clinically significant sleep problems. Interestingly, combat exposure, while initially predictive of sleep problems, was no longer predictive of PSQI scores after self-reported depression and PTSD were added to a hierarchical regression model, suggesting again that combat exposure in and of itself is not sufficient to cause sleep problems, but that disrupted sleep likely requires, at the least, the combined experience of combat trauma and psychological health problems. A study of 245 OIF/OEF veterans receiving treatment from the VA reported that difficulty in initiating and maintaining sleep increased with the severity of other nonsleep PTSD symptoms, and that nightmares in particular were worse in those with loss of consciousness following a head injury, depression, and alcohol abuse/dependence (Gellis, Gehrman, Mavandadi, & Oslin, 2010). Another study investigating sleep post deployment reported that 41% of the veterans surveyed from OEF and OIF complained of sleep difficulty (McLay, Klam, & Volkert, 2010). Furthermore, Amin, Parisi, Gold, and Gold (2010) found that 64% of OEF and OIF veterans reported that they suffered from insomnia. The high prevalence of sleep problems in military deployment and operational contexts and the role of sleep disturbances (or alternatively, consolidated sleep in

psychological and physical health) in many psychiatric disorders make sleep an increasingly important topic within the contexts of military behavioral health.

The 3P (i.e., predisposing, precipitating, perpetuating) model of sleep disorders provides (Fig. 15.2) a compelling approach to conceptualizing the impact of deployment on sleep problems. Adapted to describe post-deployment sleep problems associated with military deployments, the model acknowledges the role of predisposing factors such as adverse childhood experiences, pre-deployment shift work, genetic susceptibility to sleep problems, and circadian disrupting training that places service members at risk for acute sleep problems when exposed to precipitating events such as combat, family and social separation, shift work and irregular schedules, and jet lag (Bramoweth & Germain, 2013; Troxel et al., 2015). Third, perpetuating factors such as the use of alcohol to self-medicate for sleep, hypervigilance to threat, and social reintegration challenges work to turn acute sleep problems into chronic sleep problems which are the root cause of overall poor health and work performance outcomes after deployment.

Sleep in Operational Military Contexts

Sleep and Performance

The collective findings from a series of research studies examining the role of sleep in cognitive performance have provided compelling evidence that insufficient sleep produces degradations in performance that may have serious health and safety consequences. For example, under controlled laboratory conditions (either acute sleep deprivation or reduced sleep duration), sleep loss results in degraded neurobehavioral performance (e.g., attentional stability and response times), poorer judgment, ineffective learning, impaired memory, limited task-shifting ability, and compromised situational awareness (Balkin, Rupp, Picchioni, & Wesensten, 2008; Killgore, 2010; Lim & Dinges, 2010). These impairments can

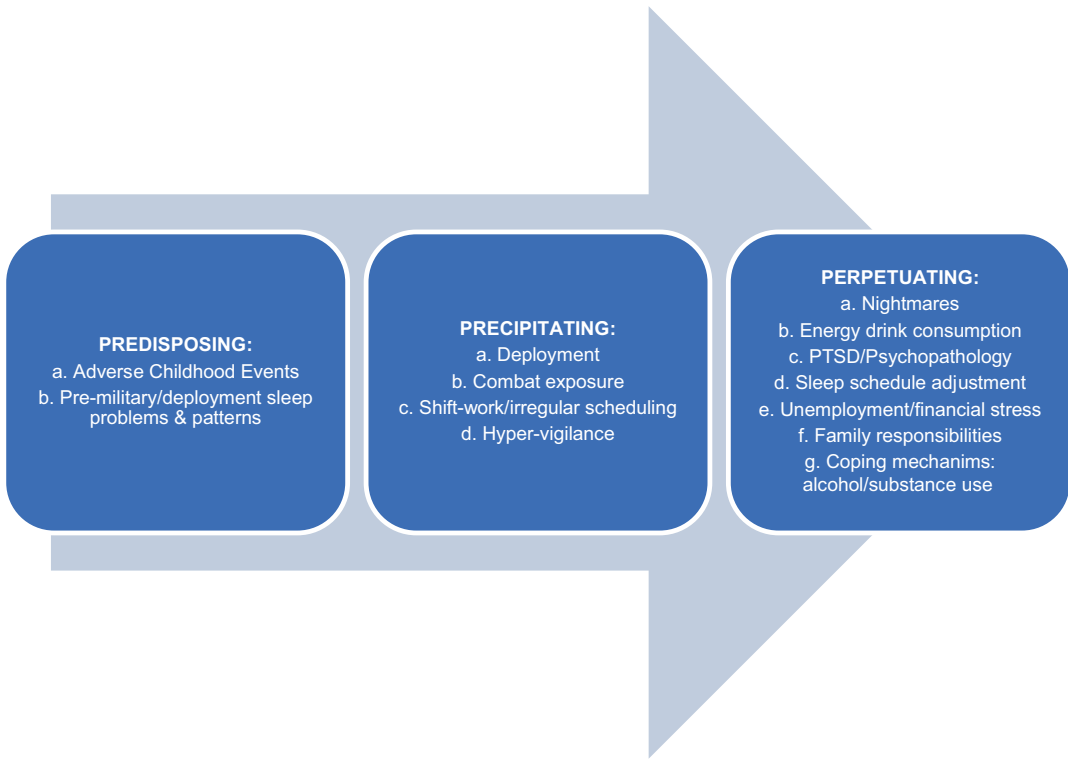


Fig. 15.2 The 3P model of insomnia for combat-exposed military personnel proposed by Bramoweth and Germain (2013)

span a number of higher order functions, for example, response latency to moral personal dilemmas during sleep deprivation is lengthened (Killgore et al., 2007). The importance of these findings becomes apparent when considering the number of military jobs that require vigilance, such as, pilots, air traffic controllers, convoy drivers, and security details. Further, data from the Naval Safety Center identifies fatigue from sleep loss as the Number 2 human factor responsible for accidents/mishaps in Naval Aviation (Naval Safety Center, 2008). These implications are not limited to job-related tasks but have consequences for the general population, such as drowsy driving which is implicated as a primary factor in approximately 83,000 on-the-road motor vehicle accidents per year in the United States (National Highway Traffic Safety Administration, 2011). One way to conceptualize the magnitude of cognitive performance impairment during sleep loss is to compare with alcohol

intoxication. Several studies have found cognitive and motor performance impairments during total sleep deprivation that were equivalent to the impairments associated with legally significant levels of alcohol consumption. For example, staying awake beyond 16 continuous hours results in neurocognitive deficits equivalent to .05–.10 blood alcohol concentrations (Dawson & Reid, 1997; Horne, Reyner, & Barrett, 2003; Williamson & Feyer, 2000).

Sleep loss is also associated with reduced workplace productivity. In a study examining the impact of insomnia on absenteeism, it was found that insomnia resulted in increased absenteeism from work which was likely mediated through increased susceptibility to illness such as the common cold (Daley, Morin, LeBlanc, Gregoire, & Savard, 2009). Yet another study reported that sleep quality is linked to job satisfaction, which in turn increases prosocial work behaviors (Barnes, Ghumman, & Scott, 2013). Other

Key Psycho-educational Points about Sleep and Operational Military Performance

- Fatigue is a physiological problem that cannot be overcome by motivation, training, or willpower
- People cannot reliably self-judge their own level of fatigue-related impairment.
- There are wide individual differences in fatigue susceptibility that must be taken into account but which presently cannot be reliably predicted.
- There is no one-size-fits-all “magic bullet” (other than adequate sleep) that can counter fatigue for every person in every situation.
- Valid counter-fatigue strategies will enhance safety and productivity, but only when they are correctly applied

Fig. 15.3 Educational points recommended by the Aerospace Medical Association (adapted from Caldwell et al., 2009)

research related to leaders found greater weekend to weeknight change in sleep duration resulted in lower performance ratings from peers, but not supervisors (Gaultney, 2014).

Aviation Operations

Continuous operations (CONOPS) and sustained operations (SUSOPS) within the realm of military aviation demand high levels of human performance for success. Fatigue is a challenge to high performance, and sleep disruption is one of the several contributors to fatigue. Fatigue is especially relevant in light of CONOPS and SUSOPS, due to related performance and safety decrements and possible adverse outcomes in terms of mishaps (Caldwell, Chandler, & Hartzler, 2012). Even among healthy professional aviators, individual reaction to sleep deprivation varies widely on measures of both flight simulator performance and subjective fatigue rating (Van Dongen, Caldwell, & Caldwell, 2006). Thus, one-size-fits-all mission planning and work/rest scheduling may underestimate or overestimate an individual’s true vulnerability to sleep deprivation. Within the unmanned systems community, sustained operations in a shift work environment may leave service members vulnerable to shift work sleep disorder. Rapid shift rotation, in particular, is associated with higher levels of reported fatigue than slower rotation, which

may be attributable to chronic partial sleep deprivation (Thompson et al., 2006). Stimulant use by fighter aircrew during combat operations has demonstrated improved perception of alertness and decreased subjective postflight fatigue (Gore, Webb, & Hermes, 2010). Potential behavioral and environmental interventions could include the incorporation of actigraphy into flight scheduling, as it provides an objective measure of sleep time and patterns. With this quantitative data, highly personalized recommendations for sleep adjustment may be made by flight medicine personnel (Rabinowitz, Breitbach, & Warner, 2009). Readers interested in a detailed review of fatigue countermeasures for aviation are encouraged to read the comprehensive, multidisciplinary position paper on the topic prepared for the Aerospace Medical Association by Caldwell et al. (2009). The five central educational points promulgated in that paper are particularly relevant to military psychologists working in aviation as well as other operational platforms (Fig. 15.3).

Maritime Operations

The work environment of underway water operations is by necessity a 24-hour a day operation requiring constant vigilance to monitor propulsion systems, navigation, command and control, security, culinary services, and medical support. However, by necessity, the ship’s company is

limited with respect to the number of Sailors and Marines who can occupy limited ship's berthing; therefore, shift work is an unavoidable reality (Cordle & Shattuck, 2013). Shift work that is not aligned with the day/night, wake/sleep cycle is a well-known threat to psychological and physical health, often resulting in loss of sleep homeostasis—a pathological condition which can be diagnosed as shift work disorder (SWD) under the *International Classification of Sleep Disorders—2nd edition* (Wright et al., 2013). Some reports indicate that on an annual basis, a ship may lose up to 5% of her crew to stress-related issues, a situation often attributed to or made worse by sleep loss (Cordle & Shattuck, 2013).

Despite the elevated risk for SWD and other sleep-related problems aboard military ships, there is a surprising paucity of literature in this domain with respect to the US Navy, a situation that possibly reflects a cultural belief that “sleep is a luxury” (Cordle & Shattuck, 2013). This situation is starting to change as a result of operations research conducted by the Naval Postgraduate School in which underway operations are evaluated using a combination of self-reports (e.g., PSQI, the Epworth Sleepiness Scale (ESS); Johns, 1991) and objective sleep measures (wrist-worn actigraphy) to evaluate the impact of various shift work configurations on cognitive performance indices (i.e., psychomotor vigilance task; PVT). For example, Shattuck, Matsangas, and Powley (2015) investigated the utility of the ESS to identify disrupted sleep aboard a US Navy Arleigh Burke-class destroyer. They found that ESS scores could be used to identify poor sleep health as well as deteriorations in cognitive performance. In this sample, the average PSQI global score indicated the average Sailor was above the threshold of 5 for clinically significant sleep problems, with just 8% scoring in the range of what could be considered “good sleepers”, i.e., PSQI score < 5. The average duration of sleep was 6.72 h and ranged from 4.9 to 8.78 h. Sailors with high ESS scores demonstrated significantly poorer performance on several PVT parameters. A second study conducted aboard the USS Nimitz (aircraft carrier) evaluated the sleep health of 110 nuclear reactor crew, 9 medical depart-

ment crew, and 12 supply crew (Shattuck et al., 2015). The percentage of the reactor crew with PSQI scores indicative of “poor sleepers” was above 91%, with 78% of the medical crew and 100% of the supply department scoring in that category. The primary reasons cited by the reactor crew (the focus of the study) for poor sleep was inadequate opportunity to sleep (88%), noise (77%), and temperature (56%). A variety of shift schedules were evaluated with respect to their impact on PVT, in particular the common 5/10 schedule in which Sailors are on-duty for 5 h, followed by 10 h off (-15-hour day). The 5/10 schedule results in rotating periods of scheduled sleep and wake that occur at different clock hours throughout the day–night cycle over a 72-hour period. The rotating shifts result in desynchrony between the sleep homeostatic drive and the internal circadian clock, and are highlighted by periods of sustained wakefulness at the ends of the schedule of between 20 and 22 h. The results indicated significantly poorer PVT performance for the 5/10 schedule compared to a schedule that aligned better with the natural 24-hour day and also provided the opportunity for the recommended sleep duration of 6/6 (6 h on, 18 h off) and 3/9 (3 h on, 9 h off). An issue raised in this study is the need to create schedules that protect sleep from the demands of other duties and needs for personal time, which further exacerbate poor sleep. From an organizational standpoint, the 5/10 shift schedule was associated with low psychological resilience, organizational commitment, and concerns about safety. The implication from these two studies is that military psychologists working with Sailors assigned to sea duty should strongly consider the role of sleep in evaluating clinical mental health as well as with regard to the role of various shift configurations, especially the 5/10 schedule, with respect to operational performance and mishap investigation.

It should be noted that the US Coast Guard developed a crew endurance management guide for operational leaders, which directly addresses topics such as sleep management, napping, circadian rhythms, and shift work (Comperatore & Rivera, 2003). However, there does not appear to be an

extensive literature regarding sleep shipboard operations for the US Coast Guard shipboard operations.

Ground Operations

Psychologists serving in ground-based military operational contexts can provide direct recommendations to the commands they support by linking the benefits of sleep countermeasures to improved quality and quantity of sleep and enhanced operational performance. Sleep deprivation countermeasures involve: (a) the effective use of sleep banking, recovery sleep, (b) napping, and (c) tactical caffeine application, and are reviewed next.

To start, sleep banking or sleep extension (Mah, Mah, Kezirian, & Dement, 2011) is an often overlooked strategy for managing episodes of sleep deprivation in healthy, nonpsychotic individuals. Sleep banking involves obtaining more hours of sleep by spending more time in bed creating a metaphorical cognitive reserve. Allowing more time in bed benefits cognitive performance, alertness, accuracy, and vigilance (Mah et al., 2011), and speeds recovery from sleep restriction (Rupp, Wesensten, Bliese, & Balkin, 2009). Thus, it may be possible that service members can prepare for known episodes of sleep restriction by sleep banking. A similar approach was seen in a research study where adolescents' time in bed was incrementally increased by going to bed 5 min earlier each night (Dewald-Kaufmann, Oort, & Meijer, 2013). Two unresolved issues for sleep banking should be noted: first, how far in advance can one sleep bank? Second, when do the benefits of sleep banking expire?

Recovery sleep goes hand in hand with sleep restriction or sleep deprivation as this activity is necessary for the recovery of baseline cognitive functioning. It is important to differentiate between chronic sleep deprivation and acute sleep deprivation. Chronic sleep deprivation could be broadly described as getting less than needed core sleep for a week or longer. Acute sleep deprivation is likely to occur when service

members are required to stay awake for 24-hour duty or mission outside of 09:00–17:00 duty hours. Recovery from acute sleep deprivation in terms of sleepiness tends to occur with recovery sleep, but full recovery in terms of cognitive performance was not evident with 8 h of sleep every night for 1 week (Pejovic et al., 2013). The brain appears to adapt and stabilize at lower levels of performance to cope with chronic sleep restriction (3 or 5 h of time in bed a night) but does not return to baseline functioning with 3 days of recovery sleep of 8 h' time in bed (Belenky, 1997). To fully recover, Belenky (1997) hypothesized that the brain likely needs sleep duration in excess of core sleep needed to produce higher levels of alertness and performance.

Napping should be used cautiously as it can interfere with a person's ability to sleep at night. The amount of time that should be dedicated to napping varies considerably according to task, job, environment, and an individual's ability to fall asleep. The National Sleep Foundation (2017) proposes three types of naps: planned naps, emergency naps, and habitual naps. Planned naps are taken in advance of becoming sleepy or when one will experience a time of sleep restriction. Emergency naps are taken when one is extremely tired and cannot continue to perform a task. This type of nap may be used when one becomes drowsy in high-risk activities such as driving or operating dangerous equipment or machinery. Habitual naps are routinely taken daily at the same time. Habitual naps may be considered "appetitive" naps (Cote, 2015), taken simply because it feels good.

The length of a nap must be based on the type of nap, work to accomplish, and the setting in which service members find themselves (Brooks & Lack, 2006). When nap lengths were compared to determine optimal length, 5-min naps produced very little benefits; 10-min naps were effective in improving sleep latency, sleepiness, fatigues, vigor, alertness, and cognitive performance (Brooks & Lack, 2006). These improvements lasted up to 155 min. Naps of 20 and 30 min were also effective, though increasing the length of the nap resulted in sleep inertia, as evident in 30-min naps. Horne and

Reyner (1996) advocate the use of 15-min naps, and also note the effectiveness of such naps persists for about 2-h.

The use of caffeine has positive effects on alertness, vigilance, and performance (Lieberman, Tharion, Shukitt-Hale, Speckman, & Tulley, 2002; Kamimori et al., 2015). For example, caffeine dosing reduced decrements in psychomotor performance and sustained vigilance during simulated ground operations during periods of sleep deprivation, as compared to placebo (McLellan et al., 2005). In addition, rifle sighting and shooting time was faster in Navy SEAL trainees given 200 or 300 mg caffeine after 72-h of sleep deprivation, versus those given only 100 mg caffeine (Tharion, Shukitt-Hale, & Lieberman, 2003).

The effect of caffeine consumption is impacted by several variables such as previously obtained sleep, the amount of caffeine consumed, and the manner in which it is ingested. Caffeine ingested orally typically takes around 30 min to take effect (Wundersitz & Baldock, 2008). Standard doses of caffeine, usually represented as coffee equivalents (e.g., 180 mg in a medium coffee), can be taken as a capsule or pill and can be prepared in an extended release format (Wundersitz & Baldock, 2008). Caffeine administered using caffeine gum formulation reaches peak blood concentration faster than when administered as a pill or capsule (Kamimori et al., 2002).

The mediating impact of prior sleep on the effectiveness of caffeine was investigated by Reyner and Horne (2000) who reported that drivers without a previous night's sleep had improvements in performance with caffeine intake, but for only the first 30 min, after which they could not safely perform the task of simulated driving. Those with limited amounts of sleep the night before (less than 5 h) benefited from caffeine use that lasted approximately 2 h. The effect of caffeine was not impacted by the user's typical caffeine consumption such that there was no difference between those who consumed caffeine up to the point of assessment and those who had no caffeine consumption up to 6 h prior to assessment (Hewlett & Smith, 2007).

While naps and caffeine were previously considered separately, is it possible for the two to be

used together tactically and effectively? Horne and Reyner (1996) examined the effects of consuming 150 mg of caffeine prior to taking a 15-min nap, a "nappuccino" on the subject's ability to drive a simulator. The "nappuccino" group produced fewer errors than the control, nap-only, or coffee-only groups. While some participants had difficulty sleeping, dozing instead, they still derived the same benefits of caffeine use and napping. Other nap and caffeine research found this combination was more effective in computer task performance than combining napping and bright light or napping and face washing in mitigating sleepiness (Hayashi, Masuda, & Hori, 2003). When examining napping only in relationship to performance on learning tasks, researchers found that the "no nap" group's performance deteriorated on tasks in the evening when compared to the nap group (Mednick, Nakayama, & Stickgold, 2003).

Operational Stress Control and Sleep

There is a clear need for operational and field-based interventions to address sleep problems among deployed service members (Campbell & Koffman, 2014). These interventions could target environmental factors as well as service members' sleep-related behaviors (Peterson et al., 2008). The Warfighter Sleep Kit is an example of one such intervention. The sleep kit (a small package containing earplugs, an eye mask, small spiral book, and a CD designed to fit into the pocket of a uniform) was conceived as a tool for the Navy Mobile Care Team. This team of behavioral health clinicians and researchers traveled extensively through Afghanistan, executing combat stress control (Campbell & Koffman, 2014) and providing outreach, intervention, and psychoeducation for sleep health across a widely distributed, combat-deployed target population. The US Air Force Air Mobility Command played a key role in transitioning the concept of the sleep kit into operational practice, and in doing so, incorporated the Fatigue Avoidance Scheduling Tool (FAST; Eddy & Hursh, 2001) into the sleep kit CD; thereby increasing access to this tool which

could be used to evaluate and predict the impact of operational tempo and sleep deprivation on human performance. Another promising technology-based intervention that could be applied in operational stress control takes the form of a mobile phone app developed by the Army Medical Research and Materiel Command. The application (called 2BAAlert, and currently in a field-testing stage) establishes baseline information using psychomotor vigilance tests (PVT) to measure performance, monitor caffeine input, and conduct sleep scheduling. Together, these indices are designed to help individuals identify their performance across time and will provide recommendations for improving alertness based on the time of day. The goal is for individuals to use 2BAAlert when mission planning to maximize human performance for the course of the mission.

The US Army Techniques Publication (ATP) No 6–22.5, *A Leader's Guide to Soldier Health and Fitness* (US Army, 2016), replaced US Army Field Manual 6–22.5, *Combat and Operational Stress Control* (US Army, 2009). The ATP is a leader's guide to assure leaders are aware of the support, services, and information that impact them and their soldiers' health, readiness, and performance. The ATP devotes a chapter to the "Performance Triad," of sleep, activity, and nutrition that are considered the basis of health and readiness. In Chap. 2, a section is devoted to each tenet of the triad. The sleep section provides information on sleep in the operational environment, sleep habits, countermeasures to maintain performance, sleep schedules, and night shifts. Also included in this chapter is information to support shift/work/duty scheduling (e.g., attempt to ensure 16 h off-time to support 7–8 h of sleep), recommendations for maintaining a healthy sleep environment (e.g., reducing ambient noise), ideas for applying countermeasures, such as caffeine to maintain performance including a caffeine dosing schedule, guidelines for recovery sleep following continuous operations (e.g., 12 h of recovery sleep after 2–3 days' nonstop operations), dealing with time zone travel (e.g., adapt to the new location's schedule immediately), and information to educate leadership with regard to

expected degradation of performance following sleep deprivation. The Navy and Marine Corps Operational Stress Control doctrine (Department of the Navy, 2010) is vague when it comes to addressing the role of sleep, offering a cursory discussion of sleep in the context of other leadership functions.

Despite the attention that the Army provides to sleep health in their leadership manuals such as the ATP 6–22.5, the degree to which frontline commanders access and utilize this information is questionable given the results of a study by Miller, Shattuck, and Matsangas (2011) who surveyed a convenience sample of 49 Army officers attending Infantry Officer Advanced Course after recently returning from combat deployments. The results were stark: 80% of the samples were not briefed on a sleep management plan during their deployment. Furthermore, there was little evidence that these company-grade leaders understood the fundamentals of operational sleep habits, as 74% reported their unit never or rarely encouraged or monitored naps, 67% rarely or never designated dark or quiet areas for rest, and half the respondents had never or rarely attempted to maintain sleep schedules. Given the paucity of attention that sleep health receives in the training of operational line warfighters, a key role of military psychologists serving in Behavioral Health Officers or COSC roles is to serve as the subject matter expert for sleep health, provide education and consultation to unit leaders, and serve as a liaison to clinical sleep medicine when necessary.

Future Directions

How does the military train its leaders to operate in a manner that minimizes the deleterious impact of mission-induced restricted sleep while simultaneously harnessing the power of sleep-restorative practices to maximize recovery to optimal performance? To start, measures of sleep quality and quantity designed for the layperson, but also rugged enough to survive in austere environments with limited Internet access, are needed to help unit leaders identify sleep-induced

functional impairments. Military psychologists can play a vital role in the design and testing of these measures, as well as to support the adoption of such technology to augment clinical sleep medicine. As discussed in this chapter and elsewhere (Killgore, Estrada, Rouse, Wildzunas, & Balkin, 2009), actigraphy and more recent smartphone-based applications have the potential to serve the critical role of monitoring and alerting individual service members, their operational leadership, or even their therapist to the pitfalls of sleep-detrimental behavior. However, such technology must be scored in a manner that makes the data accessible and interpretable without great expense or time-intensive training.

With respect to recovery from insufficient sleep, we are not aware of any attempts to integrate sleep recovery/restoration into military training scenarios or training commands that impose sleep restriction. As a future direction, one can envision a training scenario, for example, three to five continuous days with 3 or fewer hours of sleep, after which the unit leader is expected to implement sleep recovery procedures (i.e., extended recovery sleep) such as monitoring unit member adherence to recovery sleep needs (duration and quality of sleep) and documenting a return to baseline/predeprivation cognitive performance. While it is important that warfighters learn how to operate in conditions of fatigue and sleep restriction, it should be equally important that leaders are taught how to identify thresholds for significant performance decline and then practice the necessary leadership actions required to restore their operators to full functional capacity, especially before re-engaging in operations. In this regard, military psychologists with a strong background in sleep can play an important role in developing the tools and training protocols necessary to make the US military a leader in the use of sleep monitoring and restoration to improve operational performance.

Military psychologists are also being asked to take part in campaigns to raise awareness of the importance of sleep with respect to overall human performance, namely, the US Army Surgeon General's Performance Triad, a public health campaign which aims to make sleep, along with

activity and nutrition, a health priority for all soldiers. The goal of the Performance Triad is to have sleep and fatigue management strategies become second nature for soldiers engaged in sustained operations, 24-hour duties, or when planning training or other missions. The Performance Triad campaign is designed to be embedded across the training spectrum: from initial military training, command and staff colleges, within programs of instruction (POI), incorporated into warfighting doctrine, and integrated into the standards of evaluation applied by deployment readiness training centers.

Military psychologists also played a role in a sleep summit hosted by the US Army Surgeon General in December 2015 in an effort to improve dissemination of sleep information throughout the Army. An outcome of the summit was the recommendations of five different working groups that shed some light on future directions of sleep health in the military.

Garrison Environments This work group focused on changing how sleep is perceived and to help soldiers achieve more and better quality sleep. The group recommended leader engagement and command emphasis on seeing sleep as a weapon and force multiplier. To ensure a commonly understood measure, a link between Army safety incidents to sleep and fatigue is necessary to provide actionable information: a recommendation that was echoed by US Navy personnel attending a subject matter expert forum in support of the RAND report (Troxel et al., 2015).

Operational Environments This working group highlighted the need to integrate peak performance and fatigue management strategies into training guidance to enable optimal sleep within a unit's battle rhythm. In addition to education and training, it recommended soldiers and their leaders have tools to create training plans and aid in decision-making. These tools may be as simple as a matrix that identifies the level of risk associated with hours of sleep and appropriate countermeasures, to a laminated sleep tip card that may be carried in the pocket.

Primary Care The working group acknowledged an absence of adequate education and training for the assessment and management of sleep for primary care physicians, as well as limitations in the resources needed to fully address the high prevalence of sleep disorders in the primary care settings. Given the scarcity of psychologists with formal sleep education (Meltzer et al., 2009), it is not surprising. This working group recommended standardized training that targets primary care providers in Army Medical Home (AMH) teams and the development of specific AMH clinic resources to better identify and manage sleep problems, e.g., clinical practice guidelines.

Standardized Training and Treatment The working group identified significant variability in protocols used to evaluate treatment effectiveness. While CBT-I is the standard of care, it is not uniformly used nor is it fully implemented to address insomnia or other sleep problems. This working group recommended using an evidence-based, standardized, and preferably manualized, treatment protocol. Most Army Medical Home (AMH) clinics have Integrated Behavioral Health Consultants (IBHC) who would benefit from using a brief therapy approach, such as the Brief Behavioral Therapy for Insomnia (BBT-I; Germain et al., 2014). For Behavioral Health Officers (BHOs) working in behavior medicine clinics, in separate brigades, or serving as embedded behavioral health consultants (EBHC), training in manualized CBT-I is encouraged in situations where there was an identified champion who could provide clinical supervision and guidance. Of particular interest to military psychologists, the group noted that Behavioral Health Officers located in line units might benefit from learning and implementing both approaches. The Center for Deployment Psychology (CDP) provides training in both CBT-I and BBT-I and travels around the country to train behavioral health providers from all services. In addition to the CDP, the Army should consider providing similar training to its mental health clinics. Given the effort required to ensure the training of BHOs, IBHCs, and EBHCs, the work group recommended a central program evaluation to deter-

mine efficacy and fidelity of BBT-I and CBT-I protocols for military population.

Sleep Medicine Care In the Army, the working group noted that sleep medicine is not a recognized area of concentration or additional skill identifier; thus, all sleep medicine providers belong to a primary specialty such as family practice, pulmonology, psychiatry, or internal medicine. This structure tends to adversely impact the availability of sleep medicine specialists depending on the needs of the specialties. This work group recommended a hub-and-spoke model of stepped specialty care utilizing technology such as video conferencing to ensure consistent availability of care in all regions. The hub would host a standardized state-of-the-art sleep center and would support outlying hospitals or clinics.

In closing, the primary purpose of this chapter was to introduce some of the basic mechanisms of sleep to psychologists in conjunction with an overview of the various domains of the psychological literature in which sleep plays a key role such as health, behavior, and performance in both military and civilian domains. As the breadth of this literature implies, sleep is indeed an important construct for psychologists to address whether it be in research, operational support, or clinical medicine. We hope this chapter will intrigue psychologists and beckon them to engage in a thorough review of the sleep literature and pursue additional training in sleep health. Moreover, it is important for leaders within military psychology to consider the development of a formalized school or training programs devoted to the study and application of sleep medicine within the practice of military psychology. The scope of the problem and the importance of the topic in almost every domain of military health, behavior, and performance necessitate a deliberate strategic effort to improve the scope of formalized training in sleep medicine for the military.

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Part III

Selection and Assessment

Françoise Bertrand, Annemie Defranc,
Wouter Huybens, Vicky De Nil, Kristof Van
Landeghem, Veerle Tibax, Helga Peeters,
and Jacques Mylle

Any good selection procedure focuses on assigning the right man to the right place. Doing this in a consistent manner requires continuously scrutinizing all tools at hand, and is only possible through a well-functioning quality management system. Entrusted with this task, the Research & Development (R&D) department within the selection service of the Belgian Defence constantly verifies the psychometric qualities of the selection procedure, and aims to optimize it through actions such as enhancing standardization, improving tests and developing or purchasing new tests. Furthermore, the R&D department aims at ensuring equal opportunities for all candidates and guarantees that the selection procedure is in line with the applicable juridical and deontological rules. This chapter describes in more detail a part of these R&D activities, with a focus on personality assessment. We discuss a

more theoretical view of how quality can be defined and measured, after which the results on predictive validity are briefly highlighted. Next, a more practical view on the standardization process of the employment interview is elaborated. In the fourth part, we discuss possible actions for increasing the quality of personality assessment. We describe how a competency-based approach was introduced in the selection procedure to boost its quality. This approach pointed out the need for additional tests, such as a situational judgment test. The construction and validation of this test is discussed in more detail in the last part of this chapter. Finally, we conclude with the limitations of our research and with some recommendations for selection practices and future research.

Personality Assessment

Each year, thousands of applicants come to the selection center of the Belgian Defence. Depending on the personnel category (Soldier, Non-Commissioned Officer (NCO), Officer) and on the function (paratrooper, diver, pilot, etc.), the selection procedure can take 2–9 days. During this screening process, applicants are assessed on their personality characteristics. The personality assessment is an integration of the scores on different selection instruments:

F. Bertrand (✉) • A. Defranc • W. Huybens
V. De Nil • K. Van Landeghem • V. Tibax
Belgian Defence Recruitment Center,
Bruxelles, Belgium
e-mail: Francoise.Bertrand@mil.be

H. Peeters
Howest University of Applied Sciences of Applied
Psychology, Sint-Jorisstraat 71, 8000 Brugge,
Belgium

J. Mylle
Belgian Defense, Snoeistraat 12, 3945 Ham, Belgium

- Interview + standardized autobiographical form (for all applicants)
- Big-Five personality questionnaire (for all applicants)
- Achievement motivation questionnaire (for Officers and NCO)
- Group exercises (for Officers)

The widely used employment interview is for assessing an applicant's suitability for a certain job and fit to the organization. The interviewer can be a psychologist or an officer who received training to conduct interviews. In the next phase, a selection psychologist (who is not the person who interviewed the applicant) integrates the inputs of different tests (see listing above) and gives a score on a 20-point scale. If the selection psychologist finds inconsistencies between the interview and the personality questionnaire, (s)he conducts a second interview.

Quality Management

What Is Quality?

Six main criteria were identified for evaluating selection assessment methods: reliability, validity, fairness, acceptability, cost-effectiveness, and easiness to use (Cook, 2009). Of these, reliability and validity are the two criteria used for the psychometric quality assessment of a selection instrument.

Reliability refers to the degree of measurement error, particularly random error (Guion, 2002), and is often linked to the repeatability of test scores in classical test theory. When test scores – under unchanged conditions – strongly vary over time or situations, a test is considered unreliable (Drenth & Sijtsma, 2006). Reliability is a necessary, but not a sufficient condition for validity.

Validity refers to 'the degree to which evidence and theory support the interpretations of test scores entailed by purposed uses of tests' (American Educational Research Association, 1999, p. 9). Drenth and Sijtsma (2006) describe validity as 'the degree to which a test meets its

goal' (p. 329). This should make clear there is no such thing as the validity of a test, but, depending on the goal, a test can be less or more valid. For example, in the context of diagnostic assessment, the goal of a test can be measuring a personality trait, or, in the context of selection, the aim is predicting occupational performance.

In the last decades, the traditional distinction of validity types (content, construct, and criterion validity) made way for a more unitary view on validity. The Standards for Educational and Psychological Testing (1999) argue that different sources of validity evidence should not be regarded as distinct types of validity, but as different ways to accumulate evidence in support of the intended interpretations of test scores.

In the selection context of the Belgian military forces, the prime objective is predicting training and job performance. Hence, focus of the validity studies lies on criterion validity, and in particular on predictive evidence, which indicates how test scores correlate with criterion scores collected later in time (usually evaluation scores in training or the job).

Improvement of standardization – of any instrument, but in particular the employment interview – is also considered an important aspect of quality management because it increases the reliability and, consequently, can also positively affect the validity of a test. The following two sections describe the methods and results of the predictive validation studies performed in the Belgian military forces, as well as an illustration of how standardization in the employment interview is/can be improved.

Predictive Validation Studies

Method The main goal of our validation research is to examine how well test scores relate to (training, job) performance. Such predictive validity studies appear rather simple at first glance: collect test scores in a large group of applicants during selection, and when the selected applicants finished (an important stage in) training or have been on the job for a while, collect the criterion data; afterwards, calculate the association between the

test scores and the criterion (typically a correlation coefficient).

The challenge in performing predictive validation studies does not lie in doing the analyses, but in collecting appropriate and valid criterion data on an adequate sample. In the following paragraphs, we elaborate some of the methodological difficulties we faced during our studies.

Collecting appropriate and valid criterion data Criterion data are measures of job performance important to the organization, or worth predicting (Guion, 1997). At the Belgian Defence, criteria that are available are attrition and training performance. Training performance is usually evaluated on the basis of four pillars: academic (OFF) or scholastic (NCO) performance, military performance, attitude and physical performance. In the future, we aim to collect data on job performance as well.

With the exception of physical performance, all criterion data mentioned above are considered to be relevant for the validation of personality assessment. However, some criteria were found less suitable for our validation studies. For example, an inspection of the data on attitude learned that the candidates obtained very similar scores. The lack of variability was so extreme that it would lead to a severe underestimation of the correlation coefficient. It also caused doubt on the reliability of this evaluation. For these reasons, we decided not to use the attitude evaluation scores for our predictive validity studies.

The second less adequate criterion was the military evaluation for Officers because almost everyone succeeds. Hence, the question arises as to whether it is really worth predicting. The criterion 'academic performance', on the other hand, has a good variability and a lower mean level of performance: every year, a lot of candidates fail on their academic exams, leading to exclusion from the Belgian Defence or to a repetition of their year. In both cases, this implies a large organizational cost, making it a criterion that is really worth predicting.

A final remark concerns the criterion 'attrition' or 'turnover'. It is very important to make a distinction between voluntary and involuntary turnover: a candidate can leave voluntarily, for

example, because the military life does not meet his/her expectations, or involuntarily, because (s) he did not succeed in training. Mixing the two types under one broad criterion 'attrition' would contaminate it, and severely undermine the predictive validity of a selection test. A second disadvantage is the dichotomization of the variable: for example, if someone fails in training, we have no idea if he failed really badly, or if he belonged to the grey zone. This dichotomization leads to a loss of information, and can have a serious impact on the maximum size of the correlation coefficient (Cohen, 1983). It's important to take this into account when interpreting the correlations.

Range restriction The data available in our predictive validation studies are the results of the candidates who have been selected. We have no idea if the rejected candidates would have been unsuccessful in training. Moreover, the more valid a selection test, the more likely it is that the selected candidates will perform well during training, leading to little variation in training scores. The fact that we cannot make use of the whole range of scores of the selection test and/or criterion variable is known as 'restriction of range', and affects the size of the correlation coefficient (Thorndike, 1949).

Adequate sample size Another challenge in our studies concerned the sample size. Depending on the population we wished to study, sample sizes varied a lot. For some subgroups of applicants (e.g., pilots) we had to accumulate data over the years, to obtain enough power to detect a significant result and to have stable results.

Analyses For our general validation studies, we distinguished four groups of applicants: Soldiers, Non-Commissioned Officer Technician (NCO-Tech), NCO in a non-technical function (NCO-NTech) and Officer (OFF). Personality assessment scores were associated with: (a) academic/scholastic performance for OFF and NCO-Tech; (b) military performance for NCO-NTech and Soldiers; (c) voluntary (NCO-NTech and Soldiers) and involuntary turnover (OFF)¹.

¹We have observed different tendencies regarding the two

We calculated correlation coefficients, and performed linear and logistic regression analyses, with the selection tests as predictors (cognitive and personality assessments, and knowledge tests) and academic, scholastic and military performance or attrition as the dependent variables.

Results For OFF and NCO-Tech, correlational analyses showed evidence for predictive validity of the personality assessment. Moreover, in a linear regression analysis, the personality assessment made a significant contribution to the prediction of academic and scholastic achievement. For NCO-NTech there is a significant, but rather low correlation between the personality assessment and military performance. For soldiers, there is insufficient evidence to support the predictive power of the personality assessment.

For the three personnel categories, we found mixed results with the criterion 'attrition'. For OFF, personality assessment contributed significantly in the prediction of involuntary turnover (pass/fail at the end of the first academic year). For the other personnel, no significant correlations were observed between personality assessment and (in)voluntary turnover. It appears to be difficult to predict voluntary turnover, probably because the concept covers a broad range of reasons for departure including: adaptation to the military life, work-life balance, problems with colleagues, and job doesn't meet expectations.

Taken together, these results have led to the conclusion that for some personnel categories (OFF and NCO-Tech), there is predictive evidence for the personality assessment, but for other categories (NCO-NTech and Soldiers), there is room for improvement. The latter was also shown by the standardization studies, which are described in the next section.

types of turnover across the personnel categories: Soldiers have a high rate of voluntary turnover and a low rate of involuntary turnover. The reverse is the case for OFF. This tendency is caused by the difficulty of the training.

Standardization of the Employment Interview

An important characteristic of any selection measure, such as an employment interview, is its ability to detect any true differences that may exist among individuals with regard to the attribute being measured (Gatewood, Field, & Barrick, 2010). If score differences for an attribute are found, these score differences should be due to real differences on this attribute and not due to irrelevant factors such as differences in the way the interview was done or the way in which it was scored. To help control such factors, systematic, or standardized, measurement is needed.

According to Gatewood et al. (2010), a selection measure is standardized if it possesses each of the following characteristics:

- **Content:** All persons being assessed are measured by the same information or content.
- **Administration:** Information is collected the same way in all locations and across all administrators, each time the selection measure is applied.
- **Scoring:** Rules for scoring are specified before administering the measure and are applied the same way with each application.

Hence, the same content, administration and scoring should result from the use of a standardized measurement procedure. In case of the employment interview, the first and second items refer to the standardization during the interview: asking the same questions to each applicant, applying the same interview procedure, interviewing in the same environmental circumstances, etc. The latter refers to the evaluation of the applicant afterwards: the translation of the observed behavior into an aptitude score. This last item, scoring, will be the scope of the analyses described below.

Multiple human judgment errors can impact the standardization of scoring, contributing to the unreliability of the test. Since the evaluation is performed by a person, the interviewer, objectivity and accuracy are challenges (Edenborough, 2005). Scoring after an interview inevitably

requires subjective judgment. Interviewer biases, for example, horns effect or primacy effect, may influence the appraisal of the interviewer (and as a result affect the score). Interviewers must apply the rating criteria accurately and systematically in evaluating job candidates. Systematic differences within a selection team (or in case of Belgian Defence: between different selection teams for two language regimes) with multiple interviewers must be avoided. An applicant has the right to receive fair chances to be hired. A standardized selection procedure serves this goal.

A permanent evaluation of the level of standardization is needed in a mass selection system. For this purpose, quantitative and qualitative analyses are executed on a yearly basis.

Method First, the quantitative analyses show and compare the scoring tendencies of the interviewers for each military category (Soldiers, NCO, OFF). They give feedback on general patterns of scoring and the distribution of scores on the evaluated attributes. Some basic statistical measures like means, standard deviations, kurtosis and skewness values are calculated and interpreted for each interviewer. These measures are compared with those of the whole team and with those of previous recruitment sessions. Of course it is important to have a sufficient number of applicants for each interviewer in order to make conclusions regarding his/her scoring behavior (to identify aberrant scoring tendencies). Significant differences in one of these values may arise, but are sometimes difficult to interpret: is there a real difference in scoring tendency? Is there a difference in approach during the interview? Or are there differences in the applicant population in year X compared to year Y? For these reasons, qualitative analyses are a complementary method for further investigation.

Qualitative analyses on a sample of assessment reports are executed to evaluate the report on a few quality criteria. The sample reports are independently evaluated by two psychologists. The evaluation criteria are (Derycke, 2006) (a) concretization and absence of subjectivity; (b) absence of overlap between the evaluated criteria; (c) report efficiency;

(d) report completeness; (e) coherence of the score (on a nine-point scale) with the comments, all observed elements are taken into account to determine the score; (f) independence of the interview with regard to other selection instruments (e.g., cognitive test, sports test); (g) respectful language.

Results The quantitative analysis showed good levels of standardization between the selection teams. We observed a good similarity between the means of the interview scores. Although we detected a better range of the interview scores over the years, which are important for the correlation coefficients used in the predictive validity research, the variability remains unsatisfactory. It seems difficult to achieve an optimal use of the whole range of scores. Due to this tendency to the mean, differences in the description of an applicant are not always reflected in clear differences in scores. If interview scores are close to each other, the weight of this evaluation on the final aptitude score is too small.

The qualitative analyses of the interview reports demonstrated differences in concretization. Some interviewers tend to describe applicants in a more general way, applying a global description of personality. Consequently, interview reports are less grounded with concrete behavior of the applicants. This approach involves the risk of higher subjectivity, less standardization and higher amount of complaints by applicants. Moreover, focus groups with interviewers showed differences in the interpretation of some evaluated attributes. These differences can be explained by the association between several attributes: we found high correlations between some measured attributes. These results emphasized the need of adaptations in the interview manual with a better, more detailed description of the expected behavior for each function.

The results of these analyses serve for feedback to and sensitization of the interviewers. They lead to group interventions and training if necessary. Interviewers who show obvious aberrant evaluation tendencies may receive individual follow-up.

Competency-Based Approach

Research described in the previous paragraphs indicates that personality assessment can be optimized. A competency-oriented approach can contribute to a better assessment (McClelland, 1973; Schmidt et al., 1979), and as a consequence, reduce the attrition rate. The goal of the competency-based approach essentially is to improve selection by focusing on the competencies required for the entry functions.

A competency can be defined as a combination of knowledge, skills and attitudes (three pillars) of an employee, a group or an organization. It manifests itself in observable behavior and is necessary to successfully perform. The three pillars can be developed over time by (work) experiences. Several fundamental factors influence the development of competencies: abilities (e.g. intelligence), personality traits, motivation and interest (Roe, 2002). These fundamental factors are more stable characteristics and provide the basis for the three pillars.

Every competency has a clear definition and multiple behavioral indicators. A behavioral indicator is a description of behavior that demonstrates that one possesses a certain competency. It is possible to work with a list of behavioral indicators or to work with different levels of indicators within a competency. The Belgian Defence constructed a list of competencies important to the organization, more precisely a competency dictionary. It contains 29 competencies. Five of them, the key competencies, should be common to all the employees of the organization: Collaboration, Flexibility, Respecting others, Organizational loyalty and Integrity. Furthermore, the competency-based approach of selection assumes the use of multiple instruments, such as the interview, situational judgment tests and in-tray tests (Thornton & Gibbons, 2009).

Since 2013, the R&D department is working on the implementation of the competency-based approach in selection. The implementation is discussed in the remainder of this chapter and consists of three phases:

1. Identification of the required competencies

2. Development of a competency-test matrix
3. Development of a situational judgment test

Identification of the Required Competencies

Aim The first step was to identify the competencies and their behavioral indicators for each recruitment function. Although the Belgian Defence constructed a competency dictionary, no link has been made between competencies and functions. More precisely, no job analysis has been done to attribute competencies to functions. Therefore, R&D department performed its own job analysis.

Method Before discussing the job analysis, two constraints are highlighted. First, considering the great number of recruitment functions, each function could not be studied separately. Consequently, the functions were categorized into 'clusters' (see Table 16.1).

Secondly, the number of competencies that is used in selection ideally should not be more than eight (Belgium Federal Government, 2010). Therefore, at the end of the job analysis, the number of competencies per cluster will be limited to eight.

To conduct the job analysis two approaches were used, more precisely a bottom-up (BU) and a top-down approach. For the bottom-up approach, a great number of trainees were interviewed in the last stage of their military training. For the top-down approach, experts with profound knowledge of the military training and jobs were contacted to do a reality check.

Bottom-up approach For the bottom-up approach (BU), stratified sampling was used to determine the trainees. In each cluster of functions, approximately 20% of the population was selected. In total, 347 trainees were chosen from a population of 2032.

The 'critical incidents' method was used (Flanagan, 1954). The goal of this technique is to obtain various 'problematic' situations that the trainees encounter in the execution of their work

Table 16.1 Military job analysis clusters and their abbreviations

	Combat	Support	Technical	Generalist	Specialist
Soldier	Soldier CBT	Soldier SP	Soldier TECH		
NCO	NCO CBT	NCO SP	NCO TECH		
OFF				OFF-GEN	OFF-SPEC

and which require action. In order to obtain this goal, questionnaires were distributed. In these questionnaires, six open-ended questions were asked. Three questions concerned critical incidents during training. The other three concerned critical incidents experienced during working. The answers on the questions must be formulated as follows: ‘antecedent-behavior-consequences’. In total, 2082 critical incidents were obtained.

Next, a categorization of the critical incidents took place. Each critical incident was linked with one or more competencies from the competency dictionary of the Belgian Defence by a team of psychologists. The team was split into pairs, who each read a part of the critical incidents. Each pair checked which competency was necessary to resolve the problem posed by the critical incident. Finally, in order to eliminate interpersonal bias a third psychologist validated the results of the match of the other two. In total, 5994 competency classifications out of the 2082 critical incidents were counted. On average, this meant 2.88 classifications for one critical incident.

In the last step of the bottom-up approach, the competencies were ranked. The competency most frequently mentioned was ranked first. The competency that was least mentioned was ranked last. The top eight ranked competencies were selected for the top-down approach.

Top-down approach The population of experts has extensive experience in evaluating trainees. They have a profound knowledge of the functions and the clusters with their associated requirements. Two experts for each cluster were invited.

The experts did a reality check, which was accomplished in three steps. First, we created two groups of experts. Each group contained one expert per cluster of functions. Second, the two groups of experts identified how important the eight competencies were for each cluster using a

three-point rating scale (not necessary, useful, necessary). In order to be able to attribute a weight to the competencies, the experts had a definition of the competencies and a description of it in terms of behavioral indicators at their disposal. The subgroups decided upon the degree of importance that each competency had for every cluster, during a discussion between the different experts. Finally, the groups came together to reach a consensus.

Hypotheses. The competency dictionary of the Belgian Defence was used as a frame of reference. The key competencies are supposed to be common to all the employees of the organization (Collaboration, Flexibility, Organizational Loyalty and Integrity). The others are supposed to be function and category (Soldier, NCO, OFF) specific.

We assume that these two types of competencies will be found in the job analyses. The final goal of the job analysis is to make a competency matrix where competencies are attributed to clusters of functions.

Results Table 16.2 represents the results of the job analysis. It contrasts the results of the bottom-up approach with the results from the top-down approach and this as well for the key as for the specific competencies. First, the results of the bottom-up approach are discussed, followed by a discussion of the results of the top-down approach. Finally, both approaches are compared.

Bottom-up approach From the 29 competencies of the dictionary, the top eight competencies were identified. Those eight competencies are represented in the eight rows of Table 16.2. More precisely, the percentages of the critical incidents in the BU analysis for the eight most important

Table 16.2 Bottom Up - Top Down (BU-TD) analysis

	BU analysis										TD analysis					
	Soldier CBT	Soldier SP	Soldier TECH	NCO-CBT	NCO-SP	NCO-TECH	OFF-GEN	OFF-SPEC	Soldier CBT	Soldier SP	Soldier TECH	NCO-CBT	NCO-SP	NCO-TECH	OFF-GEN	OFF-SPEC
Loyalty	3.2	4.9	2.4	1.8	2.6	3.8	2.4	1.2	3	3	3	3	3	3	3	3
Integrity	0.3	0.8	0.8	0.8	1.4	1.6	1	0.5	3	3	3	3	3	3	3	3
Flexibility	12.7	11.3	11.8	12.1	11.3	13.6	9.2	10.1	3	3	3	3	3	3	3	3
Result oriented	10.9	9.8	8.1	5.7	6.5	5.7	7.9	62	3	3	3	3	3	3	3	3
Collaboration	9.7	7.2	4.9	5.6	8.7	73	3.2	6.6	3	2	2	3	2	2	2	3
Coping with stress	23.5	20	15.9	18.9	18.8	18.9	14	18.7	3	2	2	3	2	2	2	2
Directing others	1.8	0.4	0.8	6	3.2	2.5	8.4	2.5				2	1	1	2	1
Info-tasks management	9.4	14	11.4	11.1	15.6	11	11.7	15.8	1	1	1	2	2	2	2	2

competencies for each cluster are shown. For example, 9.7% of the critical incidents for the Soldiers CBT refer to the competency of Collaboration.

Five competencies (Flexibility, Result Oriented, Collaboration, Coping with Stress and Information and Task Management-ITMGT) emerged as the most important. The competencies Loyalty and Integrity did not appear in this analysis. However, they are taken into account in the top eight because they are considered and defined as key values in the organization. Directing Others also belongs to the top eight because the analysis showed that it is important, mainly for officers. Respecting others, a key competency of the Belgian Defence, was included in the competency Integrity, because it covers the same load of indicators.

Furthermore, Table 16.2 shows that four competencies do not really differentiate between clusters, more precisely Loyalty, Integrity, Flexibility and Result oriented. For the competency Result oriented, we notice that the percentages differ, but when analyzing the content of the competency, one behavioral indicator seems to be common for all clusters (the one who refers to perseverance). Moreover, they are equally important for all clusters of functions.

On the other hand, differences were observed between the clusters for the remaining competencies, more precisely for Collaboration, Coping with Stress, Directing Others and ITMGT. Collaboration is a competency that is more important for the Soldiers CBT than for the Soldiers SP and Soldiers TECH. Coping with Stress seemed to be more important for the Soldiers CBT. In addition, the bottom-up approach indicated that Coping with Stress also is more important for the OFF-SPEC. Directing others turned out to be especially important for the NCO-CBT and the OFF-GEN. ITMGT seems to be less important for Soldiers CBT.

Top-down approach The other eight columns of Table 16.2 show the results of the TD analysis. The scores 1, 2, 3 refer to the weight or importance the experts attributed to each competency, with 3 being most important. Four competencies

turn out to be more important than the others, more precisely Loyalty, Integrity, Flexibility and Result oriented. They all got a score 3 from all experts. Moreover, they are more important for all clusters of functions.

On the other hand, we also observed differences between the clusters for the remaining four competencies, more precisely for Collaboration, Coping with Stress, Directing Others and ITMGT. Collaboration is a competency that is more important for the Soldiers CBT, NCO-CBT and OFF-SPEC. Coping with Stress seemed to be more important for the Soldiers CBT and NCO-CBT. Directing Others turned out to be more important for the NCO-CBT and the OFF-GEN. ITMGT seems to be less important for soldiers.

Comparison The results show that two competencies are found to be necessary for all clusters, more precisely Flexibility and Result oriented. Moreover, these results are obtained with the two methods. The percentages of the bottom-up analysis did not differ much between the clusters. All the experts gave a score 3 to these two competencies in every cluster. Additionally, a few differences between the two methods can be observed. First, for the competencies Loyalty and Integrity, the results of the TD approach are retained. In the BU approach, these competencies did not appear in the top eight. However, since they are organizational values, we have to take them into account. Second, in the bottom-up approach, Coping with Stress seemed to be more important for the Soldiers CBT and for OFF-SPEC. The top-down approach showed the same tendency for the Soldiers-CBT and the NCO-CBT. Furthermore, the discussion with the experts showed that Coping with Stress is a very important competency for all combat functions. Next, according to the bottom-up approach, Collaboration is a competency that is particularly important for the Soldiers CBT. This result is confirmed by the top-down analysis. In addition, the top-down approach showed that this competency is more important for NCO-CBT and for OFF-SPEC as well. For

the competency ITMGT, both approaches show that this competency is less important for the Soldiers. Finally, Directing Others is particularly important for NCO-CBT and OFF-GEN.

Conclusion The results confirm our hypotheses. We found that certain competencies are very important for all clusters and that other competencies are more important for some clusters than for others. More precisely, we identified four competencies as being crucial for everybody, namely Flexibility, Loyalty, Integrity and Result oriented. On the one hand, the first three were already considered as key competencies in the competency dictionary. Result oriented on the other hand was originally not considered in this way in the dictionary, but the job analysis pointed out that it could be considered as such.

Additionally, there are four competencies that vary in importance depending on the cluster, more precisely: Collaboration, Coping with Stress, Directing Others and ITMGT. Some attention has to be paid to Collaboration. This competency is considered as a key competency in the dictionary, but appeared to be cluster-specific according to the job analysis.

To conclude, the final output of the job analysis is a list of eight competencies with their behavioral indicators, including negative, neutral and positive examples.

Development of a Competency-Test Matrix

The next step of the introduction of the competency-based approach is the development of a competency-test matrix. This means making a match between the competencies of the job analysis and the selection tools. In other words, we needed to check if the current selection tools could be used to measure the competencies identified by the job analysis. And, if not, which tools should be developed or purchased.

Table 16.3 below represents the competency-test matrix. In the first two columns, we mention the instruments we already use, more particu-

larly, a selection interview combined with analysis of a personality questionnaire and for OFF group exercises. Although the nature of the instruments will not change much, applicants will be judged in terms of competencies rather than personality characteristics. Table 16.3 shows that, the interview and the personality questionnaire will be used to evaluate all competencies. The group exercises will also evaluate all competencies, but only for OFF.

Table 16.3 shows, in other words, that the competencies are measured, except for OFF, only once. The competencies should be covered by more than one instrument to account for some unreliability in each single instrument. This should lead to optimal predictive validity. Therefore, it is necessary to add extra tools to assess every competency. We chose different tools for different competencies.

First, Loyalty, Flexibility, Integrity and Collaboration are key competencies of the Belgian Defence. For these competencies, we chose to construct a Situational Judgment Test (SJT). The development of this test will be discussed in more detail below because we believe that the process of its development can be interesting for other military organizations. Second, the competencies Directing Others and ITMGT are specific competencies that will only be assessed for NCO and OFF. These competencies are already measured twice for OFF. For the NCO, we decided to develop an in-tray test. In this test, applicants for NCO-functions will be asked to organize a bivouac. Third, to be able to measure the competency Result oriented adequately, we bought a motivation questionnaire to assess achievement motivation, proactivity and self-confidence. Finally, a resilience questionnaire is being developed to evaluate Coping with Stress. Resilience is the capability of maintaining the most adequate performance during stressful circumstances, critical incidents and adversity, and of recovering positively afterwards. Its development is coordinated by the European Defence Agency (EDA) workgroup Improving military selection: screening of psychological resilience (INSPIRE).

Table 16.3 Military job competency-test matrix

Criteria		In use		Extra Extra tools			
		Interview	Group Exercises OFF	SJT	Organization test NCO	Motivation	Coping
Competencies	<i>Key: Loyalty</i>	x	x	X			
	<i>Key: Integrity</i>	x	x	X			
	<i>Key: Flexibility</i>	x	x	X			
	<i>Key: Result oriented</i>	x	x			x	
	<i>S: Coping with stress</i>	x	x				x
	<i>S: Collaboration</i>	x	x	X			
	<i>S: Directing others</i>	x	x		x		
<i>S: ITMGT</i>	x	x		x			

The Development of a Situational Judgment Test

Situational judgment tests (SJTs) are designed to assess an applicant's judgment regarding a situation encountered in the workplace (Weekley & Ployhart, 2006). SJTs present respondents with work-related situations and a list of possible responses to these situations. SJTs are not acquired 'off-the-shelf', but have to be designed as a tailor-made tool to suit organizational requirements. SJTs are popular tests and are considered to be reliable selection instruments (Whetzel & McDaniel, 2009). They are able to predict work performance (Lievens, Peeters, & Schollaert, 2008; Lothe, Bertrand, & Hansez, 2012; McDaniel, Morgeson, Finnegan, Campion, & Braverman, 2001). McDaniel et al. (2001), for example, showed that SJTs have an average corrected correlation of 0.34 with work performance. They enhance the prediction of task performance over cognitive ability, personality, work knowledge and experience (Chan & Schmitt, 2002; Clevenger, Pereira, Schmidt Harvey, Wiechmann, & Schmitt, 2001; Weekley & Jones, 1997, 1999). SJTs also explain more variance, compared to tests of cognitive abilities in the prediction of contextual performance (McDaniel, Hartman, Whetzel, & Grubb, 2007; O'Connell, Hartman, McDaniel, Grubb, & Lawrence, 2007). Moreover, they have a high face validity and the possibility to give a job preview to the applicant during the

selection procedure (Chan & Schmitt, 1997; Lievens & Highhouse, 2003; Lievens & Sackett, 2006; Lievens & Schollaert, 2008; Ilgen & Seely, 1974). This effect can be increased by using a video-based SJT. When using videos there is no linguistic (verbal) bias, which increases the objectivity in general and makes it appropriate for less educated people. Furthermore, SJTs can be used for large groups. They also have less adverse impact towards ethnic minority groups than more traditional cognitive ability tests, especially if the cognitive loading of the SJT is low (Lievens et al., 2008; Whetzel & McDaniel, 2009). Moreover, situational tests are instruments with a good acceptance from the applicant (Banki & Latham, 2010). They also have a positive outcome on realistic job previews. More precisely, applicants want more concrete tests linked with their future jobs, in order to have a more realistic image of the job.

The development of a situational judgment test needs a rigorous method and workflow. It all begins with an unambiguous definition of the competencies that have to be measured, even at the level of the behavioral indicators. In our case, the SJT was developed according to the methodology proposed by Weekley, Ployhart, and Holtz (2006). According to them, an item of an SJT consists of four components, namely, the description of the situation, the response options, the response instruction and the scoring key. The four components will be explained below.

Our SJT needs to measure the four competencies described in Table 16.3 (Loyalty Integrity, Flexibility, Collaboration). The behavioral indicators of each competency will be measured two times, in two different situations.

The Descriptions of the Situations The descriptions of situations can be constructed in two ways: with subject matter experts (SME) or based on a theory (Lothe et al., 2012; Weekley et al., 2006). A commonly used SME technique is the ‘critical incidents’ method of Flanagan (1954; Motowidlo, Dunnette, & Carter, 1990).

In the bottom-up part of the job analysis, the method of critical incidents was already used. It provided a great number of critical incidents which can be used as a basis for the development of this kind of the SJT. These incidents were classified by competence, following our theoretical framework and next, the items were created. This is important, given the fact that SJTs based on job analysis present a higher validity (.38) than those who do not rely on job analysis (Lievens et al., 2008).

The instructions of the literature to construct items were followed. According to McDaniel et al. (2001), the more contextualized the SJT, the higher the validity. However, Weekley et al. (2006) recall that a high level of complexity can lead to biased results caused by a lesser ability to read. On the other hand, items with high cognitive load are harder to falsify than those that are more ‘transparent’ (fakability) (Lievens & Peeters, 2008). And finally, the longer the SJT, the higher the internal consistency (Lievens et al., 2008, p. 430). Therefore, increasing the complexity increases the validity and reliability of the SJT, while making it more resistant to fakability. However, rendering the test more complex increases its correlation with cognitive ability. We have therefore chosen medium, long and situation-specific items.

The Creation of Response Options A second phase in the development of an SJT is the creation of response options. Answers may vary at different levels: length (short or long), complexity (simple or detailed), specificity, social desirability and

number (number of response proposals by situation) (Weekley et al., 2006). First, according to Weekley et al. (2006), few studies have been conducted to assess the impact of the complexity and specificity of the response options. Nevertheless, the effects of reading level seem not to influence the quality of the answers given by the applicant as is the case with the descriptions of the situations (Sacco, Schmidt, & Rogg, 2000, cited by Weekley et al., 2006). Because only few studies give concrete recommendations about the complexity of the responses, options were chosen that are not too long or too complex.

Second, the more detailed and specific response options, including organization-specific jargon or specific procedures, are the more valid. Lothe et al. (2012) indicated that the responses have to refer to a ‘clear description of (observable and measurable) behavior that reflects the characteristic you want to measure’ (Lothe et al., 2012, p. 221). Thus, the response options should be designed to reflect or represent an indicator or a specific characteristic (e.g., altruism, civility) (Motowidlo, Hooper, & Jackson, 2006). In other words, the responses of participants should reveal relevant information regarding their behavior in specific situations. Every response option in our SJT is, therefore, related to a behavioral indicator that was identified as important in the job analysis. The choice has been made to only measure one competency in each situation.

Next, Weekley et al. (2006) recommend SJT designers to develop response options with the same level of social desirability. Indeed, if the level of social desirability of the response options strongly differs, the level of ‘fakability’ could increase.

Finally, the number of responses per situation has to be determined. The number of response options can vary between 1 and 12, but in most cases the number of response options is limited to 4 (Lievens & Peeters, 2008). In the validation phase, we chose to use five options per situation. This number can change depending on the results of the validation process.

The response options were developed in the same way as the descriptions of the situations. ‘Subject matter experts’ had to assess whether

the options were relevant for the situation and to what the SJT is supposed to measure. In our case, five experts responded to the questionnaire, consisting of 50 questions. Afterwards, they were reunited, and gave their opinion on each of the proposals.

The Response Instruction and Format The nature of the response instructions is crucial. Knowledge instructions ask respondents to display their knowledge of the effectiveness of behavioral responses (pick the best answer) whereas behavioral tendency instructions ask respondents to report how they typically respond (what would you most likely do?) (Lievens, Sackett, & Buyse, 2009; Patterson, Ashworth, Zibarras, Coan, Kerrin, & O'Neill, 2012). Knowledge instruction questions correlate more highly with general mental ability while behavioral tendency questions correlate more highly with personality (McDaniel et al., 2007). We have chosen behavioral questions. We want to see the actual behavior of the candidate, not his assessment of what he thinks what is the right thing to do.

There are different types of response formats: either indicate out of several options the best (or worst) response (Christian, Edwards, & Bradley, 2010), or evaluate the effectiveness of each of the responses (Whetzel & McDaniel, 2009). The first type refers to the 'forced-choice' format. In the second type, interval scales are used (e.g. Likert scales). Candidates must rate the effectiveness per item response. The use of Likert-type scales has various advantages compared to the forced-choice format (e.g. McDaniel and Nguyen, 2001). First, responses to each option are independent. Second, because each response option is rated, there are as many scorable items as there are responses. This facilitates analyses and the independent responses make it possible to measure more than one aspect of a competency with the same situation. The Likert-type rating approach also might reduce the cognitive load, as compared to the forced-choice format (Weekley et al., 2006). Furthermore, when the effectiveness of each response must be evaluated, the internal consistency will be higher

(Ployhart & Ehrhart, 2003). It is for these reasons that we choose a five-point Likert scale. Each item includes five reactions that must be assessed on a Likert scale of 1 (very unlikely) to 5 (very likely) .

Scoring Key Next, the scoring key is developed. The effectiveness of each response option has to be determined. This can principally be done using two approaches: a rational or an empirical method (Lievens et al., 2008; Lothe et al., 2012). With the rational method, experts are asked to make judgments about the effectiveness of the responses or they identify the best or worst responses. With the empirical method, the answers of a large number of respondents are used to differentiate between the respondents on a performance indicator. The answers of the respondents that score better on the performance indicator are then supposed to be the better alternative.

Lievens et al. (2008) and Lothe et al. (2012) suggest to use a mixture of the two approaches: submit the choices to the experts via the theoretical approach first and then observe if these choices are confirmed empirically.

We have chosen the mixed method. Five subject matter experts (military instructors) responded to the questionnaire. Afterwards, they were put together and discussed the effectiveness of each answer. They determined, in others words, whether the reaction was appropriate on a five-point scale. Next, we applied the empirical method. Eighty military trainees completed the questionnaire. At the same time, these trainees were evaluated by their instructors on the four competencies meant to be measured by the SJT, more precisely Flexibility, Loyalty, Integrity and Collaboration. This evaluation served as a performance indicator. We then divided the trainees in two groups, more precisely high and low performers. Next, we compared the scores on the response options of the high performers with those of the lower performers.

Finally, we compared the scores that were given by the trainees on the response options with those of the experts. If the scores of the high performers corresponded to the scores given by the

experts, we kept the response option, if not we adapted or deleted it.

Conclusion and Perspectives

The implementation of a competency-based approach in selection and the development of situational judgment tests are examples of actions that can be taken following a lack of predictive validity and/of standardization in selection. This chapter reviews the steps that allowed implementing these actions. A similar reasoning can be adopted when looking at our cognitive and physical tests. For some groups of applicants, these tests encounter problems with predictive validity (cognitive tests) and adverse impact (physical tests). When facing problems with selection instruments, we will use the same scientific process, namely identify the requirements, the expected profile and the selection criteria, determining the best tests available and the norms to use and finally validate the new test.

The implementation of a new instrument requires a quality check on a continuous basis, not only before putting the new tests into practice, but also afterwards. Therefore, analyses of predictive validity and standardization will be performed on the SJT and all measurements of competencies. They will allow guiding further changes and making adaptations where necessary. They will also provide us weights for the various tests used in measuring competencies.

This quality approach appears to be essential with regard to the competitive labor market (especially for technical functions) and the significant turnover rate for combat functions within the Belgian Defence, mainly for mental and physical problems in the early stages of training. The advantages of an improved selection process are not limited to selection, but allow meeting the requirements of military training and in general of the entire organization. The perception of the quality of the selection by the applicant also has an impact on his satisfaction and perception of organizational justice.

Evidently, this approach has certain limits. The data collection to achieve predictive analyses is

often difficult, due to a lack of a centralized database, and due to small numbers. The quality of the criterion data is sometimes questionable, in particular the data on attitude evaluation. Since this criterion is very important in validating the new instruments, the best solution would be to develop our own criteria, such as providing competency measures to supervisors to assess the actual performance of the candidate, or observing ourselves with our competency grid performance in training or in the job. Another difficulty is the large number of functions that exist and the constant renewal of functions. A large degree of proactiveness and flexibility is necessary, keeping future trends in mind. Establishing a SJT may seem ephemeral in that sense, because the proposed situations will perhaps no longer apply in 5 years. Another difficulty is to reconcile science and practicality. What we see in books unfortunately is not always applicable on the field, especially in an organization like ours, which has its constraints, and provides a variety of job opportunities.

What could be our way ahead? Maintaining high-quality selection under budgetary restraints and in a competitive job market remains crucial. To optimize the cost-benefit ratio, more international collaboration should be encouraged, especially in the armed forces, where common synergies can be expected. Those synergies could be managed more easily through the use of a military competency dictionary, which would create a common language among the NATO countries. Our experience with the European Defence Agency (EDA) team encourages us towards further international collaboration. In this team, five countries (the Netherlands, Germany, Sweden, Finland and Belgium) have joined forces to develop a questionnaire for the screening of psychological resilience and hardiness of military applicants. An other area of possible collaboration could be the development of psychological tests, detecting 'dark sides' of someone's personality, more in particular the tendency towards extremist thoughts and cross-border behavior. After a recent infiltration of an extremist youngster in the Belgian police force the question was raised whether we would have been able to detect any anomaly during our selection procedure.

The war against terrorism indeed not only has its influence on our internal intelligence service but also on our selection system. Even though impressionable youngsters can radicalize when they hang out in certain social circles long after they have joined the armed forces, selection specialists can join forces to determine if they can contribute to the fight against this new threat and to what extent.

On the other hand, the war in the Middle East has unleashed an endless stream of refugees and asylum seekers crossing the European borders. This mass migration will make our society even more multicultural and will thus also make military personnel more diverse. Recruitment and selection procedures should welcome applicants of foreign origin in an appropriate way, with culture- and gender-free high-quality tests and with an open-minded focus on diversity. Again, this could be an opportunity for closer international collaboration.

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

As operational and military psychologists, our work has focused primarily on the assessment and selection of high-risk operational personnel (Picano, Williams, & Roland, 2012). We define high-risk operational personnel as those individuals who engage in physically and psychologically demanding missions under conditions of extreme threat, isolation, and complexity. Such individuals acquire and possess special technical skills and abilities beyond those of their peers. They often confront unknown and uncontrollable situations in environments in which there is little logistical support or back-up, and in which standard “textbook” solutions are insufficient. Missions performed by high-risk operational personnel are typically critical and sensitive, often involving national security, and carry dire consequences for failure. We differentiate high-

risk operational personnel from other military and operational personnel by the specific mission profiles and demands they ordinarily encounter in their jobs (see Table 17.1; Picano et al., 2012). According to our conceptualization, high-risk operational personnel include, but are not limited to, astronauts, Special Operations Forces (SOF), clandestine intelligence operatives, and certain tactical law enforcement personnel.

Key Competencies of High-Risk Operatives

Identifying the competencies required to perform the job effectively is an important first step in the development of Assessment and Selection (A&S) programs for high-risk operational personnel. Desired competencies drive the choices of assessment methods and measures. Ideally, such competencies are derived a priori from job analyses and/or subject matter expert (SME) descriptions.

Previous reports from selection efforts with personnel having similar job requirements can serve as a useful starting point for identifying competencies in a new assessment program, and can also serve as a check to ensure comprehensiveness of competencies in established programs. The characteristics identified by the Office of Strategic Services (OSS) staff and reported in the monograph, *The Assessment of Men*, represented the first comprehensive effort in the United States to

J.J. Picano (✉)
UTMB and National Aeronautics and Space
Administration, Houston, TX, USA
e-mail: james.j.picano@nasa.gov

R.R. Roland
Consulting Psychologist, Pebble Beach, CA 93953,
USA

T.J. Williams
National Aeronautics and space Administration,
Houston, TX, USA

P.T. Bartone
National Defense University, Institute for National
Strategic Studies, Center for Technology and National
Security Policy, Washington, DC, USA

Table 17.1 Some characteristics of high-risk operational jobs

Critical and sensitive national security missions
Nonroutine, nonstandard, or unconventional occupational and tactical demands
Extreme, hostile, and/or denied operating environments
Frequent and/or extended deployments
Various cultural settings
Independent operations with no or very limited logistical and/or tactical support
Unknown and often uncontrollable factors demanding ingenuity, expertise, initiative, and a high degree of common sense in order to avoid mission failure

describe the competencies required for successful performance of high-risk military missions, and more specifically, clandestine intelligence operations (OSS staff, 1948). The OSS staff identified seven broad categories which they believed were required to function effectively in the field, whether in support or operational roles: Motivation, Effective Intelligence, Emotional Stability, Social Relations, Leadership, Energy and Initiative, and Security. Three others, Physical Ability, Propaganda Skills, and Observing and Reporting, were also measured in those assessed for direct operations missions in the OSS. These competency areas are a good starting point in looking at competencies required for all operational personnel and are presented in Table 17.2.

Recently, Lenzenweger (2015) applied modern factor analytic techniques to identify latent factors in the ratings of the competencies used by the OSS. He identified three factors: emotional and interpersonal (emotional stability, social relations, security), intelligence processing (effective IQ, propaganda skills, observing and reporting), and agency/surgency (motivation for assignment, energy and initiative, leadership, physical ability). Though these underlying dimensions are specific to clandestine intelligence operatives, we previously found that they reasonably extended to other high-risk operatives as well, perhaps with the exception of some intelligence processing competencies that might be more specific to intelligence missions (e.g., Observing and Reporting, Propaganda Skills; Picano et al., 2012). We organized the OSS competency areas in Table 17.2 according to their loading on these latent dimensions. In Table 17.2,

we also present the competencies that were most commonly listed among diverse groups of high-risk operational personnel (Picano et al., 2012).

As Table 17.2 illustrates, key competencies identified from descriptors of those required for success across many different kinds of high-risk operations correspond well with the broad dimensions identified by Lenzenweger (2015) in the OSS data. Competency areas shared by high-risk operational personnel include cognitive skills, interpersonal and emotional factors, and agency/surgency. It should be emphasized that these competencies are probably not sufficient for characterizing any one particular group, since differences among specific mission sets and operational communities likely require unique and additional competencies. Note, for example, that highly specific competencies thought necessary for success in clandestine intelligence operatives (e.g., observing and reporting, propaganda skills) are not included among the key competencies identified. We also expanded the descriptors used by the OSS staff for Effective Intelligence and grouped the more cognitively oriented competencies Adaptability and Judgment in this domain.

The latter point raises an important issue from the previous review: competency dimensions often have similar names, although the actual descriptors can vary. Also, similarly named dimensions sometimes comprise different sub-competencies and descriptors. In practical application, careful description of the competencies and sub-competencies captured in a particular dimension is important as these drive the development of assessment procedures and measurements and scales, as well as specific behavioral rating anchors (Saucier, 1997).

It is worth mentioning again that the key competencies identified in Table 17.2 are likely not sufficient for the assessment and selection of any one particular type of high-risk operative. Additional specific and unique competencies will emerge from job or competency analyses. The final competency list to inform assessment efforts should be representative, but manageable and not overly burdensome or unwieldy. Campion, Fink, Rugeberg, Carr, Phillips, and Odman (2011) suggest keeping competency areas to about 10–12.

Table 17.2 Key competency areas for high-risk operational personnel

OSS clandestine operative		High-risk operative	
Factor	Attribute area	Attribute area	Descriptors
Emotional and social	Emotional stability	Emotional stability	Composed, unflappable Emotionally controlled Maintains focus, and able to function effectively when under stress or when pressed
	Social relations		Puts group goals ahead of individual goals Supports team efforts Contributes to group effectiveness
Intelligence processing	Security		
	Effective intelligence	Adaptability	Acts promptly in response to changing demands Modifies plans in response to changing demands Generates novel solutions to problems
		Judgment	Accurately and quickly assesses risks, outcomes, and repercussions in problem-solving situations Demonstrates sound judgment under pressure Assess risks, likely outcomes, and possible repercussions in problem-solving situations
Agency/surgency	Propaganda skills		
	Observing and reporting		
	Motivation for assignment	Motivation	Self-motivated and directed Motivated by challenges (intrinsic) Mission (specific) orientation and interest
	Physical ability	Physical ability and stamina	Possess stamina and endurance Physically fit Rugged, able to tolerate harsh environments and conditions
	Energy and initiative	Initiative	Display initiative Ambitious Motivated to advance, achieve
	Leadership		

Assessment and Selection Program Components

Assessment and selection (A&S) courses for high-risk operational personnel are physically and psychologically rigorous events designed to both “select out” those who are unqualified or unsuited for the work, and “select in” those with the most potential to perform effectively in the job. In A&S programs for military and national security operatives, candidates are recruited based upon technical skills and abilities, and then thoroughly screened for medical, psychological, and security risks. Candidates who pass these initial gates are then subjected to extended assessment and selection procedures comprising detailed psychological evaluations (cognitive ability and personality tests, and psychological interviews), situational tests (team and individual, usually under high stress conditions), and physical performance/fitness events. The use of simulation tasks (or situational tests) and other performance events closely follows the assessment center model, with tasks typically designed specifically to assess the unique job demands and competencies required for the specific position. Scores for the various competencies across tasks are aggregated, and compared across individuals. These tasks tend to be unique to the various programs and designed to mimic the operational requirements.

We have described typical assessment and selection components in greater detail elsewhere (Christian, Picano, Roland, & Williams 2010; Picano & Roland, 2012). We highlight physical performance events here as one area of high-risk operational A&S programs that differentiates them from most other occupational assessment centers.

Physical Performance Events

High-risk operational personnel engage in high-intensity operations in challenging physical environments with tactical and logistical autonomy often requiring them to carry heavy loads. Not surprisingly, physical fitness (or stamina) emerges as a core competency dimension for most high-risk operational personnel (Picano et al., 2012).

Consequently, A&S programs have high physical health and fitness standards for entry. Standards for scores on military physical fitness tests for entry into such programs usually exceed those required to meet standards for basic military service. A&S courses for high-risk operational personnel are also structured to mimic harsh operational environments with demanding physical events (such as obstacle courses, ruck marches, swims) as situational tests. In addition to these physical challenges, sleep and food deprivation are oftentimes used to test performance under extreme physiological depletion. In addition to assessing physical fitness, the rigors of A&S programs for high-risk operational personnel test tolerance for hardship, perseverance, sustained performance under physical stress, and recovery after stress. It comes as no surprise that baseline physical fitness, as measured by performance on standard military physical fitness tests completed prior to participating in these rigorous assessment programs consistently emerges as one of the strongest, if not the strongest, predictor of successful completion of A&S programs for military SOF personnel (Beal, 2010; Taylor, Miller, Mills, Potterat, Padilla, & Hoffman, 2006; Teplitzky, 1991; Zazanis, Hazlet, Kilcullen, & Sanders, 1999).

Psychological Evaluations

Assessment and selection programs for high-risk operational personnel comprise an interesting blend of clinical (individual) and assessment center methods. In an assessment center model, all components and procedures are typically indexed to the competencies under consideration. In contrast, psychological evaluations, including interviews and psychological testing (both cognitive and personality), often focus more heavily on broader clinical constructs than on the specific competencies identified, and yield more general or global assessments of candidates' suitability for high-risk operational work.

Suitability Interviews Given that many modern-day A&S programs for high-risk operational personnel in the United States trace their

methodological roots back to the OSS program, it is not too surprising that psychological interviews follow a more holistic, clinical method (see Highhouse, 2002, for a more detailed discussion of this approach). Our experience is that interviews used in contemporary A&S programs are more structured and attentive to job-relevant competencies (e.g., Girodo, 1997; Picano & Roland, 2012) than those following individual assessment techniques in other settings (i.e., executive selection), having incorporated important lessons from research on the use of interviews in personnel psychology (Campion, Palmer, & Campion, 1997).

An earlier report describes our interview components and the suitability ratings derived from them (Picano & Roland, 2012). We would classify our interview approach as a competency-informed, but clinically based assessment. The interview informs the overall assessment of suitability focused specifically on the candidate’s psycholog-

ical and emotional stability, training and performance potential, and behavioral and security risks. There is empirical evidence of validity in the use of interviews in this way in A&S programs for military personnel (Picano & Roland, 2012; van der Linden, Nijenhuis, Cremers, van de Ven, & van der Heijden-Lek, 2014) and other high-risk operational personnel (e.g., undercover police officers; Girodo, 1997).

Although not originally designed to assess the core competencies of high-risk operational personnel we identified from the literature, our interview is comprehensive and addresses these competencies as they are manifested by certain life-history indicators. Table 17.3 shows how the identified core competencies identified by us map onto the psychological suitability interview dimensions and sub-competencies used in our work over the years in one particular assessment program for high-risk operational personnel (Picano & Roland, 2012).

Table 17.3 Sample life-history indicators of key competencies.

Core competency areas	Relevant sub-competency areas	Sample interview content areas/life history indicators
Physical ability and stamina	Fitness and stamina	Fitness routines Physical fitness test scores Rugged or challenging hobbies/activities Military/civilian technical skills/licenses “extreme” or “high-risk” recreational activities/hobbies Competitive athletics Current and health and injuries
Motivation/ Initiative	Motivation (extrinsic v. Intrinsic)	Interest in assignment Career trajectory and fitness Alternative career plans Current job satisfaction Understanding of implied job requirement/mission History of successful occupational striving Military deployments/combat and field experiences Previous military assignments Training schools attended
Adaptability	Written and oral communication Academic achievement Novel thinking ability Mental agility	Oral and written communication-verbal fluency Foreign languages and fluency Previous level of academic achievement (degrees, GPA) Educational progression Academic honors (including in military training) Past successes/failures in military training courses Demonstrated complexity of thought in verbal expression Writing samples Information-processing difficulties (including TBI or other acquired problems) Developmental learning/attention problems Observed mental processing speed and agility

(continued)

Table 17.3 (continued)

Core competency areas	Relevant sub-competency areas	Sample interview content areas/life history indicators
Judgment	Impulse control/ Normative orientation Responsibility Trustworthiness/integrity	Childhood conduct history (including school suspensions) Legal entanglements (including juvenile offenses) Problematic aggression/physical fights Domestic conflict Substance use/abuse Military judicial/nonjudicial punishments Financial management/stability Personal financial savings/debt Marital and or relationship infidelity Security issues/violations
Cooperation with others	Interpersonal-social skills	Marital/relationship history Work relationships/conflicts Team experience Social organizations and leadership positions
Emotional stability	Stress tolerance Resilience	Past/current mental health issues Stress-coping skills Completion of demanding training courses Response to life challenges

Family stability, although not an individual competency, emerges as an important area of consideration for high-risk military operational personnel selection for a number of programs that we reviewed (Picano et al., 2012); this includes the one from which we developed our structured interview and ratings. Consequently, we also assess and rate family stability as an important dimension of suitability for assignment looking at indicators such as current marital satisfaction and past relationship stability, spousal support for assignment, family tolerance of multiple or extended deployments, spousal self-sufficiency, and family medical (or other) limiting conditions/special needs.

Compared to situational tests, our interview assessment of adaptability and judgment focuses on different facets of these competencies. Our approach emphasizes the cognitive competencies undergirding adaptability and judgment (e.g., flexibility, self-regulation), as opposed to problem-solving and decision-making. These other facets of adaptability and judgment tend to be better indexed by situational tests.

Cognitive Testing Intelligence testing is a central component of the psychological evaluations in A&S programs for high-risk operational personnel. Strong cognitive abilities consistently

emerge as attributes identified as essential to mission success in high-risk operational personnel (Picano et al., 2012). Cognitive ability has consistently proven to be one of the strongest predictors of future job performance and training success with average validity coefficients above 0.50 across many different types of occupations (Schmitt, 2014; Schmidt & Hunter, 1998). In A&S programs for high-risk operational personnel, cognitive ability has repeatedly been shown to predict selection in US Army Special Forces assessment (Beal, 2010; Hazlett & Sanders, 1999). Most commonly, assessment of cognitive ability is accomplished using group-administered and usually brief, well-validated measures such as the Wonderlic Personnel Test (WPT) and General Ability Measure for Adults (GAMA). Typically, these measures are not linked to a specific cognitive competency, and provide an overall estimate of intellectual and cognitive ability relative to the general population (and perhaps the specific population if such norms exist).

We are aware of programs using more extended assessments of cognitive ability with measures linked to a clinical model of intelligence (e.g., Multidimensional Aptitude Test, or MAB). However, we are not aware of any published accounts of success in predicting selection in Special Operations Forces or other high-risk

operational personnel. It would be important to know whether the additional investment of time required for a measure like the MAB yields improvements in prediction (selection, training, operational performance) over briefer measures of *g*, or whether specific cognitive abilities measured by MAB have utility for understanding or measuring other important cognitive operations identified as essential competencies in high-risk operational personnel (e.g., judgment, adaptability). For instance, the MAB has shown utility in research in military (US Air Force) pilots with specific scales contributing to prediction of pilot performance (Chappelle, Heerema, & Thompson, 2012).

Personality Assessment The assessment of personality in A&S programs for high-risk operational personnel often follows the clinical method, similar to the manner used by OSS staff. Personality tests are used in two rather separate lines of assessment: detection of psychopathology to screen out unsuited individuals, and assessment of general personality traits, especially those thought to be important in the world of work (e.g., conscientiousness). Given that emotional stability is a major competency that emerges across descriptions of those required for success in high-risk operational personnel, it is not surprising that assessment programs routinely incorporate clinical personality instruments. Clinical instruments (such as the Multiphasic Personality Inventory (MMPI)) assist in the detection of psychopathology and maladjustment, and are generally used to screen out individuals who are unsuitable for assignment.

Regardless of the intended objectives of personality assessment, the results of personality testing are generally used by operational psychologists in A&S programs to yield broad or global assessments of suitability or personality effectiveness, and to develop personality “sketches” of candidates being assessed. Nowadays, these sketches or profiles are often organized under the rubric of the Five Factor Model (FFM) of personality. There is less tendency to link or map specific personality measures or scales to the specific personality

competencies (e.g., perseverance) required for successful performance. Nevertheless, there is compelling evidence that personality measures add validity to selection decisions (Ones, Dilchert, Viswesvaran, & Judge, 2007). Specific personality competencies are more typically rated in simulation exercises in A&S programs for high-risk operational personnel.

Part of the reason for more global assessments of personality in A&S programs may be that operational psychologists tend to employ omnibus personality instruments. Omnibus personality measures provide a convenient way of assessing a broad range of personality constructs, though not with the specificity in any one instrument to cover all of the personality competencies of interest.

A number of well-validated personality instruments are commercially available. Prewett, Tett, & Christiansen (2013) review the psychometric properties of 12 commonly used inventories in occupational settings. In our experience, only relatively few with research evidence for their validity are commonly used in assessment programs for high reliability (e.g., police officers, airline pilots) and high-risk operational personnel in the United States. Table 17.4 lists the measures commonly encountered in our experience.

Other well-established measures used in selection for high-reliability personnel such as the Hogan Personality Inventory (HPI) have not been widely used in more specialized military selection programs. However, the HPI was used to predict success of US Navy personnel during a winter tour in Antarctica (Biersner & Hogan, 1984). Also, a measure of personality hardiness or resilience known as the DRS – Dispositional Resilience Scale has predicted success in US Army Special Forces candidates (Bartone, Roland, Picano, & Williams, 2008), and in Norwegian Arctic border rangers (Johnsen, Bartone, Sandvik, Gjeldnes, Morken, Hystad, & Stornæs, 2013).

It is likely that no single measure of personality is likely to be superior to any other for use in the assessment and selection of high-risk military personnel. Therefore, the choice of specific personality tests should be guided by several factors: the attributes (and personality constructs) deemed

Table 17.4 Major personality inventories used in assessment and selection programs for high-risk operational personnel.

	Items	Scales	Keying	Scale development	Theoretical model/approach
California Psychological Inventory (CPI)	434	3 vectors and 20 scales, numerous supplementary and research scales	True/false	Mixed-criterion-referenced and rational/empirical (internal consistency)	Gough's "folk" concepts
NEO-PI-R	240	5 factors and 30 facets	5-point likert	Rational/empirical (internal consistency)	Five factor model (FFM)
16PF	185	16 primary and 5 secondary factors	Multiple choice	Empirical (factor analysis)	Cattell's structural taxonomy of fundamental personality traits/FFM
MMPI-2	567	3 validity, 10 clinical, and numerous content, supplementary and research scales	True/false	Criterion-referenced	None. Psychopathology assessment
Personality Assessment Inventory (PAI)	344	22 nonoverlapping scales	4-point graduated scale	Rational/empirical (internal consistency)	None. Psychopathology assessment/two personality circumplex scales included

important in the job analysis; the evidence for the test's validity as a selection measure (see Prewett et al., 2013 for more detail); and the logistical considerations involved in using the test (e.g., cost, time involved to administer/score/interpret, automation requirements, test length and fatigue effects, vulnerability to response bias).

The way in which personality data are utilized is probably more important than the choice of the particular measure itself. In meta-analyses of studies predicting overall job performance, actuarial use of the data generated by personality (and other) measures leads to higher validities than does combining personality results into holistic judgments (Kuncel, Kleiger, Connelly, & Ones, 2013), which is the more common practice that we encounter in A&S programs for high-risk operational personnel.

Relevant Theory and Research

The structure and components of A&S programs for high-risk operational personnel appear to be guided more by the exigencies of selection requirements rather than theoretical considerations. However, modern-day A&S programs evolved from the design of earlier programs, in

particular, those used by the OSS during WWII. Most still adhere closely to that methodology (Banks, 2006; see also Girodo, 1997). For a host of reasons, many pragmatic, the OSS staff adopted the holistic approach favored by Henry Murray, which involved inferring general tendencies and traits from multiple observations (Highhouse, 2002). The OSS assessment strategy was characterized as "multiform organismic" because it involved using variety of procedures to arrive at a description of the person as a whole (OSS Assessment Staff, 1948). The OSS staff generated a final consensus job fitness rating for each candidate derived from the integration and synthesis of all information gleaned from the assessment events. In keeping with an organismic approach, this rating represented the "total potentialities of the candidate for meeting the challenges of life" (OSS Assessment Staff, 1948, p. 217). OSS staff assumed that trained assessors were better able to predict outcomes than was the mechanical (statistical) combination of test scores (OSS Assessment Staff, 1948). This assertion was as contentious then (Meehl, 1954; see also Grove & Lloyd, 2006) as it is now (Highhouse, 2002).

The holistic approach (sometimes referred to as the clinical approach) espoused by the OSS

Staff made its way into industrial psychology in England and the United States very quickly after the war, gaining prominence particularly in executive assessment (Highhouse, 2002). The term, *individual assessment*, now describes an employment selection procedure that uses multiple assessment methods for individual candidates that are integrated into an overall evaluation of a candidate's suitability for a particular job based upon the judgment of the assessor (Morris, Daisley, Wheeler, & Boyer, 2015). Individual assessment continues to be widely used in employee selection (Kuncel et al., 2013), particularly for executive advancement and suitability for specialized assignments in which successful performance is difficult to define and relatively few individuals occupy the roles (Highhouse, 2002). The latter use accurately describes the conditions in high-risk operational personnel selection.

In contrast to the individual assessment method is the mechanistic or statistical (actuarial) approach. The primary difference between these two approaches is not so much in the method for acquiring the data (clinical methods can be used), but in how the data is integrated or combined once collected. In the individual assessment approach, an overall impression or composite score is made by an individual assessor (or panel) using judgment, insight, and intuition, as opposed to the use of statistical algorithms or formulas typified by the mechanistic approach (Kuncel et al., 2013). A recent meta-analysis shows that the individual assessment approach demonstrates evidence of validity in predicting job performance, especially for higher-level, managerial jobs. However, the validity coefficient does not exceed that which is usually obtained using cognitive ability tests or structured interviews alone (Morris et al., 2015). Moreover, mechanistic approaches substantially outperform individual assessment in predicting job performance, though (and perhaps more relevant to the assessment and selection of high-risk operational personnel) the differences in predictive validity for advancement criteria between the two methods are less substantial compared to those for job performance (Kuncel et al., 2013). Individual assessments may still be useful in sit-

uations in which mechanistic approaches might not be feasible such as those in which it is difficult or impractical to conduct criterion-related research (Morris et al. 2015); a common situation for many psychologists who work in specialized A&S programs for high-risk military operational personnel.

What is it that "multiform organismic" A&S programs for high-risk operational personnel actually assess? The OSS account – the "total potentialities of the candidate for meeting the challenges of life" – extends far beyond the determination of the individual's suitability to perform that particular high-risk job. It suggests that A&S measures of physical and psychological health, cognitive ability, and personality effectiveness may tap into a broader, latent construct. Evolutionary psychologists (Miller, 2000; see also Sefcek & Figueredo, 2010) have proposed a general fitness factor (*F-factor*) to account for the shared variance indicated by positive correlations among measures of physical health, mental health, general intelligence (*g*), and personality (General Factor of Personality or GFP). *F-factor* is hypothesized to tap into the individual's underlying genetic quality (or "mutation load"; Sefcek & Figueredo, 2010). Genetic quality is signaled in fitness indicators reflecting morpho-developmental quality (e.g., fluctuating asymmetry), neuro-developmental quality (e.g., intelligence, psychopathology), and immuno-competence (i.e., ability to fend off disease). Figure 17.1 shows this model. According to this model, fitness sits atop of subordinate factors, each representing general areas of fitness (e.g., neurodevelopment stability), comprising higher-order factors of subordinate constructs, such as the GFP (Figueredo & Rushton, 2009), *g*, and a general factor of psychopathology (*p-factor*; Caspi, Houts, Belsky, Goldman-Mellor, Harrington, Ramrakha, Poulton, & Moffitt, 2014), which serve as "fitness indicators" (Miller, 2000). It is likely that the multiform processes and procedures used in the A&S of high-risk operational personnel, with their focus on identifying the brightest, healthiest, and most resilient and adaptive, are essentially tapping into the latent genetic fitness of the individual.

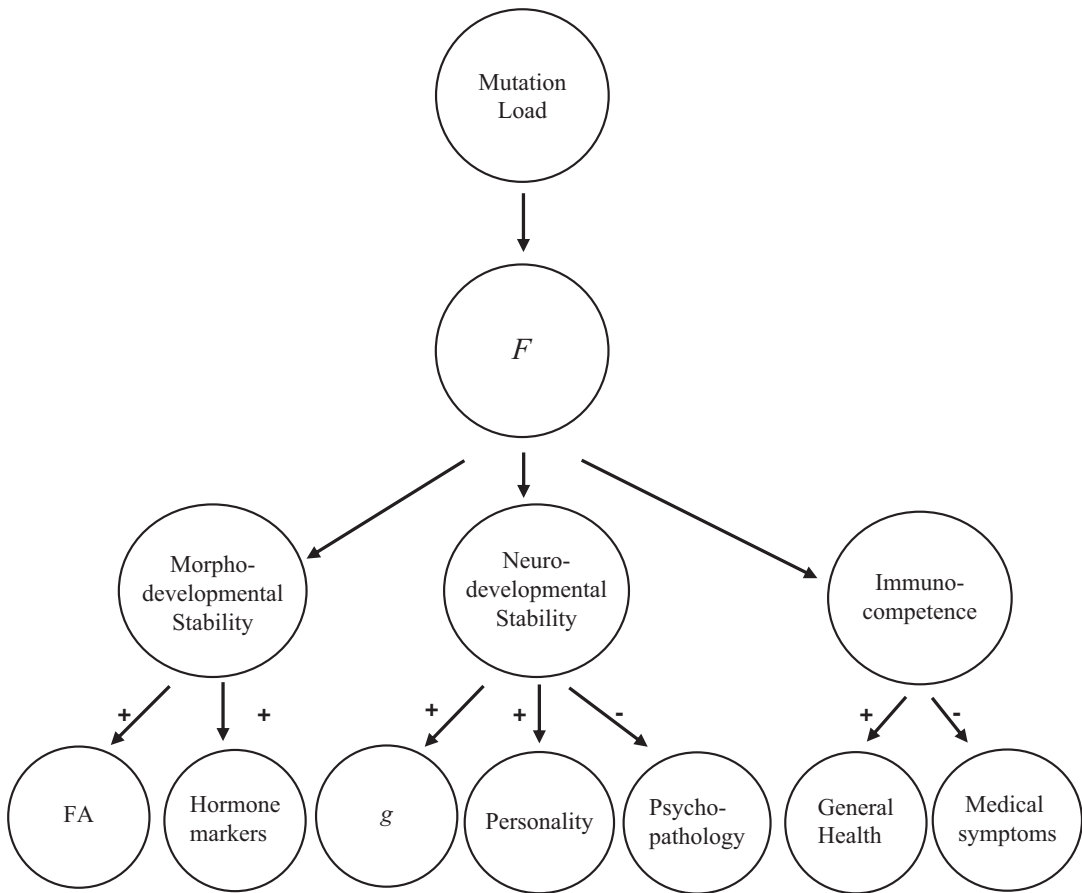


Fig. 17.1 Hypothetical fitness factor model. *FA* fluctuating asymmetry, indexed as the deviation from perfect symmetry in bilateral traits that are symmetrical at the

population level (e.g., facial asymmetry). *g* general cognitive ability (Adapted from Sefcek & Figueredo, 2010)

Current Military Applications and Future Directions

Smaller and more “boutique” A&S programs for high-risk military operational personnel sprouted up in the United States (and elsewhere) after 9/11 in an effort to meet the increased demands to bring new and specialized capabilities to the War on Terror. Most operate in the “shadows,” and security concerns preclude sharing of specific information about their practices. However, here is a common scenario in specialized A&S of high-risk military operational personnel: a candidate is recruited to attend because of interest, technical skills, and experience that suggests

potential as an operative; the candidate undergoes a screening of occupational, medical, psychological, and security concerns; qualified candidates, comprising a small group from those screened, are invited to attend an extended (weeks long) “assessment course” designed to evaluate suitability for training and assignment; candidates complete psychological evaluations, high-fidelity situational tests (likely both individual and team), and physical performance events; performance data are gathered using a variety of methods including observer ratings; some candidates are eliminated during the extended assessment course due to medical reasons (illness and injury), failure to meet performance standards, self-elimination (quit), or integrity violations;

and finally, performance of the candidates that remain at the end (usually fewer than half of those who started) is reviewed by a panel who will select those that show the greatest potential to complete specialized training and perform the mission successfully. Those selected are then assigned to the organization and go on to specialized training to prepare them for the job. Upon successful completion of training, they are assigned to operational elements in the organization for deployment.

There may be some differences in the format of specialized military selection programs from one to another. However, in our experience, the integration of the performance data for use in decision-making tends to favor judgment rather than statistical prediction. In our opinion, this reflects a bias against the use of statistical prediction models owing in part to adherence to the methods of the OSS approach, the unavailability of validated models in many programs because of operational resource constraints on psychologists, and practical considerations impacting specialized A&S programs (e.g., small N, lack of job performance criteria). We would add that the practical concern of small Ns in building statistical prediction models for decision-making in specialized A&S programs is compounded by measurement problems, including range restriction on psychological measures due to preselection effects (especially on cognitive ability measures), and social desirability response bias (on personality measures) typical in high-stakes selection testing. These represent challenges to the development of statistical prediction models, but in and of themselves, such difficulties should not preclude efforts to doing that.

We are aware of considerable efforts in specialized assessment programs to build elaborate statistical models and to present those to the selection panel when reviewing candidate performance. However, even in those situations, decision-makers will sometimes choose to use their professional judgment to override those recommendations when a candidate has a unique capability, or the panel members' experience or intuition contradicts the findings. Research in employment selection suggests that "adjusting"

statistical predictions based upon expert judgment typically results in lower validity coefficients (Kuncel et al., 2013; Morris et al., 2015).

The development of statistical prediction models should be the goal for decision-making in specialized A&S programs. However, we acknowledge that the literature findings favoring statistical over clinical data integration methods may not hold in such approaches, may not be preferred or acceptable to leaders in such programs, or may be impractical to implement for one reason or another. Kuncel et al. (2013) offer some useful practice suggestions for those who are solely using expert judgment in arriving at decisions in specialized A&S programs: statistically derived data can be used as an anchor and limited adjustments could be made based upon judgment; expert-combined and mechanistically combined recommendations could both be presented to decision-makers; and particularly relevant to current practice in small N programs, experts could provide testable predictions about the future behavior of candidates that can allow for the accumulation of data and analysis over time.

We are not necessarily advocating for "throwing out the baby with the bathwater" when it comes to the individual assessment methods used by the OSS that have informed the design of many specialized A&S programs for high-risk operational personnel. Rather we are hopeful that "hybrid methods" of data combination (Kuncel et al., 2013) can be developed that fit the unique measurement challenges and constraints of specialized A&S programs, and improve our ability to predict success. Operational psychologists can help set the condition for more effective predictions when those predictions are informed by the statistical probabilities and context that are used to yield more quantified judgments.

A&S programs for high-risk operational personnel should attend as much as possible to multiple criteria in predictive validation efforts. Our own work has been more narrowly focused on predicting successful completion of rigorous selection programs. This seems appropriate given that attrition from these selection courses is often quite high (upwards of 50%) and identifying important predictors can help inform efforts to

target and recruit candidates who are more likely to be successful. We have yet to see published accounts focused on incremental validity of various assessment methods or models (e.g., individual assessment versus statistical) in predicting selection outcome. Also important are validation studies on criteria such as training success, and ultimately, job performance in high-risk operational personnel. Our experience suggests that these tend to get far less attention than they deserve largely due to difficulty tracking these outcomes because of inadequate feedback channels for that information, and to some extent, difficulty in arriving at adequate measures of job performance for the relatively rare and highly complex jobs performed by specialized operational personnel (see Girodo, 1997, for an exception). Ultimately, these analyses are crucial for a full understanding of the validity of assessment methods and data integration models, and to identify best practices for the assessment and selection of high-risk operational personnel.

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Selection of Police Special Operations Officers: The Role of the Psychologist

18

Bjørn Helge Johnsen

The use of psychologists and of psychological testing in the selection of police officers has increased dramatically over the last decades (Cochrane et al., 2003). This is due primarily to the high cost of admitting unqualified personnel into the service. This negative impact can be seen on citizen safety, the reputation of the service, or monetarily as when expensive training is applied to personnel who cannot perform the work as expected (Cochrane et al., 2003; Shusman, Inwald, & Landa, 1984). Thus, attention has focused on the entry-level recruit's psychological or emotional adequacy regarding police service. However, a lack of consistency and standardization in pre-employment screening is found between police agencies (Dantzker, 2011), with huge differences in levels of sophistication (Cochrane et al., 2003). This is probably even truer with regard to different types of law enforcement personnel. Thus, the purpose of this chapter is to outline the role of the psychologist in the selection of personnel for the Norwegian National Counter-Terrorism Unit (Delta Norway).

The selection of personnel to special operation forces units is of special importance to law enforcement and military organizations around the world. These types of personnel are expected to perform high-risk operations involving extreme stressors. The expectations from officials and the public are that they successfully perform their missions, that is no-fail tasks. Such tasks put great emphasis on the operators' intrinsic motivation. Furthermore, the use of technologically sophisticated equipment and advanced tactics involves a steep learning curve and demands the ability to quickly absorb new information.

Historical Background

The Delta Norway (Norwegian *Beredskapstroppen*) was founded in 1975. The decision to establish the organization was based on risk assessment of possible terrorist threats toward the nation's oil production facilities, as well as a general recognition among citizens of the increased terrorist threat level. The unit was designated to be a national resource on counter-terrorism, hostage rescue, and general high-risk operations involving armed perpetrators. The unit performs 400 to 500 armed missions each year. Since the Norwegian Police usually are unarmed (armed when ordered), these missions mostly include activities where there is expected to be

B.H. Johnsen (✉)
Department Psychosocial Science, University of
Bergen, Christies gt. 12, 5015 Bergen, Norway
Royal Norwegian Navy, Medical branch,
Bergen, Norway
e-mail: Bjorn.Johnsen@uib.no

armed confrontations with dangerous suspects. Originally, the selection procedure was modeled after the Norwegian Army Special Forces selection course. This course was based on the British Special Air Service selection program.

During the last couple of decades, a need for a more tailor-made selection program emerged, anchored more on characteristics of police personnel and police-type missions. The major difference regarding personnel was that the Delta Norway recruited experienced police officers with 3 years of education from the National Police Academy and included a bachelor degree and at least 3 years of operational experience. However, beginning in 2014, personnel directly out of the police academy could apply. The applicants must be of a minimum age of 25 years. The mean age of active personnel in the unit is 37 years. This is in contrast to the Army Special Forces, who recruit from the mandatory military service, with recruits usually around 20 years of age. Furthermore, although there are some similarities in missions (i.e., Direct Actions), the main bulk of operations were predicted to be high-intensity, high-risk, police missions where, for instance, experience in execution of a “force pyramid” (use of adequate means of power) was important.

Relevant Theory and Research

Personality and Job Performance

Several meta-analyses have supported the conclusion that personality predicts overall job performance (Barrick & Mount, 2003). It has been reported that personality measures have shown incremental validity over both biodata (McManus & Kelly, 1999) and evaluations of managerial potential performed by an assessment center (Goffin, Rothstein, & Johnston, 1996). Furthermore, Schmidt and Hunter (1998) showed that by combining meta-analysis with structural equation modeling, it was estimated that the Big-Five dimension of Conscientiousness added significant incremental validity over general mental ability for most jobs. The Big-Five approach

describes the personality of an individual in terms of five broad dimensions (Digman, 1990; Costa & McCrae, 1992). These dimensions are: Neuroticism (emotional stability), Extroversion (a tendency to be social active and a preference for social settings), Openness for experience (broad field of interest, imagination and creativity), Agreeableness (quality of social interactions and empathic ability), and Conscientiousness (ability to plan and achieve goals).

However, several investigators have challenged the notion of conscientiousness as a predictor for job performance in police officers. Barret, Miguel, Hurd, Lueke, & Tan (2003) showed that conscientiousness was not a stable predictor for job performance in law enforcement officers. They separated data for different law enforcements units and were not able to replicate the findings of Barrick and Mount (2003). They advised practitioners to be cautious in believing that Conscientiousness scales alone predicted law enforcement’s job performance.

In spite of this, Rothstein and Goffin (2006) concluded that numerous meta-analytic studies on personality-job performance relations conducted during the 1990s demonstrated that personality measures contribute to the prediction of job performance criteria, and if used appropriately, may add value to personnel selection practices. The Five Factor Model (FFM) of personality has become increasingly popular among researchers and practitioners, contributing to the renewal of interest in personality-job performance relations. However, more specific, narrow personality measures continue to demonstrate equal or greater utility for personnel selection. For example, psychological hardiness has been found to predict performance of military cadets, over and above the Big-Five factors (Bartone, Eid, Johnsen, Laberg, & Snook, 2009), and also predicts success in a US Army Special Forces selection course (Bartone, Roland, Picano & Williams, 2008). Furthermore, the choice of an appropriate personality measure for use in predicting job performance should be based on careful consideration of the expected theoretical or conceptual relations between the personality predictor and performance criterion of interest.

Predicting Job Performance in Police Officers

In a review, Sanders (2003) pointed out two challenges in detecting a generic police personality. Firstly, there is a problem in measuring job performance in policing, and linking it to personality. One reason for this relates to the diversity of police tasks. The other problem in identifying a common police personality concerns the impact of organizational culture. This culture could mask the effect of personality on job performance. However, several characteristics have been presented in the literature (Sanders, 2003). Most frequently described are intelligence, honesty, conscientiousness, and common sense. Other, more inconsistent, characteristics reported are interpersonal skills, communication skills, sensitivity, empathy, and flexibility.

Personality Testing in Police Selection

Traditionally, most personality testing has been conducted using the Minnesota Multiphasic Personality Inventory (MMPI) and the California Personality Inventory (CPI; Sanders, 2003). The MMPI has often been used in order to detect psychopathology or characteristics not compatible with the role as a police officer (i.e., negative selection). Scogin, Schumacher, Gardner, and Chaplin (1995) showed predictive validity of the MMPI when the test was administered at entry-level police training and performance data were collected during a 1-year follow-up. Bernstein, Schoenfeld, and Costello (1982) found that MMPI scores recorded at the academy predicted sick leave, citizen complaints, and injuries later in the officer's career. Both MMPI and CPI have proven to be related to attrition from the police academy and low ratings of suitability by instructors (Hargrave, 1985). CPI scores have also been related to social abilities, well-being, and self-control (James, Cambell, & Lovegrove, 1984).

More recently, the instruments tapping the Big-Five have been more commonly used. In a meta-analysis, Barrick and Mount (1991) identified a positive association between some of the

broad domains of the Big-Five and the performance of police officers. According to Barrick and Mount (1991), the strongest predictor of police performance was the domain of Conscientiousness. Neuroticism, Extroversion, and Agreeableness also showed predictive power, but there was no association between Openness to experience and performance. All domains except agreeableness have also predicted police training effects (Black, 2000). Furthermore, the "Big-Five" approach has been able to predict team performance. In a review article investigating the Five Factor Model and its relation to personnel selection, Rothstein and Goffin (2006) reported that 11 of the 15 studies reviewed found a correlation between Extroversion and team-related behavior. This included "team-performance, group interaction style, oral communication, emergent leadership, task role behavior and leadership task behavior" (Rothstein and Goffinn, 2006, p. 165).

Assessment Centers

Assessment centers (AC) were introduced about 60 years ago and have gained enormous popularity as a selection procedure. Most selection courses within the police and military environment have characteristics in common with AC. Assessment centers is a method that involves a combination of procedures as outlined in Guidelines and Ethical Considerations of Assessment Center Operations (see Guidelines; International Task Force, 2008). When used for selection, the aim of the AC is to provide a prediction of a candidate's ability to be successful in new assignments. The characteristics of AC include the use of trained assessors in evaluation of candidate's performance in a series of simulations based on work analyses. Characteristics that could be defined in terms of behavioral observations (i.e., leadership behavior, interpersonal skills, fighting spirit) have potential for evaluation. Observers use a systematic process of recording and evaluation of behavioral observations. Often, additional information is used in order to complement the information recorded

during the AC. This type of information often comprises the candidate's resume, background checks, and interviews with people who know the candidate. Tests of individual differences (cognitive, personality, multi-source rating) could also be used. The evaluation of each candidate is often done by combining input from different assessors to create an overall assessment rating. This could be done by sharing and discussing the input, or by using a more statistical approach.

The predictive validity of ACs has varied from 0.37 (Schmitt, Gooding, Noe & Kirch, 1984) to 0.41 (Gaugler, Rosenthal, Thornton, & Bentson, 1987). Thornton and Gibbons (2009, p. 183) concluded that "research and practice suggest that ACs are valid, fair, legally defensible, and acceptable to candidates and other stakeholders in a wide variety of jobs. Furthermore, that evidence suggests that the AC method offers a viable alternative and supplement to other personnel selection methods."

Guidelines for Selection

Professional guidelines for personnel selection have been developed (Society for Industrial and Organizational Psychology; SIOP, 2003). The guidelines involve a four-step process. The first step is performing a job analysis. The job analysis often includes one or a combination of methods such as, behavioral observation, interviews of subject matter experts, and the use of questionnaires. The job analysis should include a translation of characteristics obtained from observations (or other inputs) to psychological terms in order to identify the personal characteristics and professional competencies required. This could further guide the actual assessment scales that are included in the selection procedures. The second step is to conduct a validity study. The purpose of a validity study is to provide empirical support for the accuracy of the assessment scales related to the present job. As an alternative, often used when local validation cannot be done, validity generalization is an accepted practice. Validity generalization refers to the demonstration that the validities of assessment tools generalize

across new settings. The third step recommended by SIOP (2003) is to create a personality profile based on step one and step two. The profile should specify the scales that will be used in order to make decisions. During this step, cutoff scores should be established for each scale used in the assessment. The last step is to conduct adverse impact analyses which should protect the applicant from discrimination based on demographics. This could be done, for example, by comparing mean assessment scale scores among demographic groups.

The two latter steps are important when assessment scales are used within a framework of cutoff scores, where decisions or recommendations by the psychologist are often given in a pass or fail style.

Selection of Police Special Officers

The Norwegian Police Response Personnel are categorized into five echelons, indicating the type of service as well as the level of training. Category five is the Police Reserve. They do not receive any annual training, and could be called upon in a national crisis. The other four echelons consist of active police personnel graduated from the National Police Academy (3-year program). Category four is the main group of Police Response Personnel, and constitutes frontline police officers as well as some investigators, criminal technicians, control-room operators, etc. This group receives annual retraining (minimum 48 hours), and completes a yearly test in order to be certified to carry firearms if instructed to do so. Category three is made up of the local area response teams (SWAT-type), which receive enhanced annual training (minimum 103 hours per year). Category two is the Dignitary Protection Unit, which is dedicated to protect national and foreign dignitaries as well as the Royal family. Category one is the National Counter-Terrorism Unit (Delta Norway), where 50% of the time is dedicated to training. These personnel also train regularly with both Norwegian Army and Navy Special Operation Forces.

Desirable Personal Characteristics for Officers in Delta Norway

The personal characteristics wanted for police officers in the Delta Norway are based on a job analysis performed by the unit itself. During discussions with the selection psychologist, these terms were translated into psychological constructs which could be suitable for testing and observation. The characteristics sought after include an ability to motivate oneself during hardship (intrinsic motivation), fighting spirit, resiliency, stress tolerance in acute settings, and emphatic ability. Some of these characteristics are also described in the advertisements used to recruit personnel.

Practical Considerations

Although psychological tests are used, these are not relied on as stand-alone tools. The psychologists work in close relationship with the leader of the selection program. The leader of the selection program is educated in operational psychology and has basic knowledge of personality psychology and test development. Furthermore, the psychological tests used are viewed as information to be input on the same level as information collected by other methods. This means that tests form the basis for hypotheses with regard to the applicant, and are not used as tools for acceptance or rejection into the program. The basic idea is for the leadership of the program to have hypotheses on the candidate that can be confirmed or rejected based on other information available. This information could be gathered from service history, references, and most commonly performance in the AC. The idea of using psychological tests as a form of “hypotheses testing” in combination with other aspects of the selection procedures increases the knowledge about the applicant and gives rise to a better decision with regard to acceptance or not into the unit. With regard to the selection procedure it increases the incremental validity. The use of psychological tests in combination with other “sensors” is explicitly relayed to the applicants.

The final evaluation of the applicants (in or out) is done by the leader of the selection program.

One challenge when using tests in this form is to translate personality characteristics into observable behaviors. In order to do so, the psychologist must have extensive knowledge about the unit that is selecting the personnel, as well as the content of the total selection procedure. The translation is done in a discussion with the leadership of the selection program.

Ethical Considerations

Applicants to the Delta Norway selection program are extensively evaluated without feedback or control over target characteristics and behavior. They are scrutinized by means of tests, background checks, and performance. The evaluation is done by colleagues who the applicants potentially are going to work with if accepted into the unit, or will likely meet professionally if they are rejected. This gives rise to several ethical concerns. The main challenge is handling of information about the applicants. With regard to information from psychological testing, only the leadership of the selection program (two persons) in addition to the psychologist has access to this type of information. These persons are attached to the training wing and not involved in operational personnel. It is a clear mutual understanding that the information is restricted and should merely be used as hypotheses, and the principal aim is to reject these hypotheses. During the selection course, the psychologist is working in close relation to the leadership of the program to ensure that this information is not relayed to other assessors.

Other ethical aspects for the psychologist are related to the intensity of the course. It is in the nature of a selection procedure to special operation personnel that they will have to endure extreme physical and psychological hardship. It is vital that experienced, knowledgeable leaders with high integrity are in charge of the selection. Once again, a close relationship between the psychologist and the leadership of the course is important in order to support the leadership with

expert knowledge on topics such as sleep deprivation and mental load.

Procedures for Selection

Figure 18.1 outlines the selection course for the Delta Norway. Applicants are first recruited through job advertisements in national police journals and police intranet sites. The unit also actively recruits in police academies of large police districts. Originally, the criteria for applying included: age between 25 and 32 years, 3 years of Police Academy, and 3 years of job experience in the police force. Following recent revisions, applicants over 32 years of age can be considered for service if their background (e.g., military special forces) is of interest. Students could also be admitted directly from the Police Academy. Applicants who meet these criteria are given a physical test, and then they are administered a test battery of two personality inventories. The Minnesota Multiphasic Personality Inventory (MMPI) is mainly used to test for psychopathology (i.e., negative selection) as well as resiliency.

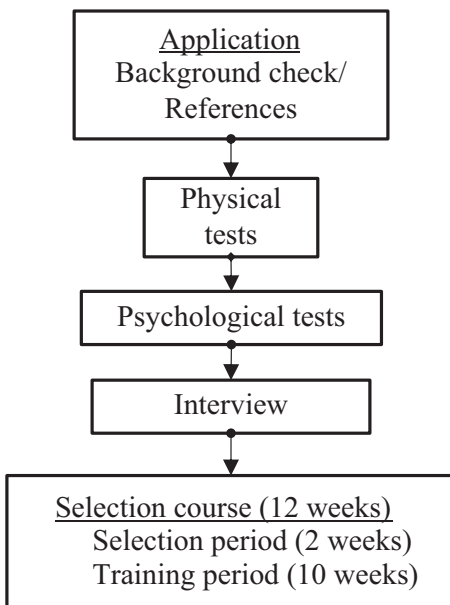


Fig. 18 1 Graphic outline of the selection program used to evaluate candidates for the Norwegian National Counter-Terrorism Unit

Clinical Scales, sub- and content scales are all examined and interpreted. The NEO PI-R is used to derive hypotheses on emotional stability, stress tolerance, stamina, and empathic ability. The hypotheses are conveyed to the leaders of the selection course before the candidate meets the interview board. This information is used in the background check and in the interview itself.

Applicants passing the physical and psychological tests as well as the interview and background check next meet for a 12-week long selection course. This is done in an AC manner and observations are made on a 24-h basis. The first 2 weeks focus on selection. Half of the 2-week period is dedicated to selection on individual characteristics using situational tests and expert evaluators from the Delta Norway. The rest of the period is focused on team performance. The evaluators provide individual ratings of all applicants, and these ratings are considered by the leadership of the program. The role of the psychologist is to give expert input on the situational tests, make evaluations of the applicants in cooperation with the course leadership, and provide lectures on behavioral markers of target characteristics for the observers. For instance, lectures on markers of team behavior were based on Salas, Sims, and Burke (2005), who emphasize team leadership, monitoring, support behavior, team attitude, and team adaptability. Lectures on sleep deprivation and coping are also given to the applicants early in the course.

Close supervision and guidance of the trainees is crucial during this phase. Since individual limits of the applicants are pushed (i.e., sleep deprivation and fatigue) the role of the psychologist would be as a “sparring partner” of the course leadership. Thus, course leadership is vital, and the decisions are always made by the leader of the course. In this phase, there should always be room for flexibility both on a course and individual level. No course would be identical due to, for instance, weather conditions. This could result in some courses having more extreme stressors compared to previous courses. Individual flexibility is also vital. For instance, in order not to select only on physical strengths, applicants with superior physical capabilities could be driven

harder compared to others in order to test stamina and stress tolerance.

After the 2-week selection period, the course is mainly dedicated to instruction and training. Although it is during the selection period when most applicants are selected out, a few will be rejected during this later phase. The main reason for drop-outs during this phase is applicants not being able to follow the steep learning curve for tactics and individual performance. The psychologist has a minor role during this phase of the course, for example providing consultation for rejected personnel.

Psychological Consultation with Rejected Personnel

Since personnel applying for this course have put an enormous effort into preparation as well as the actual performance during the course, the disappointment of being rejected is high. In addition, stressors inflicted on the personnel can create new and disturbing experiences. For instance, sleep deprivation frequently causes hallucinations and occasionally causes thought disturbances. These aspects are often the topic of the consultations after rejection. Another topic is a psycho-educative approach on possible physical and psychological reactions in the weeks following the course. Since the selection course is extremely physical, demanding physiological reactions like increased sweating, digestive or nutrition problems as well as fatigue could occur. Psychological symptoms of intrusion and avoidance are also possible. Another issue covered in this psycho-educative approach is the mental preparation of personnel returning to their units, and sometimes meeting their families who have had high expectations for them.

Based on the course conducted in 2014, a total of 92 police officers applied for the selection course. Sixty-five of these applicants participated in the physical and psychological tests. Forty of these passed on to the interview, and of these 25 were selected to continue the course. Of these 25, only 12 passed the selection course resulting in an admission rate into the unit of 13%. Experience

from several of these selection programs shows that these figures are representative across time. Clearly, it is a difficult and highly selective course.

Relevance Beyond the Police Organization

An obvious relevance beyond the police establishment for this type of selection is for the selection of military personnel into special operation units. The use of situational testing in the Armed Forces is not new. German military psychologists started situational testing after World War I, and this was adopted for use by the British and the US military during World War II (Pynes & Bernadin, 1992). Personality measures are also commonly used as selection tools. However, the role of the psychologist as presented in this chapter is more rare, in which the psychologist does not evaluate candidate in an approved or rejected manner, but presents hypotheses to further be tested and observed in situational tests or by other information-gathering procedures. The psychologist is an active partner and works in close relationship with the leadership during the complete selection program. As a result, the psychological tools applied form an integrated part of the complete selection program. This is in contrast to the more frequently described selection procedures where candidates are approved or rejected solely on the basis of personality or aptitude test scores (see also Picano et al., Chap. 26, this volume).

Conclusions

The present chapter describes the role of the psychologist in the selection of Police Special Officers into the elite National Counter-Terrorism Unit in Norway. This includes the use of personality tests as a basis for forming hypotheses about strengths and underdeveloped sides in a candidate. By forming hypotheses that can be falsified or accepted, this provides the leadership of the selection program the final decision in admitting personnel into the unit, while also increasing

the leadership's responsibility for selecting the right personnel. It also increases the overall validity of the selection program. An active role in the complete selection program ensures that psychological knowledge is applied both in designing situational tests and evaluation of candidates, as well as a focus on ethical sides of testing. Feedback from the leaders and evaluators has also shown an increased credibility for the psychologist as a result of the close interactions between psychologists and the evaluators. Psychologists play a key role in the selection process by providing directions for observation, being accessible to discuss issues occurring during the selection course, and by that contributing to reducing the number of errors made in the selection process.

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Stephen V. Bowles, Matthew S.A. Feely,
Eric J. Weis, Anthony DiBella, Paul T. Bartone,
and Karen Kimmel

Evolutionary biologists and anthropologists have amassed a trove of irrefutable data that trace the slow and methodical development of *Homo sapiens* over 6 million years. With surgical precision, nature has carefully trimmed, deleted, and added infinitesimally small pieces of human DNA to ensure the survival of the fittest for the environment in which they live. This adaptation process holds invaluable lessons for the twenty-first-century leaders and their followers and is the core of the Adaptive Leadership model.

S.V. Bowles (✉) • P.T. Bartone
National Defense University, Institute for National
Strategic Studies, Center for Technology and
National Security Policy, Washington, DC, USA
e-mail: dr.stephen.bowles@gmail.com;
bartonep@gmail.com

M.S.A. Feely
Columbia University, New York, NY, USA
e-mail: matthew.feely.wg92@wharton.upenn.edu

E.J. Weis
Eisenhower School for National Security and
Resource Strategy, 408 4th Ave, S.W., Fort Leslie
J. McNair, Washington, DC 20319, USA
e-mail: eric.j.weis.mil@gc.ndu.edu

A. DiBella
Organization Transitions, 75 Huguenot Drive, East
Greenwich, RI 02818, USA
e-mail: ajd@orgtransitions.com

K. Kimmel
The Federal Executive Institute, 207 Cameron Lane,
Charlottesville, VA 22903, USA
e-mail: rkkimmel@gmail.com

As the pace of change continues to rise, leaders of organizations must adjust their strategies and systems to thrive in new environments. This chapter describes the practice of adaptive leadership, an approach that leaders can use to maximize their effectiveness in challenging conditions. We review the strategic principles of adaptive leadership, discuss key competencies, and provide coaching techniques for coaches and leaders interested in employing the wisdom of this model to seek solutions to extraordinarily complex challenges.

In his book, *Leadership without Easy Answers*, Heifetz introduces the concept of adaptive leadership (Heifetz, 1994). Synthesized after decades of work with leaders from every field of endeavor, he hypothesized that our current world requires a different approach to leadership. The situations we face are “embedded in complicated and interactive systems” to the extent that one person in authority at the top of a hierarchal pyramid would rarely have the answer that is needed (Heifetz, 1994). The solution to this conundrum is to build and maintain an organizational environment that is curious enough to venture beyond the known, brave enough to ensure the pain of change, and persistent enough to implement the actions they have identified.

Toward this end, Heifetz is clear that leadership and authority are two separate entities, which are unfortunately and frequently confused. In the traditional organizational chart, leaders at the top are recognized as the authorities for that

organization and are expected to produce answers to difficult problems. They have the experience and perspective that warrant being perceived as the experts to whom all others should turn for direction, protection, and order in times of crisis. This has worked well for technical problems for hundreds of years, allowing humankind to conquer difficult problems with methodical, meticulous, and coordinated work. From the construction of the Hoover Dam to the conquering of polio, leaders have done amazing things.

However, the multisystem, interrelated challenges of the twenty-first century demand far more complex strategies. There are no ready answers from the leaders at the top of the pyramid of power and they can no longer function as experts to provide quick solutions. In those situations, Heifetz believes that adaptive leadership is required from every member of the team. All must correctly diagnose the challenges in their surroundings, adjust their values, change their perspectives, and develop new habits of behavior.

An excellent example of adaptive leadership was seen during the Apollo 13 spaceflight, when a series of events set the stage for a catastrophic mission failure. Three astronauts were being hurled through outer space in a crippled ship with little power and no heat. With only hours to devise a recovery strategy, this was an adaptive challenge of epic proportions.

Quite understandably, the head of NASA did not have a quick answer for the situation. The leader at the top of the pyramid was not an expert for this extraordinary challenge and could not provide the degree of direction, protection, and order that is normally expected from senior leadership. The traditional hierarchical mindset of turning to the person holding the senior position of authority was not going to be able to produce the solution.

The Apollo 13 remedy was going to require collaboration, innovative thinking, and an astronomical amount of creativity among the NASA team. This was the Adaptive Leadership model in heart-stopping reality. NASA personnel had to create an adaptive solution to the unique reality

before them. They had to discard their assumptions and what they believed to be true, explore multiple options quickly, mentally test all proposals, brainstorm with each other, and agree to the best course of action. In an interview with CBS news, Apollo 13 astronaut Fred Haise stated, "Hundreds of people in Mission Control refused to fail and did whatever they had to do to give Apollo 13 its Plan B's, C's, and D's". Their response was an "outside-the-box" solution that saved the lives of Fred Haise, James Lovell, and Jack Swigert.

Just like in the Apollo 13 scenario, Heifetz argues that leaders must address two types of problems: technical ones, which are addressed by applying largely known approaches relying on expertise, high-quality science and technology, and good management, and adaptive challenges, which require learning and innovation. When facing adaptive challenges, leaders must recognize the inadequacies of utilizing approaches that are appropriate for solving technical problems. To succeed, leaders must be willing to forsake the old approaches and find new ones, while inspiring many, if not all, members of the organization to do the same (Heifetz & Laurie, 2001).

While this sounds easy, the reality is that problems normally come bundled (Heifetz, Grashow, & Linsky, 2009a). Those in authority must first ascertain if the problem is technical or adaptive or a mix of both. Adaptive leaders dissect the technical components from the adaptive challenge and begin to engage the team members to find solutions. The following questions can assist leaders in assessing whether or not the challenge is an adaptive one¹:

1. Is the problem a recurring one?
2. Does it challenge values, assumptions, policies, mindsets, or current procedures?

¹The questions were formulated based upon the logic presented in Heifetz's (2001) article cited throughout this chapter.

3. Does it require people to face issues they would prefer to avoid or have been avoiding?
4. Is there no previously identified solution to this problem?
5. Is there no recognized expert for this problem?
6. In order to solve this problem, will new learning or new ways of doing business be required?
7. Is the solution embedded in both the people in authority positions and the entire team?
8. Will the solution involve change and subsequent discomfort and sacrifice by the members of the team, the authority figures, and external stakeholders?
9. Will the solution require some experimentation before advancing to implementation?
10. Will the solution take time and perseverance in order to change a former routine?
11. Will the solution require more than just logic and data?
12. Will the solution require courage to implement because it involves risk to reputations or relationships?
13. Will the solution require the loss of employment or other sacrifices?
14. Will the solution require collaboration across silos, stovepipes, or other organizational boundaries?

If the answer to one or more of these questions is yes, then the problem at hand may likely be an adaptive challenge.

To further understand adaptive leadership, it may be useful to address some of the myths surrounding the concept. First, contrary to popular belief, adaptive leadership is not an approach to leading that requires a superior set of capabilities that a few, unique, leaders possess. Most people, if not all, can learn and apply the practices necessary to cultivate adaptive leadership and to help build an adaptive organization. Second, adaptive leadership, contrary to its name, does not suggest that a leader is focused on adapting to change. Adaptation implies a response, a reaction to change. Adaptive leaders are proactive; they anticipate change and, when possible, shape or

create it (Govindarajan, 2016). Third, and again, contrary to its name, adaptive leadership does not focus the spotlight upon the organization's top leader; rather, it shifts the focus to others. Lastly, adaptive change causes modification of people's beliefs and behavior as they become able to live with losses, preserve the essential, and develop a new capacity to thrive (Heifetz, Grashow & Linsky, 2009a).

As noted earlier, the term adaptive leadership implies distributed leadership. Every member of the workforce representing every measure of expertise and every level of seniority has a leadership role in performing analysis and making decisions, including strategic decisions. Adaptive leadership is less a description of the top leader's behavioral approach to leading than a description of the organization's use of each workforce member to build an all-inclusive leadership team to help the organization adapt to changing conditions, build new capacity, and achieves its goals (Heifetz, Grashow & Linsky, 2009a, 2009b).

Adaptive organizations, so called because they utilize and benefit from adaptive leadership, are superior to other organizations in facing conditions that the US military describes as VUCA (volatile, uncertain, complex, and ambiguous). While leaders of local, state, and federal government entities typically operate in environments that are less VUCA than the military faces, the civil sector does nonetheless face similar conditions occasionally and therefore must be able to leverage adaptive ideals. An increasingly vocal and angry populace is demanding innovative solutions from their leaders.

The superiority of an adaptive organization, especially when compared to its organizational antithesis, the hierarchical, top-down command and control organization, is attributable to leveraging the wide-ranging, collective expertise and wisdom of the whole workforce, not merely the upper echelons to meet the demands of VUCA conditions. Perhaps it is not altogether surprising that the impetus behind building adaptive organizations within the military and government is an expectation that the future presents a murky set of unpredictable conditions – the very conditions

from which Heifetz's "adaptive challenges" spring forth.

The distributed nature of adaptive leadership does not relieve a military organization's commander or senior government leader of responsibility. The top leader is faced with one of leadership's most daunting challenges – to mobilize workforce members to do the difficult work of leadership. To convince all-too-often reluctant workforce members to accept responsibilities for which they feel either unqualified, unprepared, or maybe both often leads to high levels of stress and anxiety which result from having to accept all that accompany new responsibilities: new roles, new approaches, new behaviors, and new relationships (Heifetz & Laurie, 2001).

Leaders are responsible for monitoring situations, considering courses of action, and then intervening when problems arise. To do so, leaders must be comfortable with holding incompatible ideas in their mind while searching for the most efficient solution to a problem. Furthermore, the role integrates multiple intelligences as the leader combines the intellectual, emotional, physical, and spiritual elements, as well as connecting with their own heart and the hearts of others. Adaptive leaders need to connect to a larger purpose that orients their lives and work in order to be committed to their actions (Heifetz et al., 2009a).

Heifetz's Seven Principles for Leading Adaptive Work

Ideas for cultivating adaptability in leaders have evolved since Heifetz first introduced four principles in 1994 (Heifetz, 1994). Heifetz and Laurie identified two additional principles in 2001 (Heifetz & Laurie, 2001), and Heifetz, Grashow, and Linsky added another critical principle in 2009 (Heifetz et al., 2009a). These seven principles that include "getting on the balcony," identifying the adaptive challenge, regulating distress, maintaining disciplined attention, giving work back to the people, protecting voices of leadership from below, and, more recently, guiding leaders to take care of themselves are designed to teach adaptability to leaders (Heifetz, 1994;

Heifetz & Laurie, 2001; Heifetz et al., 2009a, 2009b). *The "surge" in 2007 can be illustrated in a couple of the Heifetz's Seven Principles described below.*

"Getting on the balcony" serves as the first principle and refers to top-level leadership facilitating the development of a broad-based, comprehensive perspective of the organization's logic and of the environment in which the organization operates. At the individual level in an emergent situation, this is the "fog-of-war" ability to reflect, "zoom-out," and see the situation in the midst of action. This is the first step in the iterative process of observing events as objectively as possible from afar (balcony) and then interpreting and developing a successful intervention to meet the adaptive challenge (Heifetz et al., 2009a). From the balcony, instead of focusing on the urgent, the talented workforce is free to concentrate on the important. Leadership can foster a comprehensive perspective by, for example, teaching the workforce about the organization's history, values, and purpose (Heifetz, 1994; Heifetz & Laurie, 2001).

The second principle, identifying the adaptive challenge, is necessary to ensure that the workforce understands where to focus its talents – by recognizing the underlying causes of problems that threaten the effectiveness of the organization. Leadership can elevate the collective ability to analyze by ensuring that the workforce listens to and understands the perspectives of a broad array of stakeholders, inside and outside the organization. *This principle can be illustrated by the adaptation, specifically in terms of beliefs, attitudes, and behaviors, of US coalition forces during President Bush's 2007 "surge" operations in Iraq. Prior to 2007, the power vacuum created by supporting a Shia/Kurd-dominated government led to a ferocious Sunni-backed, Al Qaida in Iraq (AQI) insurgency. However, during the 30,000 troop surge, the previously disenfranchised Sunni insurgency found cause to partner with USA and coalition forces to target true AQI forces; primarily with the prospect of removing a common threat and gaining a greater voice in future government allocations and decisions. This allegiance shift may have been easier for the*

Sunni militias than for returning US forces who could assume that their partners in this newly formed Arab Awakening were the very same insurgents from previous deployments. However, the environment had changed drastically, requiring a necessary adaptation on the part of the coalition surge troops. Prior enemy combatants now played prominent partner roles, necessitating not only a significant shift in previously held beliefs, attitudes, and behaviors but also in the trustworthiness aspect of adaption seen later in this chapter. Leaders can also foster norms of problem identification that include asking fundamentally important questions, such as whether there may be a need to challenge the organization's beliefs, attitudes, behaviors, traditions, habits, attitudes, priorities, resource allocation decisions, or relationships within the workplace (Heifetz & Laurie, 2001).

Heifetz's third principle of regulating distress recognizes that some stress is needed as a motivator, acknowledging that too much stress can exhaust and demoralize the workforce before it can assert itself to solve problems. Regulating just the right amount is no easy task, as the right amount varies with individual personalities and the collective personality of the workforce. Nonetheless, leadership must recognize that the very nature of the VUCA environment and of the adaptive challenges it creates can overwhelm all but the stoutest. Thus, leadership is well advised to ensure the workforce knows it is not being held to an unrealistically high standard with regard to certainty or timeliness of an expected answer.

Maintaining disciplined attention, the fourth principle, equates to avoiding distraction. To maintain attention on the adaptive challenges, leaders must themselves be transparent and in all ways evident regarding their own commitment to resolving the adaptive challenges to maintain the support and focus of others. Leaders might also have to perform a type of monitoring function to ensure that the technical components of the challenge do not swamp, displace, or otherwise interfere with the essential work of redressing adaptive challenges. If, for example, workforce members stray from the adaptive parts of the challenge at hand to focus on the parts that fit current proce-

dures and know-how, the leader must step into the fray to focus the effort once again (Heifetz, 1994; Heifetz & Laurie, 2001).

The fifth principle is giving work back to the people that must own the problem, and often are intimately familiar with it, in other words, leveraging their expertise (e.g., analysis and decision-making) to solve problems and their need to make adjustments in their operation. This reflects a belief that shielding the workforce from responsibilities and the difficulties of leadership, including the need to change, promotes individual and organizational complacency and failure. Leaders therefore need to challenge and support the workforce, not control it. Additionally, leaders must cultivate another necessary condition: building collective self-confidence, so that the workforce, and the large community of relevant stakeholding parties, would have the necessary courage to struggle with uncomfortable challenges (Heifetz et al., 2009a, 2009b; Heifetz & Laurie, 2001). *This principle can be illustrated by the adaption across organizational levels during President Bush's 2007 "surge" operations in Iraq. As this influx of tactical units flooded areas previously dominated by Al Qaida in Iraq (AQI) forces, they were met with tenacious insurgent opposition. Most notable was the AQI's ability to rapidly change both their tactics and munitions to combat this new coalition threat. The AQI employed new, sophisticated ambush techniques and perfected improvised explosive devices (IED) created with homemade materials undetectable by the coalition's mine-sweeping equipment. The offensive-oriented US forces had to adapt to and defend against these new AQI tactics, techniques, and procedures (TTPs). While it took many casualties before the USA shifted into that strategy, leadership adapted to the tactics of the enemy. After initially reviewing, assessing, and communicating with them within their internal units (i.e., battalion tactical forces operating in the same area of operations), the information was also reported to their higher headquarters. Alert Battle Majors at the brigade and division levels then shared these reports across the battle space to ensure not only the widest distribution of the latest AQI TTPs but also to encourage wider*

sharing between units on detection and counter-action techniques to defeat the new threat. In essence, they were able to discern the adaptive challenge through exhaustive environmental scanning, create vast communication networks for rapid information sharing, and orient the organization for collective action. Authorities shift from providing answers to framing the challenges, key data points, and sequence of questions, and creating the conditions that would direct local adaptability and decision.

Protecting voices of leadership from below, the sixth principle, means that all echelons of the organization are encouraged, not punished, for offering experimental and sometimes disruptive ideas or unpopular or critical opinions that might sting other members of the workforce. Top leaders have to ensure, for example, that criticism is seen as an offering for betterment, not an attack on the fortress of pride. Of course, demanding decorum in the criticism levied is recommended, but the bigger matter is to ensure that guaranteed psychological safety underscores every decision to speak out. Leaders must also show patience, recognizing that most members of the workforce are likely to be inclined, as well as conditioned through past experiences, to avoid confrontation (Heifetz & Laurie, 2001).

The last principle concerns the leader at and away from work, taking care of oneself (Heifetz et al., 2009b). Caring for oneself despite the rapid pace of work is a challenge for many. There are several things that the leader can do. Leaders have to manage their thinking, emotions, work, family/significant others, and overall well-being. Leaders need to find white space or a place of sanctuary and reset while asking; “Am I pressing myself or others too hard or too little?” Leaders should maintain relationships with a coach, colleague, or mentor to debrief their thinking and actions. By bringing emotions, feelings, and poise to the job, leaders can catalyze action at work. Lastly, leaders don’t define themselves through work alone. Instead, they engage family, friends, and people at work and away from work and accomplish something meaningful with those around them each day (Heifetz et al., 2009b).

Necessary Personal Competencies and Coaching for an Adaptive Organization

Assuming the leader does all that Heifetz and his collaborators suggest, the likelihood of success remains largely dependent upon the competencies that reside within the leadership and the workforce. There are five competencies the top leaders cultivate to maximize the potential to transform a conventional organization into an adaptive one. These five competencies are trustworthiness, communicativeness, emotional intelligence (EI), tolerance of ambiguity, and hardiness. Each of the five competencies individually represents a necessary but insufficient condition to enable an organization to operationalize and practice the seven principles of adaptive leadership, and thus, to leverage the advantages of adaptive leadership. Furthermore, the five competencies are interdependent and mutually reinforcing.

Trustworthiness of all members of the workforce, both laterally among peers and vertically with authorities, is a necessary precondition for members to distribute and accept leadership responsibilities. Three traits in aggregate identify trustworthiness: ability (competence), benevolence (i.e., shared values), and integrity (ethical standards) (Mayer, Davis, & Shoorman, 1995). And yet, the very existence of these three antecedents to trustworthiness is not likely to be recognized without an abundance of communicativeness, EI, tolerance for ambiguity, and/or hardiness.

Communicativeness, for example, determines how accurately individuals are able to convey to others their values or abilities and so also helps to identify benevolence. EI’s self-awareness dimension allows individuals to act authentically, which, in turn, helps assure that individuals’ values are apparent to observers and, thus, identifies benevolence. EI’s social awareness helps an observer empathize with others and so provides for a measure of their motives and their integrity. Tolerance for ambiguity underscores the cognitive patience needed for a member of an organization to suspend judgment and avoid making

premature decisions. Hardiness provides the mental attitudes and abilities to tolerate, and even thrive, on the adverse conditions of the adaptive challenge.

Without communicativeness, EI, tolerance for ambiguity and hardiness, there is no recognition (or at best, fuzzy recognition) of trustworthiness even if the individual being judged is indeed inherently trustworthy. The perceived absence of the elemental competency of trustworthiness would subsequently preclude the formation of adaptive leadership and, in turn, prevent the emergence or sustainment of an adaptive organization. The capacity for a military organization to anticipate, shape, and respond to the murkiness of a VUCA environment, or for government leaders to respond to crises of all origins, would be constrained. The advantages that Heifetz envisioned in an adaptive organization, where all levels of the organization work collaboratively to resolve issues through a collective intelligence in and outside of the executive suite, would be lost.

Techniques for promoting each competency are now described in order to coach the leader while simultaneously enhancing the leader's ability to coach and teach their subordinates. Coaching through an inquiry process can help leaders reach answers to the problems they are trying to solve. At times when leaders may cause unintended negative consequences to themselves or their enterprise, more directive advice can be provided.

Interviews with subject-matter experts in coaching and results from a practice-analysis survey conducted by prominent consulting psychologists identified several critical techniques used by successful coaches with their respective clients (Vandaveer, Lowman, Pearlman, & Brannick, 2016). These best practices and processes included empathic listening, clarifying communication and Socratic questioning, as well as some commonly used organizational and individual development techniques (i.e., goal setting, self-reflective homework, brainstorming ideas, a consultative feedback, and cognitive restructuring of ideas). In the next section, we expand on these techniques and processes and how they can influence adaptive leadership.

The Adaptive Leader Development Process

Just prior to becoming Chairman of the Joint Chiefs of Staff, General Martin Dempsey came to a critical conclusion based on the high-consequence lessons learned following years of combat engagement within the two theaters of Iraq and Afghanistan. He recognized that the rapid pace of environmental change with a diverse and dynamic threat, coupled with vast decentralization of command authority and responsibility, necessitated a more adaptive leader capable of agile and innovative decision-making (Brafman & Pollack, 2013). This leadership capacity required a more formalized process of conscious development than the natural self-guided evolution after multiple deployments.

Instead of depending on the ultimate crucible of on-the-job training in an uncertain combat environment, General Dempsey championed this development through the introduction of a more systematic design process as highlighted in the current Army and Joint doctrine (Cojocar, 2011; also see FM 5-0, *The Operations Process*). Indeed, the Army Field Manual (FM) 6-22 highlights that the challenges facing today's contemporary military leader require a sense of comfort with ambiguity, a flexible mental model, and an ability to quickly identify and make sense of critical environmental input.

Despite their application in vastly different domains, approaches designed to develop and/or enhance these competencies tend to adopt a similar three-pillar system, traditionally labeled as operational, educational, and self-directed (see Table 19.1 for a sampling of the techniques and opportunities). While obviously not an all-inclusive list, we have attempted to highlight some of the more popular and established methods for developing and enhancing this chapter's competency foci.

The operational pillar is the most familiar and most utilized, representing experiences and opportunities a leader is naturally exposed to through on-the-job training. As the leader assumes the duties and responsibilities of a particular position, he or she is expected to leverage

Table 19.1 Pillars of adaptive development

Operational	Educational	Self-directed
On-the-job training Stretch or developmental assignments	Professional education systems Armed Service's Professional Military Education (PME) system Internal/External Executive Leadership Courses <i>or</i> Senior Leadership Programs	Mentorship Academic Programs (resident; online)

past experience and successfully apply it to achieve organizational success. Some research suggests that due to its inherent action orientation, this domain provides the most appropriate and impactful opportunity to practice one's craft (see Bass & Stogdill, 1990). Sink or swim, leaders experience firsthand practice in applying, modifying, and perfecting their repertoire of key leader competencies. In real-world workplace environments, working in either their current experiential comfort zone or being "stretched" in an assignment that forces rapid growth, leaders' actions and behaviors result in immediate feedback ranging from success (producing validation of competency level) to failure (requiring reassessment of personal gaps and relearning of appropriate responses).

The educational pillar represents a much more formalized process for assessing skill levels, providing opportunities for gap identification, access to new material content and process, and occasions to practice newly found competencies in a low-threat/risk environment. Traditionally, these formal systems are progressively and strategically spaced throughout a leader's career growth with certified, subject-matter expert instructors and an approved curriculum designed to match specific leadership levels. For example, the United States Army adopts a sequential program of professional military education (PME) that provides formal instruction opportunities at the junior (i.e., Basic Officer Leader Course; Captain's Career Course), mid-career (i.e., Command and General Staff College), and senior (i.e., War College; Capstone) levels to ensure preparation for the next series of duty responsibilities and authorities (see Headquarters, Department of the Army, 2014). An example of this at a war college is the Adaptive, Agile, Leadership Network (currently called Leadership

for Innovation or L4I) concentration that was recently established at The Eisenhower School for National Security and Resource Strategy (National Defense University). This concentration was established to develop an adaptive leadership approach to three broad strategic challenges for the military and nation: veteran reintegration, humanitarian assistance/disaster relief, and energy and environment.

The final developmental pillar is that of self-directed activities. As the name implies, the onus is placed on the leader as to where, when, and how to engage in this developmental approach. Research indicates that self-directed (or self-paced) education programs are preferable (and arguably more successful) than the more formal, organizationally developed programs, especially in adult learners, mainly due to perceptions of control and self-motivation (Kanfer, Chen, & Pritchard, 2012; Merriam, 2001). The challenge remains how to carve enough "white space" on one's calendar in order to create opportunities to experience self-growth. Although many organizations encourage (and sometimes provide guidance and intellectual capital in terms of directed mentorship programs), this third approach requires additional self-motivation due to its application and execution beyond the scope of a typical business day. Additional options for self-directed development include taking advantage of the numerous resident and online courses offered at both academic and leadership-oriented programs. While certainly not an exhaustive list of examples, our purpose remains to illustrate that there are numerous and varied opportunities within both the personal and professional domains for additional exposure to, and growth from, the challenges of leadership.

Ideally, the leader would gain training and experience through these methods for adaptive

leader development. The areas that become more critical to leaders as they progress in their career are interpersonal skills and conceptual skills. Due to the limitations of this chapter, we focus on five competencies, recognizing there are other areas in which leaders need to continually develop.

Trustworthiness: The Indispensable Personal Attribute and Enabler of Adaptive Leadership

This segment of the chapter proposes that two principles of Ronald Heifetz’s notion of adaptive leadership, giving work back to the people and protecting voices of leadership from below, require trustworthiness and thus the prevalence of three traits throughout an organization’s workforce: ability, benevolence, and integrity. When all three traits apply to any given individual within the organization, that individual is deemed trustworthy (Hurley, Gillespie, Ferrin, & Dietz, 2013) and is, in turn, an excellent candidate for enabling the two principles that are central to adaptive leadership (Table 19.2).

The three traits are worthy of reflection by the leader to assure that trustworthiness is a part of the organizational culture. Ability, a near synonym for expertise, refers to having the skills or means to accomplish a specified or implied task or set of tasks. Benevolence, though often thought of in terms of acts of kindness or an inclination toward acts of kindness, means something different in the context of an organization. Here, benevolence refers to individuals sharing the same or a similar set of values, which, in turn, suggests a parallel desire to benefit the organization in a similar way. Integrity refers to honesty, but also to consistency in thought, purpose, and action, and implies transparency.

Heifetz’s principle of giving work back to the people dictates that two or more persons are involved in a transaction whereby one person – vested with responsibility and authority – delegates some, or all, of the responsibility and/or authority to another person(s) through an agreement. It follows that no devotee to the organiza-

Table 19.2 The adaptive leader and trustworthiness

	Giving work back to the people	Protecting voices of leadership from below
Ability	Leadership gives responsibility to competent subordinates and builds reciprocal trust and respect through a collective act of leadership	The able subordinate entrusted and protected to operate with the new responsibility has equal confidence in the collective leadership and that the leadership has the ability to identify expertise
Benevolence	Cultural shift into collective leadership with subordinates that have similar values and goals and desire to benefit the organization	Collective decisions are encouraged and guided by shared values between leaders and subordinates for the good of the organization
Integrity	Distribution of leadership roles based on who the primary leader recognizes as truthful and honorable	Protection of subordinate decision-making is done transparently and in a timely manner and allows those in the group to speak out in settings such as commanders’ call or open meetings

tion would give responsibility and authority to another unless he or she had some certainty that the prospective subordinate(s) possesses the ability to execute the responsibilities, displays a proclivity to work toward similar results, and is shown to be honest and consistent (Heifetz & Laurie, 2001).

Giving work back to the people requires more than a decision to delegate or apportion, however. The prospective subordinate(s) has to accept the new task(s), yet do so only with a healthy regard for the leader’s trustworthiness. The prospective subordinate(s) would want to know that the

leader had the ability to identify expertise (Mayer et al., 1995). Otherwise, the subordinate might doubt his or her own ability to meet the new challenges attendant to the enhanced role in analysis and decision-making. The prospective subordinate would also want to know that his or her values were essentially aligned with the leaders as a guarantee that the parties don't have conflict over the approach or results of subsequent analysis or decision-making.

The same three traits are necessary for protecting voices of leadership from below and providing top cover to individuals with disruptive ideas, since their voices can present risk; they always impose costs, and no ideas are certain to yield the desired results (Mayer et al., 1995). The decision to provide protection, then, is essentially a calculated risk, reflecting the likelihood of success and the benefits that will accrue if successful. The greater the ability of the source of the disruptive idea, the more the idea is likely deemed to succeed. The greater the similarity of the idea generator's values to those of the leader, the more likely the leader will believe that the aimed-for results, if achieved, will mirror the organization's purpose. Lastly, a leader must be confident that the estimations of ability and benevolence reflect reality, a condition guaranteed only when the source of the disruptive idea is honest and transparent. Without the guarantee, the prospective subordinate would likely feel threatened by the prospect of apportionment. Finally, the prospective subordinate would need near certainty of the integrity of the leader so as to have confidence that his or her perceptions of the leader are accurate.

As with giving work back to the people, providing protection for voices from below is not a one-way transaction. The subordinate must be willing to accept the leader's protection, and this willingness is contingent upon the belief that the leader is indeed able to protect. This belief is typically correlated with the leader's reputation, which is itself contingent upon the general abilities the leader displays at work. The subordinate would also need to be assured of the leader's values being similar to his or her own; since aligned

values suggest that the protection will remain in place even if some transactional disagreements arise. Finally, the perception of the leader's integrity determines whether the subordinate accepts that his or her judgments concerning the leader are well founded.

A Real-World Example of an Organization Emphasizing Adaptive Leadership

From 2010 through 2012, Captain Matthew Feely, USN, was the commanding officer of the US Navy's Fleet Logistics Center Yokosuka (FLCY), an organization that provided logistics services to the US Seventh Fleet and several other US allied and partner-nation entities operating within the Pacific Rim and Indian Ocean Regions. The organization's multilingual, multinational, and multicultural military and civilian workforce resided in 14 locations across 9 nations and territories. The organization's work was completed aboard ships and aircraft at sea and ashore at the headquarters in Yokosuka, Japan, and several regional offices in locations as far afield as Sydney, Australia; Jakarta, Indonesia; Diego Garcia, British East Indian Territory; and Singapore. The organization served an area of responsibility (AOR) representing approximately one-third of the globe's surface area.

The sheer size of FLCY, the interdependencies of the elements within it, and the breadth and nature of the logistics services offered, point to FLCY being a complex organization executing complex operations. FLCY runs the supply department for an industrial shipyard and operates the largest liquid refueling infrastructure within the Department of Defense. FLCY provides US Postal Services mail services throughout the AOR. The organization also contends with the "tyranny of distance," leveraging multiple supply chains originating at points on opposite sides of the globe. It must adhere to the imperative to deliver provisioning, repair parts, and commodities' support in the right quantities, at the right

time, and at the proper location to ships in port and at sea, which quite literally represent small, moving targets over an enormous span of ocean.

The challenge of complexity and its characteristic likelihood that any number of variables would change at any time and, thus, present unanticipated and unpredictable challenges to success, painted the need for FLCY's commanding officer to practice and cultivate adaptive leadership to help make the organization more responsive. That is exactly what Captain Feely did – to a large extent placing trust in others through decentralizing authority, by articulating and then implementing a values-based leadership philosophy that explicitly emphasized notions that underscore trustworthiness: ability, benevolence, and integrity.

Although a cogent argument can be made that the success of an organization is best measured by observing performance over long periods of time in the face of a myriad of conditions, crises place an organization's effectiveness in stark relief. Indeed, FLCY faced two crises while Captain Feely was in charge: first, immediately after military forces of the Democratic People's Republic of Korea fired artillery shells and rockets into Yeonpyeong Island, Republic of Korea, in November 2010 and, second, in the aftermath of the cascading tragedies resulting from the Great East Japan Earthquake in March 2011.

Shortly after the Yeonpyeong incident, leaders at FLCY recognized the likelihood that the 7th Fleet would respond by deploying multiple ships as a signal that USA maintains a high level of vigilance and robust capability. Without the need of explicit direction from Captain Feely, due to the qualities of adaptive leadership within the organization, the workforce devoted considerably extra time, effort, and resources to readying the fleet. Their preparations were prescient. Indeed, the 7th Fleet commander subsequently ordered a large-scale deployment, and because of FLCY's preparations, the deployment occurred with no delay.

As another example, in the immediate aftermath of the Great East Japan Earthquake, Captain

Feely began to organize the command for what he thought would be a major humanitarian assistance/disaster relief (HA/DR) operation in northeast Japan, to begin within a few days. What he could not have anticipated, however, were some immediate needs to assist the local government of Yokosuka, Japan. The earthquake had damaged the fuel oil delivery system to the city's wastewater treatment facilities. Without the fuel oil, a considerable pollution release would have contaminated Tokyo Bay. The mayor of Yokosuka asked for help. Here again, members of the FLCY workforce led the way. Through their collective leadership, mid-level managers recognized the legitimacy and importance of the request from the city, made the determination to deliver the fuel, and then – in accordance with all applicable laws and regulations – made all arrangements to deliver it. These were activities that in a traditional organization would have entailed a decision by the highest level of leadership. In this case, collective decisions made by "lower levels" allowed FLCY to act expeditiously, saved Tokyo Bay from environmental disaster, and allowed Captain Feely to focus on the prospective HA/DR, an operation that would become the largest HA/DR action in Japan's history.

Both remarkable events precipitated unforecast spikes in the demand for logistics services, including the need to make ships ready for deployment and, in the case of the earthquake, providing humanitarian relief and disaster assistance to victims. These two novel events required a degree of tolerating ambiguity to address the delicate situations at hand. Due to the rapidly changing situations, FLCY had to reflect on and analyze the situation in order to identify the adaptive challenge prior to taking action. This sudden demand placed FLCY under considerable strain, but FLCY met all of the necessary missions.

Three organizational traits may be credited with paving the way for FLCY to respond adaptively. First, most members at all levels of the workforce possessed the ability to act expeditiously and effectively. The workforce's collective knowledge of supply chain management,

applicable law and regulation, and operational planning and execution was superb. That ability underscored the confidence the workforce needed to act in both contingencies without explicit direction from the commanding officer. The high-level ability of the workforce also encouraged the commanding officer to feel comfortable that devolving operations to the workforce would result in successful logistics support. And indeed, success characterized both operations. FLCY delivered fuel to Yokosuka within a few hours of the request. And in the case of the earthquake HA/DR, the expertise of the workforce was manifested in locating and delivering commodity inventories from locations around the world, leveraging multiple novel supply chains, and letting new contracts to expand commodities' availability and delivery.

Second, a strong, values-based organizational culture assured all members of the workforce that they shared fundamental work-related values, which were derived when the FLCY identified the adaptive challenge. Leaders were also able to return the work to the people based upon their social awareness. Through leader, self, and social awareness, they were able to minimize distress and ensure that members were able to work at optimum levels during adaptive challenges. This assurance translated into the morale-boosting knowledge that all members were working to their best ability to do their part to prepare the fleet for deployment or to provide humanitarian assistance and disaster relief. No member dared let another member down, and so the entire chain of effort was strengthened.

Third, when the workforce did make mistakes, the transparency that is part of integrity helped pinpoint the problem that, in turn, helped FLCY apply collective wisdom to fashion a fix. The organization's possession of these traits ultimately ensured that members of the organization felt that their shipmates reflected the indispensable personal competency, trustworthiness. And trustworthiness, in turn, enabled adaptive qualities to come to the fore.

Leaders demonstrate trustworthiness through their talent, ethics, and honesty. To gauge their

organization's culture of trustworthiness, leaders must reflect and ascertain that they and their organizations have the critical components of ability, benevolence, and integrity.

Coaching Trustworthiness

Leaders play a primary role in establishing trust, in organizations. Transformational leadership has four key components: Individualized Consideration encourages leaders to be attentive to the individual needs and goals of those around them. Idealized Influence carries an ethical aspect by encouraging leaders to act in a way that their followers wish to emulate. A recent study focused on the latter two areas of transformational leadership. Inspirational Motivation (communicating an inspiring vision) and Intellectual Stimulation (challenging followers' ideas) are two dimensions of transformational leadership that are important for leaders to develop trust with their teams (Boies, Fiset, & Gill, 2015). Intellectual Stimulation (IS) is important for creative performance, while Inspirational Motivation (IM) is important for task performance. When developing teambuilding through communication, both IS and IM appear to be effective and trainable approaches.

Coaching Techniques These transformational leadership dimensions may serve as a guide for the coach working with the leader toward building trust in their organizations. These dimensions may be used to develop trust through the following methods:

- Strengthening the capacity to understand when you do not know something. Keeping work at the center of integrity allows leaders to "operate at the frontier of competence," while they "enable others to push their frontier of competence to be experimental, without shame or the need to cover up" (Heifetz, personal communication, April 3, 2017)
- Fostering greater communication among team members through Intellectual Stimulation

- Uniting the team through development of a collective vision
- Developing this collective vision through Inspirational Motivation
- Assisting leaders with empathy for members in their organizations and help leaders understand how their morals, values, and ethics impact their organization through Idealized Influence
- When practical, consult with team members when making decisions
- Sharing common values with the leader is important
- (Boies et al., 2015; Brown, Treviño, Harrison, 2005; Gillespie & Mann, 2004)

Further Instructions This research suggests that leaders influence team trust when they facilitate greater communication among team members. Coaching leaders in developing their vision, empathy, and challenging thinking enables them to train their personnel and foster greater openness for creative and effective thinking. These transformational leadership dimensions provide coaching techniques for leaders looking to develop trust while building their organizations.

Communicativeness

Communicativeness is an important characteristic of an adaptive leader due to the influence it has not only on the individuals under the leader, but also on how other organizations view and interact with the adaptive organization itself. As with regular organizations, communication is vital when dispersing information, delegating tasks, and conducting day-to-day routines. In adaptive organizations, leadership, listening, and communication are even more imperative due to the flexibility demanded to deal with the ever-changing tasks that come with the adaptive challenge.

Noted leadership researchers, Jim Kouzes and Barry Posner, wisely espouse that all leaders, regardless of their level, should be able to “paraphrase, summarize, express feelings, disclose

personal information, admit mistakes, respond non-defensively, ask for clarification, [and] solicit different views” (Kouzes & Posner, 2006, p. 164). These baseline individual communication abilities greatly facilitate numerous related leadership requirements that range from simple (establishing friendships) to challenging (perfecting the art of persuasion in order to influence others) and to complex (adopting wide-ranging strategic communication strategies). Ironically, a leader’s capacity for effective communication tends to be an overlooked adaptive competency, mostly because it is generally considered a necessary behavioral manifestation of a leader’s overall interpersonal tool kit of skills.

Those leaders that are ineffective or inconsistent in their ability to transmit information (in written and oral formats) to provide guidance, direction, motivation, and coordination or are hardpressed to see their vision for organizational success, may hinder the organization rather than help it. Although one’s ability to communicate effectively may become an increasingly important leadership competency as one progresses from direct positions, through operational positions, and potential strategic-level positions (Mumford, Campion & Morgeson, 2007), it still remains directly attributable to one’s ability to interact with and influence others for organizational effectiveness. As duties and responsibilities increase commensurate with position, the scope of work, the recognition/awareness of change, and the coordination needed to achieve short- and long-term alignment throughout the vertical and horizontal layers found within and external to an organization requires an ever-increasing repertoire of communication abilities. Similar to leadership, being an effective and adaptive communicator is both a science and an art.

This section argues that communicative capacity (hereafter referred to as communicativeness) of a leader within an adaptive organization can be best described as a two-directional process that ensures “information is clearly and accurately exchanged between two or more team members in the prescribed manner with the proper terminology; it is the ability to clarify or

acknowledge the receipt of information” (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995). Previous references to early adaptive leadership work conducted by Heifetz and Laurie (2001) advocated a technique relevant to communicativeness, termed “Get on the Balcony.” Whether taken literally or figuratively, this technique reveals a leader’s ability to reflect and gain a more holistic or systems’ perspective above the chaos of a particular field of play. Upon this reflection and identification of the adaptive challenge, the leader can communicate and frame key components, orient the team to adapt roles and responsibilities, manage conflict, and shape/influence norms conducive to effective and efficient execution. Listening enables one to sense people’s adaptive capacity and to adjust the pacing of change, and empowering the organization to leverage diversity through horizontal and vertical communication can offer needed ideas from voices below. For our purposes, we offer a visual representation using a ladder of increasing difficulty to show that a leader’s ability to vertically and horizontally communicate progresses from a common perspective of *why, what, how, and when* (Fig. 19.1).

The first two steps of this adaptive communication ladder are more universal and represent a more commonly accepted science. The extant literature is replete with examples of the traditional motives for *why* a leader needs to be an effective communicator. Leaders must possess the obvious ability to effectively interact internally with their team/organization in order to fulfill traditional roles of leading, transforming, inspiring, directing, and motivating. Additionally, leaders must also possess the ability to communicate externally, to collaborate, influence, and

negotiate with customer, partners, and stakeholders in order to gain or maintain a competitive advantage within the business environment. This transmission is typically realized through a combination of written or orally communicated interactions that express topics that range from the mundane (i.e., policy, general operational guidance, annual reports, newsletter, e-mails) to the more strategic (i.e., mission, vision, strategy, goals, objectives, values), all of which are designed to achieve *what* the strategic leader determines are the desired organizational goals, objectives, and outcomes.

The last two rungs of the communicativeness ladder reflect slightly more difficult and nuanced actions of the leader. Instead of being primarily descriptive like the first two rungs, the last two represent more challenging, behaviorally oriented actions and reflect more of the art of adaptive communication. *How* a leader approaches opportunities to provide direction becomes even more complex when the manner and tenor of the communication may change with regard to audience (i.e., individual employees, teams, customers, and external stakeholders) to regulate stress. Indeed, existing research indicates that the style in which a leader communicates is more highly correlated with organizational effectiveness and performance than the actual content of the message (Geertshuis, Morrison, & Cooper-Thomas, 2015). Maintaining attention to a disciplined communication style as well as focusing on effective content is a powerful competency for adaptive challenges. Self-help and best practice books abound and address the power of persuasion and influence that is progressively complemented by a strong sense of emotional or social intelligence. These popular and well-researched books and journal articles espouse important behavioral leader traits such as humility, confidence, objectiveness, trustworthiness, and the ability to actively listen as critical factors in developing, nurturing, and creating the buy-in required to align the organization (Carnegie, 1998; Goleman, 2006; Salovey & Mayer, 1990). Communicating clearly with empathy, enthusiasm, and compassion to



Fig. 19.1 Communicativeness difficulty ladder

make a point in interpersonal and organizational interactions is key to conquering the *how* of communication.

Similarly, adaptive situations, especially at the operational and strategic-leader levels, require the ability to communicate change and provide new directions and guidance following periodic review and revision as conditions change in today's VUCA (Dubik, 2013). It is important to note that the effectiveness of the communication is further enhanced by actual (or at least perceptions of) trust. Research suggests that knowledge and expertise, openness and honesty, and concern and care are all highly correlated with determining the credibility of a communication, especially in a high-risk environment (Peters, Covello, & McCallum, 1997). Once the credibility of communication is established, the door is opened for individuals to place trust in their organization; eventually leading to the organization being deemed as trustworthy.

The final rung is paradoxically the most difficult to achieve: knowing *when* to leverage this art of communicativeness. On one hand, initial direction and periodic follow-ups with respect to *what* information/guidance is needed to ensure proper continued alignment are fairly standard and predictable. However, in today's frenetic 24-h news network environment, the landscape and the surge of information change and flow at an exponentially faster rate. Leader and organizational actions in this complex decision space sometimes have both delayed reactions and unintended second- and third-order consequences. How early is too early to decide whether or not a new mission and vision for the organization is achieving its desired effects? How does the leader determine if calling an audible is required, to adapt the plan to fit new conditions rather than pursuing a failed plan or strategy? At an even more nuanced level, knowing when to step in and provide additional guidance to key peer or subordinate leaders or allow the friction of ambiguity to challenge and develop one's bench of future talent is certainly more art than science, with no available guidebook.

Coaching Communicativeness

Although much of the advice and recommendations on leader competency and effectiveness derives predominantly from more traditional leadership (see Burke et al., 2006; Conger, 1993) and medical fields (see Aspegren, 1999; Rider & Keefer, 2006), the material is easily translatable to facilitated coaching in this critical dimension.

Coaching Techniques In order to instruct a leader to become a better communicator, you must first establish a baseline of verbal competency. This should be a combination of self-reported assessments (via interview) and practical/constructive feedback *in situ* from superiors, peers, subordinates, and other relevant personnel (i.e., customers, external stakeholders, significant others) – an important combination that offers the communication expert an effective assessment with regard to what is being transmitted by the communicator versus what is being received by his or her audience. We recommend that communication experts use a variety of techniques to capture this information via one-on-one interviews, survey instruments, and voice/video recordings in order to provide multiple perspectives capable of targeting the following key areas that can be shared with the coach:

- Overall effectiveness of delivery, captured primarily by the level of interest/engagement of intended audience
- Content: word/phrase choice, grammatical syntax (i.e., is the content appropriate for the audience), reliance on fillers (i.e., use of “ah,” “um,” “like”)
- Prosody: intonation of voice, inflection points
- Volume: finding the happy medium between soft and loud delivery
- Rate: speed of delivery
- Nonverbal indicators: appropriate use of body language (i.e., eye contact, gesticulations, posture)

Further Instruction The coach can then shadow or discuss and monitor communications progress with the leader. These feedback mechanisms allow

a coach to guide the leader through a modified Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of their communicativeness. Mutually agreed upon goals in the work environment, designed to sustain observed strengths and develop exercises to address weaknesses, will greatly enhance the leader's ability to adapt and modify any or all of the mechanisms above. Once mastered, these individual techniques can then be applied to more interpersonal communication situations to facilitate team/group/organizational coordination and synchronization dynamics. Interested readers can find additional techniques and assessment protocols in recent research performed by Gallo (2014), Geertshuis et al. (2015), Mayfield, Mayfield, and Sharbrough (2015), and Schwartzman et al. (2010).

This section offers coaches several important communication methods, as outlined by a communication expert that may be helpful when working with leaders to assess and improve their communication effectiveness. Assessing leaders' baseline communication skills through recordings, self and coaches' assessment can offer leaders greater self-awareness for developing these adaptive leader competencies. The ability for communicativeness clearly plays an integral role in positioning the leader, the led, and the organization for proactive and reactive adaptive responses.

Emotional Intelligence

Emotional Intelligence (EI) is the capacity to recognize and act effectively on others' and one's own emotional states in intrapersonal or interpersonal interactions. There are threads of emotional intelligence seen throughout Heifetz's adaptive leadership principles. The importance of EI and leadership has been explored in the literature and research with some support (Stein & Book, 2011). More recent literature and research on leadership, leader competencies, and performance have helped identify behaviors that contribute to superior leadership performance. These behaviors were categorized into seven leader

skills groups and placed into one of the two categories: these being core skills or adaptive skills (Bradberry & Greaves, 2012).

Emotional Intelligence has been identified as a component of adaptive leadership. In their research, Bradbury and Greaves conceptualized Goleman's four main dimensions of emotional intelligence as one of the four critical categories of adaptive leadership (Goleman, Boyatis, & McKee, 2013).

The four common Goleman EI dimensions are self-awareness, self-expression and management, social awareness, and relationship management (Goleman et al., 2013). While using these four general dimensions, Bradberry and Greaves (2012) identified different underlying factors that were related to Goleman's conceptualization. This section examines the important EI dimensions and their factors for adaptive leadership based on several frameworks (Bradberry & Greaves, 2012; Goleman et al., 2013; Stein & Book, 2011).

The first EI dimension is *self-awareness*. This dimension is composed of the following contributing attributes: self-assessment, reflection, emotional awareness, and mindfulness. Self-assessment and reflection help to gain better insight into past, current, and future situations regarding thoughts and emotional connection. Research suggests that the maturation of self-reflection for executives occurs around the age of 40 (Tamir & Finfer, 2016). Suri and Prasad (2011) found that *self-awareness* is positively correlated to transformational leadership in information technology managers in India. Moore and Mamiseishvili (2012) found that awareness of one's emotions was more closely related to team cohesion than the other EI dimensions. This may have been due to members' ability to reflect upon, know, and discuss their feelings with others. *Self-awareness* allows one to differentiate between thoughts and emotions and provides clarity of thinking for decision-making. *Self-awareness* may be enhanced through mindfulness practices of simply focusing on the present moment. If leaders encompass mindfulness practices, it would aid them to "get

on the balcony,” lead their unit in an objective manner, question personal theories, examine personality issues, and demonstrate the intellectual flexibility of contrasting the real with the ideal. With greater emotional awareness or mindfulness there is an increased capability for the leader to self-monitor their behavior and lead and address a great range of adaptive challenges. Through this reflection on self- and social-awareness, leaders can recognize patterns of change internal and external to the organization (Heifetz & Laurie, 2001). Through identifying and examining the organization’s emotional temperament, and resources, there is a better risk assessment conducted to determine the capacity of the organization to meet the adaptive challenge (Heifetz & Laurie, 2001).

Self-Management is a collection of attributes that recognize and effectively communicate emotions in order to afford oneself a concentrated drive and energy to accomplish defined goals. Having self-control or self-regulation allows one to manage emotions, impulses, and develop stress tolerance for disturbing emotions so that thinking remains clear during chaotic events.

The Center for Creative Leadership (CCL), when examining 302 managers taking the Bar-On EQ-I emotional intelligence test and the CCL Benchmarks, a multirater leadership assessment, noted that there were areas that could derail leaders. Those behaviors included lack of stress tolerance and poor impulse control when adapting to change (Ruderman et al., 2001). Leaders with confidence and competence can manage stress and take action during uncertain events. Developing the right amount of stress tolerance with the collective workforce can be done by educating the organization to recognize and develop awareness of how and what changes are needed for the future (Heifetz & Laurie, 2001). Though not focusing on leader research in emotional intelligence, Armstrong, Galligan, and Critchley (2011) found that emotional self-awareness, expression, self-control, and self-management were attributes that could aid in mitigating the effects of aversive situations and were important for psychological resilience. Leaders should have

the emotional capacity to tolerate uncertainty, the self-awareness to manage their distress, and the social awareness to recognize the stress of others.

Social awareness is the ability to connect in meaningful relationships through recognition of others’ emotions under a variety of conditions. Barbuto and Burbach (2006) found that empathic responses of political leaders were related to the transformational leadership traits of Individual Consideration (for employees) and Intellectual Stimulation (the ability to cause self-reflective change for employees). Additionally, Kafetsios, Nezelek, and Vassiou (2011) found that school directors’ use of emotions was positively related to subordinates’ work emotionality and attitudes. Being empathetic to a subordinate’s challenges can press leaders to be open to rethinking the problem and contemplating what they can learn as a leader about the topic or challenges with which their subordinates grapple (Heifetz & Laurie, 2001). Therefore, it is important for leaders to be in touch not only with their own feelings, but also with the feelings of the individuals under them.

Relationship management is addressing others’ emotions through persuasion and negotiation to come to a consensus when adaptive leadership is required. Leaders must be independent, confident, and optimistic thinkers who can assert their will through the social network in order to instill a corporate self-confidence in leaders who, in turn, take responsibility and risks (Heifetz & Laurie, 2001). Researchers found that emotional appraisal skills and social skills positively impacted team performance. They also found that leaders with high EI or teams that had a high average EI demonstrate high levels of performance (Chang, Sy, & Choi, 2012). Moore and Mamiseishvili (2012) found groups with high EI were more cohesive than groups with low EI.

In order to maintain focused attention on developing EI skills, leaders must be self-directive. This allows them to maintain cohesion for adaptive challenges through relationship management; such as behaviors involving scapegoating, losing focus on technical issues, or the behavior of attacking others rather than critiqu-

ing themselves (Heifetz & Laurie, 2001). Furthermore, leaders are able to influence and serve as a change catalyst to engage key members of networks based on past collaborative relationships for new initiatives. These leaders will mentor staff into leadership roles to prepare for the leader's departure so that the organization is adaptive and can adjust to internal and external changes.

Coaching Emotional Intelligence

The development of EI can occur on the job through a knowledgeable boss, through formal civilian, government or military education, self-education, leader mentorship, and/or coaching. CCL recommends the use of 360-degree assessments as a way to expand emotional intelligence (Ruderman et al., 2001). In this section, we look at some coaching approaches that may be beneficial to develop the four abovementioned dimensions. Specific self-assignments created by other authors (Stein & Book, 2011; Stein, 2017) may be of use in coaching leaders in the four dimensions.

Coaching Techniques The following are some ways to develop skills as a coach for leaders in the four areas conceptualized by Goleman et al. (2013) with some of Stein and Books EQi (2011) factors integrated into EI coaching.

Self-Awareness Self-awareness involves being attuned to one's own emotions, thoughts, and reactions and being aware of one's own strengths and limitations. In order to assist leaders to become more self-aware, these areas should be emphasized:

- Teaching the leader to scan his or her body and recognize body physiology, emotional reactions, and body language that can offer greater self-awareness in preparation for interactions interpersonally.
- Educating the leader about the capacity of the brain ability for cellular change, thinking in

terms of emotional traits leaders would like to change. Also called neuroplasticity, this process occurs through creating different behaviors, thinking, and emotions. The emotional brain may be impacted by mindfulness (Davidson & McEwen, 2012) and the coaching of mindfulness may be valuable for self-awareness and self-reflection.

- Helping the leader develop the practice to set aside time each day for greater awareness of self and others through reflection of positive and negative events of the day. The leader can think about various leadership scenarios and concepts put forth; such as balancing optimism with realism (Heifetz et al., 2009b) – a useful tool when thinking in terms of planning and decision-making.
- Coaching art-based group leadership through participant observation of a performance; as well as the reflection, discussion, and written material relating to the performance. Researchers found that art-based leadership programs helped enhance self-awareness as well as contributed to areas of self-management in improving humility and stress modulation (Romanowska, Larsson, & Theorell, 2014).

Self-Management Self-management is the ability to regulate emotions, manage energy, and modulate one's stress and impulses and to stay focused in accomplishing goals. Assessing sleep, exercise, eating and drinking, and impulsive or relaxing behaviors can provide insight into the ways of energy management. This can also be achieved by having leaders examine what they value in life (i.e., health, family, free time, work) and how are they prioritizing these values in their daily life.

- Coach leaders into developing energy management practices toward a healthy lifestyle.
- Help leaders develop and accomplish positive SMART goals with risk assessment consideration and determine how goals, values, and

beliefs might be linked to personal and organizational values.

- Assist leaders with communicating their emotions effectively (as described in the communicativeness competency section), and developing self-regulation behaviors and other attributes that relate to creativity, innovation, and psychological resilience.

Social Awareness Social Awareness is the ability to convey empathy by taking interest in others as well as recognizing and developing meaningful interpersonal relationships. On an organizational level, empathy is the ability to recognize the different powerful relationships inside and outside the organization that are relevant to thrive.

- Coach leaders to recognize when others are experiencing challenging emotions, articulate this recognition, recognize the prevalence of emotions in relationships, and take an interest in offering support to the person/groups/organization as appropriate.
- Review how to speak and write collaboratively during problem solving for positive solutions as discussed in communicativeness competency section. Discuss ways to communicate issues with others, keep everyone involved, and develop better working relationships through respectful empathy.
- Discuss ways to recognize and assess emotional states, which interact with intellectual, religious, monetary, and/or political power networks internal and external to the organizational environment.

Relationship Management Relationship management is the process of influencing and developing desirable responses in others or in the organization in order to create cohesion (e.g., a healthy work environment or a strong supportive social network). Additional leaders should be developing important leadership relationship skills such as emotional appraisal skills, social skills, con-

veying corporate confidence, and optimism while influencing and negotiating with others.

- Institute weekly after-action reviews to develop and utilize the question at the end of the chapter to create an adaptive leadership environment fostering self-awareness, self-management, social awareness, and relationship management. The weekly process will utilize three or more regular or rotational questions to keep the leader and their organization adaptive, agile, and resilient and maintain a culture of innovation and well-being.
- Guide leaders to communicate clearly and in the right tone, to recognize the problems and the feelings of others, to foster commitment, and consensus for a mutual positive outcome.
- Coach leaders to delegate within this process and work with mentees to develop distributive leadership. Check that leaders create systems to reward and develop leaders in organizations.
- Coach the leader to refine relationship skills in order to utilize and expand their networks.
- Stress the importance of leader's awareness regarding regulation/policy and/or have that capacity with others to follow, change, and/or create needed guidance in crises situations.
- Assess with the leader important personnel policy areas such as (1) a respectful work-family environment with these competing institutions; (2) emotional health of the work force through prevention and inspirational resources; and (3) enforcement of emotional and physical workplace environmental safety and cyber security threats.

Further Instructions Evidence-based practices that can enhance relationship management skills for leaders may also be found through the American Psychological Association's online Center for Organizational Excellence in their evidence-based Psychologically Healthy Workplace Program. Coaches need to encourage and develop greater self-awareness, stress regulation, relationship building, and influencing skills for leaders as

some of the important emotional intelligence abilities in the adaptive environment.

Tolerance of Ambiguity

A common and essential competence for effective leaders is the capacity to make good decisions. Effective data analysis provides the foundation for good decisions. That can be a very complicated process due to the amount of data collected and needed to understand today's complex environment.

Most people see the world in particular ways and often focus on data they are comfortable with or that conform to their views of how the world is. However, to see the world in its complexity or as it changes, necessitates a systems view and a consideration of as wide a range of data as possible. Heifetz and Laurie (2001) refer to the ability to see systems and patterns as being "on the balcony." Tolerance of ambiguity includes the capacity to free oneself of a specific mental model and to see the environment through a broad form of reflection and practice. This enables a more complete picture upon which to base decisions; however, this demands cognitive patience, a recognition that one's view of the world is incomplete, and the suspension of judgment (Mendenhall et al., 2008).

To ease anxiety, the human psyche needs a sense of reality through which it may process new data within the context of that perspective. However, as the world changes, new paradigms or mental models are needed. This dynamic enhances anxiety thereby increasing the potential to make faulty judgments or inaccurate inferences about data. Leaders can ease anxiety by "getting on the balcony," or deciphering what data is relevant to the task at hand, and then communicating what is important. Consequently, subordinates trust that their leaders communicate what is vital, allowing them to avoid feeling inundated or distressed by unnecessary information. This freedom from irrelevant data can help them better focus their attention on important tasks in order to avoid the stress from uncertainty.

To develop a new view of reality requires the letting go of the old and tolerating the ambiguity of not knowing what to replace it with. Without that tolerance, people jump too quickly into a new paradigm that may be incomplete or inaccurate. They do so to relieve the anxiety or discomfort that comes from not having a paradigm within which to act or make decisions (Hofstede, 1984). The pressure to jump into a new paradigm is especially felt by organizational leaders since followers look toward their leaders to make sense of what is happening. Absent of that understanding, people are either incapacitated to act or act in ways that only produce more chaotic conditions.

Another need for tolerance of ambiguity derives from the limitations of binary thinking. Many people see the world in terms of good or bad, right or wrong, and black or white. When binary choices are perceived as the only options, there is minimal ambiguity. It's either one or the other, and yet we know that in a VUCA world where wicked problems exist, there is rarely ever clarity, certainty, or lack of ambiguity.

Tolerating ambiguity means suspending judgment and decision-making until more facts are known or more interpretations or perspectives are articulated (DiBella, 2013). In effect, a leader must refrain from making a decision until the best decision or a better decision is found. Tolerating ambiguity requires being comfortable with the anxiety and uncertainty that come from not knowing what is to be done. Lack of this competence leads to what is known as a rush to judgment (on the other hand, too much patience leads to "paralysis from analysis"). Effective leaders should accept and grapple with uncertainty for as long as it takes to fully understand the problem and its solution, or take action in uncertainty with a contingent, experimental mindset. A person intolerant of ambiguity is less apt to solicit different points of view around a problem or decision and thus unable to integrate broader understandings required of robust solutions. Leaders who engage in self-reflection can identify their capacity for tolerating ambiguity. Such an insight can enable them to avoid premature decisions.

An excellent illustration of an effective leader tolerating ambiguity can be seen in the movie *Ike: Countdown to D-Day*. Arguably the most critical decision General Dwight Eisenhower had to make as Supreme Commander of allied forces in World War II was choosing when to launch the invasion of Normandy. Eisenhower had to consider a range of variables including the level of operational readiness, tides, and weather as he deliberated the decision. Despite the angst and uncertainty experienced by his command staff, he deferred choosing the date of the invasion until what seemed like the last possible moment.

Another consequence of intolerance of ambiguity on the part of military commanders is a tendency to micromanage. When leaders cannot tolerate the ambiguity of not knowing what their subordinates are doing, they are apt to overspecify the rules, regulations, and procedures that subordinates must follow. Such conditions reflect low trust in an organization and its leader's inability to trust. The result is the incapacity to delegate effectively, leaving subordinates unable to adapt to changing circumstances.

Coaching Tolerance of Ambiguity

There's a dilemma when it comes to assessing an individual's tolerance for ambiguity and coaching in ways to promote or enhance it. Assessment is about increasing clarity and reducing uncertainty. We want to know whether someone has a particular competence. Some forms of coaching can be prescriptive or directive to make clear what a leader can or should do to enhance some competence. However, to promote the capacity to tolerate ambiguity, coaches may need to acknowledge uncertainty and promote humility.

Coaching Techniques Encouraging tolerance of ambiguity can be achieved through various personalized techniques. Coaches may follow and encourage these practices in accordance with their best judgment and knowledge of the individuals with whom they will be working. Such techniques are as follows:

- Debriefing current professional cases.
- Exercises in holding steady during uncertain times.
- Implementing Leadership Coursework with a strong experiential methodology (i.e., Parks [2005], *Leadership Can Be Taught*).
- Learning to manage expectations of certainty.
- Coaches must encourage humility in their clients in order for them to acknowledge that their views are not the only ones. This creates a wedge that allows a leader to suspend judgment, delay decision-making, and promote inquiry about the situation being confronted.
- Coaches must instruct individuals to handle the anxiety that comes from uncertainty in the delay in taking action or making a decision.
- The incapacity to handle anxiety leads individuals to rapidly move up the ladder of inference (Senge, 1994).
- Coaches must be aware of selective choices of data. These result in misinterpretations due to a limited mindset, belief system, or pre-existing paradigm or mental model.
- Mindfulness practices, defined here as awareness of thoughts and feelings, have become popular to reduce anxiety and eliminate distractions. Coaches may use mindfulness practices to quell dysfunction and encourage timely decision-making (Hofmann, Sawyer, Witt, & Oh, 2010).
- Increasing mindfulness can make individuals more aware of the inferences they make as they interpret the world around them. Coaches may communicate this awareness with their followers.
- Coaches may also encourage meditation as another practice to reduce anxiety and build cognitive patience.
- Encourage leaders to engage in outside activities to enhance their well-being and develop greater knowledge in areas that may apply to their adaptive challenge at hand.

Further Instructions If coaches specify to prospective leaders their need to tolerate ambiguity,

their current capacity for it, and the ways they can build that competence, they are acting prescriptively and reducing uncertainty. However, in the process they are doing for the individuals what they need to do for themselves. The reality is that the medium becomes the message, and so we face a dilemma. The more we assess competence and are directive about how to enhance it, the more we reduce ambiguity rather than promote its tolerance. In effect, the more prescriptive coaches are, the less their clients need to think for themselves. Leaders need to trust their coaches and the coaching process, and they must possess the self-confidence that they themselves can work through their own ambiguities.

Coaching tolerance of ambiguity involves working with the leader to develop humility, suspend judgment, recognize other viewpoints, develop situational awareness, and engage in other activities to provide the leader with greater knowledge. Tolerance of ambiguity serves as a method to cope with the stresses of adaptive leadership as well as a guide to maintaining and encouraging humility. This competence encourages more robust decision-making required to solve complex problems.

Hardiness

In discussing adaptive leadership, Heifetz and Laurie (2001) recognize that personal attitudes, behaviors, and habits have a lot to do with how well an individual can take on the adaptive leader challenges. Hardiness is a set of attitudes that can have a major influence on a person's capacity to adapt. Considerable research has shown that people who remain healthy and continue to perform well under highly stressful conditions possess the three interrelated qualities of commitment, control, and challenge, the three Cs of hardiness (Bartone, 1999; Bartone, Roland, Picano, & Williams, 2008; Kobasa, 1979).

Commitment reflects a strong interest and engagement with the world, and an abiding sense that life is meaningful and worthwhile. Control is

the belief that through effort and action one can influence important outcomes. Challenge is an attitude of curiosity, a receptiveness to the variety of changes in life. When faced with new or changing conditions, high hardy persons tend to perceive these as challenging opportunities to learn and grow. These leaders also prefer proactive problem solving and coping strategies.

Hardiness facilitates several of Heifetz's principles of adaptive work for leaders. Most importantly, hardiness-challenge establishes an attitude in which change is expected and even welcomed. The high hardy leader is thus better equipped to address Heifetz's second principle, "identify the adaptive challenge." This leader would perceive important changes in the environment more quickly and thus be able, and willing, to identify how the organization needs to change in order to cope with the new environment.

Hardiness likewise enhances the capacity of leaders to "get on the balcony" and see what is going on across multiple levels in the organization. This is mainly a function of hardiness-commitment, which extends to three important spheres of life: the social world, the physical world, and the world of self, what existentialists called *Mitwelt*, *Umwelt*, and *Eigenwelt* (Binswanger, 1963). Those high in commitment routinely pay more attention to all three spheres, and so are better able to take a broad view of the organization as well as the external environment. There is a conceptual similarity here to emotional intelligence, as the high hardy person is both more socially aware (*Mitwelt*) and also more attuned to his or her own emotions and reactions (*Eigenwelt*). With greater awareness of how people are reacting to the stressors of change, the leader is able to take the right steps to "regulate distress" across the workforce, another key principle of adaptive leadership.

The control dimension of hardiness also facilitates adaptive leadership work, particularly in regards to the principle of "give the work back to the people." High hardy leaders understand the importance of having a sense of control, and that one's own actions matter. They are motivated to

find ways to involve workers at all levels in decision-making, while also making sure to maintain good communications.

Coaching Hardiness

There are a number of things that leaders can do to build up hardiness attitudes and behaviors in themselves and their organizations, thereby facilitating the work of adaptive leadership. The focus should be on the three Cs of psychological hardiness: commitment, control, and challenge.

Hardiness-commitment is all about being engaged in the surrounding world and in the self. Leaders build up hardiness-commitment throughout the organization by communicating a strong and clear vision. Multiple methods and repetition inculcate the vision in ways that foster engagement by the workers in significant ways. Seeking their input and ideas is the next step. Leaders also should strive to model engagement, by being available, visible, and curious about all aspects of the work within the organization. Perhaps most important, leaders should take the time and trouble to communicate and explain to workers what they are doing and why. The more workers understand the overall purpose and meaning behind their activities, the greater will be their sense of commitment.

Hardiness-control is the belief that one's actions can influence events within one's own life as well as having the ability to influence the world. Leaders can increase the sense of control by ensuring that the tasks and duties assigned to workers are within their capabilities and skill levels. Tasks that are too easy can lead to boredom, while those that greatly exceed worker abilities can be overwhelming and anxiety-producing. Whether in training programs or production activities, it is best to follow a graduated schedule in which small, manageable tasks are presented first, followed by more demanding ones as skill and confidence develops. In this way, the leader

creates what Heifetz and Laurie (2001) call a "holding environment" in which workers feel safe, while at the same time pushing them somewhat beyond their familiar comfort zones.

The third C of hardiness, challenge, involves taking a positive outlook on change, being actively interested in new things and situations, and being curious about options and avenues for making advancements. The challenge aspect of hardiness can be encouraged across the organization by a number of leader actions and workplace policies. Of primary importance is the role-modeling established by leaders. The high-challenge person enjoys variety and sees change as a chance to learn and grow, rather than something to be feared and avoided. Leaders should demonstrate this approach in their own daily lives, especially where they are most visible to employees – at work. When confronted with surprising events, the high hardy leader will show a calm demeanor and an interest in learning more and solving the problem. He or she accepts responsibility for failures, and avoids blaming others when things go wrong. Also, the high hardy leader is willing to shift and change approaches in the face of changing conditions, and to experiment with new ideas. In addition to modeling these qualities, the leader also seeks to create a work environment that rewards and reinforces them across the workforce. This can be done, for example, through policies that permit flexible routines and schedule changes.

Below are some more specific coaching strategies for building up hardiness-commitment, control and challenge in leaders and organizations.

Coaching Techniques Techniques for coaching focus on the three primary hardiness facets of *commitment, control, and challenge*

Hardiness-Commitment To build commitment, leaders should be encouraged to:

- Take some time each day to think about what's important and interesting; reflect on personal goals and values.
- Work on increasing skills and competencies in some area that's important. Take pride in past successes and achievements.
- Pay attention to what's going on around you and in the world: read, observe, and listen!
- Allow workers to have input into workplace policies and activities; seek their input and ideas.
- Perform team- and cohesion-building activities that also enhance commitment to the group and to the shared values of the organization.
- Be fair, and do not take special privileges. When hardship occurs, such as pay cuts or long hours to meet production deadlines, hardy leaders share that hardship evenly, and do not exclude themselves.
- Interact visibly with employees regularly. Get around and be seen!
- Take time and trouble to communicate and explain policies and decisions to workers. The more workers understand the purpose and meaning behind their activities, the greater their sense of commitment.
- Don't follow a rigid schedule. Allow for variation and surprises. Consider rotating employees into different jobs to give them some variety, while also building their knowledge of the overall organization (this also builds commitment).
- When failure occurs, first ask: what can I learn from this? Employees who fail at a task should be counseled, and encouraged to view the experience as a learning opportunity and chance to improve and do things better next time.
- Try out new things and take reasonable risks. While some stability and routine are necessary, the willingness to experiment is also important. This fosters a climate of innovation and challenge.

Together, these approaches can lead to increased attitudes of personal hardiness in leaders and throughout the workforce, which in turn will support leader efforts to create a more adaptive organization. Additional information on building hardiness in leaders and organizations can be found in Bartone, Eid, and Hystad (2016) and Bartone (2017).

Hardiness-Control To build hardiness-control, leaders should be encouraged to:

- Focus their time and energy on things they can control or influence. Don't waste time on things that are outside of one's capabilities to fix.
- Give work assignments which match or slightly exceed worker abilities, allowing them to engage fully and realize success, enhancing the sense of control and mastery.
- For difficult jobs, break them up into manageable pieces so progress can be seen.
- Provide employees with the needed resources to accomplish assigned tasks.

Hardiness-Challenge The third C of hardiness, challenge, involves taking a positive outlook on change and being actively interested in new things and situations. To build hardiness-challenge, leaders should be encouraged to do the following:

Summary Coaching Questions for the Adaptive Leader

The Adaptive Leadership model requires leaders to refrain from offering solutions when none are clear or sufficient. The responsibility is shifted to the collective intelligence of the team who own the problem as well as the solution. Those in positions of authority can help the team resolve long-standing, unresolved problems, or assist them in responding to new, unexpected crises, by asking the team members powerful questions. These questions are equally applicable to the leaders and can be used at any time during the problem-solving cycle:

1. What percentage of this problem is technical problem, an adaptive challenge, or both?
2. What values could be preventing the team from seeing the solution to this challenge and implementing it?

3. How could team members be resisting the changes needed to obtain a solution?
4. What sacrifices would be required by the team or individuals to achieve a solution?
5. What outside threats are there to this solution?
6. How our stakeholders are impacted by the challenge or would be by the solution?
7. How accurate is my view of this problem when I stand on the balcony and when I stand on the dance floor? What could I be missing?
8. What conflicts have not been addressed and need to be discussed in order to get to a right solution for this challenge?
9. What biases are hindering the team's vision of this problem?
10. How can the stress/distress levels of the team be monitored? What symptoms do team members display when the stress is too high?
11. How would the leader protect the voices from below and actions (good and bad) that are taken without authority?
12. What sacrifices will be required by the team for the solutions?
13. What options may have been eliminated prematurely?
14. How would the leader know if team members are receiving the appropriate level of direction, protection, and order?
15. How well is the team using their collective differences to stimulate creativity?
16. How can the leader make the team more comfortable in assuming responsibility for the solution to the challenge?
17. How committed is the leader to backing up the team if they make mistakes?
18. How committed is the team to learning what we need to learn to solve this challenge?
19. How accurate is the team's understanding of this challenge? What are other explanations?
20. What loyalties may be impacting the team's perceptions of the challenge?
21. To what extent has the leader successfully connected with the values, beliefs, and anxieties of the team?
22. How could the team's expectation of success be too narrow?
23. How could a desire for power and control be preventing the discovery of the solution to this challenge?
24. How clearly has the leader communicated the "perspiration" part of the inspiration message for this challenge?
25. Before taking action on the solution, to what extent has the team clearly described the challenge, identified the major players, solicited partners, described the actions to be taken, and identified the potential positive and negative impact of those actions?

Future Direction and Conclusion

Habits and attitudes are hard to change because they offer stability. Adaptive change fosters resistance because people have to question their identity and competence. The greater the adaptive change, the more learning is needed. This change will typically cause greater resistance, risk, and difficulty for the leader (Heifetz & Linsky, 2002). The leader and the organization need to recognize and embrace conflict as a guide for change and new directions to face adaptive challenges.

This chapter has provided an overview of seven of Heifetz and colleagues' strategic principles for adaptive leaders and five competencies we feel are critical for adaptive leaders. Adaptive leaders clearly need to mobilize their teams and larger organization in the VUCA environment to thrive. The competencies we identify are important for leaders to continually develop and foster in their organization. The five competencies (trustworthiness, communicativeness, emotional intelligence, tolerance for ambiguity and hardiness) are areas that leaders can be coached in and proceed to coach and guide their organizations through the complexities of current events. Part of leaders taking care of themselves is finding trusted advisors or confidants that nurture these competencies of the adaptive leader. The adaptive leader competencies are skills that civilian, government, and military leaders would need in kinetic, diplomatic, and international conflicts (Table 19.3).

Table 19.3 Adaptive leadership and the five competencies

	Trustworthiness	Communicativeness	Emotional intelligence (EI)	Tolerance of ambiguity	Hardiness
“Getting on the Balcony”		Communicate insights on adaptive challenge by framing key challenges, orienting team to adapt to roles and responsibilities, managing conflict, and shaping/influencing norms conducive to effective and efficient execution	Through reflection on self and social awareness, leaders can recognize patterns of change internal and external to the organization	The capacity to let go of a frame of reference or mental model and see the environmental systems and patterns more broadly through reflection and practice	Reflect on how to garner workers’ engagement (commitment) and develop their sense of autonomy (control) and build this in the organization
Identifying the Adaptive Challenge		Communicate change and provide new directions and guidance following periodic review and revision as conditions change in today’s volatile and complex environment	Through identifying and examining the organization’s emotional temperament and resources there is a better capacity to determine the organization’s ability to identify and meet the challenge		Leaders high in commitment are fully engaged and aware, can see broadly to identify changing needs, and build commitment by listening and supporting workers’ good ideas in times of adaptive change
Regulating Distress		Attention is especially required when modifying the manner and tenor of a communication based on the targeted audience (i.e., individual teams and external stakeholders) to regulate stress	Develop the right amount of stress tolerance with the collective workforce by educating the organization to recognize and develop awareness of how and what changes are needed for the future Leaders should have the emotional capacity to regulate uncertainty, the self-awareness to manage their distress, and social awareness to recognize the stress of others	Capacity to handle the stress that comes from uncertainty	Provide the proper challenge and build in the proper training for a sense of control to build confidence and reduce stress and shape the new norms and provide employees with manageable tasks and needed resources
Maintaining Disciplined Attention		Maintaining attention to a disciplined communication style as well as focusing on effective content is a powerful competency for adaptive challenges	Leaders must be self-directive in maintaining a focused attention on adaptive challenges through relationship management of behaviors such as scapegoating, losing focus on technical issues, or attacking others rather than their behavior	Staying in an inquiry mode	To keep leaders focused and committed, recognize conflict from diverse thinking and new ideas and openly restore equilibrium while allowing polarization that can affect the mission

<p>Giving Work Back to the People</p>	<p>Giving work to a subordinate who possesses the ability to execute responsibilities and a proclivity to work toward similar results</p>	<p>Leaders must use personnel to determine whether or not the communicated mission and vision for the organization is achieving its desired effects and possessing the fortitude and capacity to adapt and collectively communicate the revised plan to fit new conditions</p>	<p>The leader must be an independent, confident, and an optimistic thinker that can assert his or her will through the social network to instill a corporate self-confidence in others to take responsibility and risks</p>	<p>Letting go of control while also knowing when to step in and provide additional guidance to key personnel Allow the friction of ambiguity to serve and challenge the development of future talent</p>	<p>Leaders build hardiness control in the organization by delegating authority to subordinates and trusting workers to perform (while also verifying). Control is reinforced by listening to workers' input</p>
<p>Protecting the Voices of Leadership from Below</p>	<p>Ensuring those to whom responsibility is delegated are protected and encouraged to foster their ideas</p>	<p>Recognizing that "listening" is an important component of protecting communication Leaders can empower the organization to leverage the diversity of thought, background, and experience via free-flowing horizontal and vertical communication</p>	<p>Be empathic to the challenges from subordinates and ask, What can I learn about the topic or situation?</p>	<p>Appreciating alternative points of view</p>	<p>Building challenge can be done through allowing workers to experiment, and when failure occurs using this as a learning opportunity</p>
<p>Leader: Take Care of Yourself</p>		<p>Communicating clearly with empathy, enthusiasm, and compassion to make your point in interpersonal and organizational interactions</p>	<p>Setting aside time each day for greater self and other awareness.</p>	<p>Learn new information outside your job</p>	<p>Encourage leaders to reflect on successes, build hardiness-commitment, self-esteem and competence, as well as control and confidence in their abilities to influence</p>

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Part IV

**Special Topics in Military Psychology
Practice**

Lesbian, Gay, Bisexual, and Transgender Service Members: Clinical Practice Considerations

20

Michael A. Glotfelter, Randy J. Georgemiller,
and Kyle M. Bandermann

At the time this chapter is being written, we are at the very center of revolutionary advances for sexual and gender minorities serving in the US Armed Forces. Even before these recent advances in military policy to allow open service by sexual and gender minorities, they have served shoulder-to-shoulder with their heterosexual and cisgender (persons whose self-identity conforms with their biological sex) counterparts in every branch (Pollock & Minter, 2014; Shilts, 1993). With these changes come unprecedented opportunities and challenges for those who provide healthcare in our dynamic military environment. The opportunities and challenges explored in this chapter will focus primarily on those for behavioral health providers given recent changes concerning military service members who identify as lesbian, gay, bisexual, or transgender (LGBT).

This chapter strives to advance the understanding and capabilities of those providing behavioral healthcare to LGBT service members at both individual and population levels. A historical review

of sexual and gender minorities in the military will give a contextual backdrop, followed by a brief review of relevant research and theory as it relates to behavioral healthcare practices with LGBT service members. Extending from this is a discussion of the relevance of behavioral healthcare for LGBT service members beyond the military. Lastly, the discussion will highlight possible future directions in research and behavioral healthcare.

In considering groups of sexual and gender minorities, one must acknowledge that individuals who identify as LGBT are not a homogenous group. Worldwide advances for lesbian, gay, and bisexual persons have progressed more quickly than for transgender persons, including the US military. Transgendered persons represent a smaller demographic whose experiences are separate and unique from sexual minorities, but have in the past been lumped in with sexual minorities resulting in less awareness and social advances for gender minorities. As such, it is important to validate the relative dearth of research and data on gender minority service members compared to those who identify as sexual minorities. Where available, we have drawn on prior work with transgender individuals. Our hope is that this apparent deficiency will inspire future research and practice as advances continue.

Estimates of the number of LGBT individuals serving in the US Armed Forces have been difficult to obtain. These were not demographics

M.A. Glotfelter (✉)
Wright Patterson Medical Center, Dayton, OH, USA
e-mail: michael.glotfelter.1@us.af.mil

R.J. Georgemiller
Eisenhower Army Medical Center, 300 East Hospital
Road, Fort Gordon, GA 30905-5650, USA

K.M. Bandermann
US Naval Hospital, Guam, USA

officially surveyed through the Department of Defense (DoD) until recently. Further, there is likely still reluctance on the part of many service members to disclose their sexual orientation or gender identity. Best estimates suggest rates of LGBT individuals in the military are comparable to civilians in the same age range. An estimated 2.2% of the military population (Gates, 2010) and 3.3% of the civilian population self-identify as LGB (Ward, Dahlhamer, Galinsky, & Joestl, 2014). Estimates of the number of transgender service members are also suggested to be representative of the broader civilian population (about 0.3%), where the definition of transgender typically used is discordance with the gender assigned at birth (Gates, 2014). Some estimates suggest that 15,500 DoD service members identify as transgender and are relatively more likely to volunteer for service in the Armed Forces compared to cisgender individuals. Transgender members assigned female at birth are about three times more likely compared to adult women to serve, and those assigned male at birth are 1.6 times more likely compared to all adult men to serve (Gates & Herman, 2014).

The landmark changes in DoD policy affecting LGBT service members mark a movement toward an even stronger military (DoD, 2012). Increasing evidence points to the strength of organizations requiring full employment of the skills, abilities, opinions, and perspectives of a diverse workforce (Fassinger, 2008). As one of the federal government's largest employers, the military has a unique opportunity with recent policy changes to further foster diversity and inclusion. Past experience suggests that increased cohesion and innovation along with new ideas and approaches with the inclusion of LGBT service members will follow. However, if inclusion occurs only at the policy or individual level and not at the organizational level, the benefits will not be realized, and underutilized LGBT service members will seek other career opportunities (Blustein, 2008; Johnson, Rosenstein, Buhrke, & Haldeman, 2015).

Prior to recent policy changes, behavioral health providers were faced with various ethical and legal obstacles in providing efficacious and

ethical care to LGBT service members (Johnson & Buhrke, 2006). Providers attempted to manage these obstacles while avoiding harming patients, but providing evidenced-based affirmative care to LGBT service members was not a requirement or even a discussion in most healthcare settings. One concern that cannot be ignored is that, after such longstanding exclusion of LGBT service members, military healthcare providers lack the recent experience and the cultural competence to provide evidenced-based behavioral healthcare to sexual and gender minorities (Johnson et al., 2015; Shipherd, 2015). Broadly speaking, in healthcare there is inadequate discussion and limited cultural competence regarding sexual orientation and gender identity (Petroll & Mosack, 2011; Sherman, Kauth, Shipherd, & Street, 2014; St. Pierre, 2012) despite recommendations from the Joint Commission (2011) and the National Academy of Medicine (formerly the Institute of Medicine [IOM], 2011) that sexual and gender identities be a part of healthcare encounters with all patients given their known impact on health outcomes.

Sherman et al. (2014), found in the Veterans Health Administration (VHA) about two-thirds of gender and sexual minorities reported having never been asked by a provider about sexual orientation and only about one quarter indicated experiencing the VHA as welcoming to LGBT veterans. A potential driver of this lack of discussion could be limited awareness that both sexual orientation and gender identity can have negative impacts on not just mental health (Cochran, Balsam, Flentje, Malte, & Simpson, 2013; Grella, Greenwell, Mays, & Cochran, 2009; Mollon, 2012) but health overall (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013; IOM, 2011; Mayer et al., 2008; Ward et al., 2014). This is a topic that needs continued discussion and efforts to create a shift in the culture of not just the US military medicine, but medical and military culture as a whole.

The ending of the military's prohibition of both sexual and gender minorities from serving openly in the US military did not come with clear expectations for how such foundational changes would impact service members, military culture,

or the behavioral health providers working in these settings. Currently, there are more questions than answers regarding how best to address this population in the military from a behavioral health perspective. The changes are exciting and rapid as we continue our efforts to catch up with policy changes and more importantly meet the unique needs of LGBT service members. It is helpful as we begin this discussion to have some knowledge of the history leading up to increased inclusion.

Historical Background

The American LGBT Timeline

To understand the current US military policies regarding LGBT service members and the role of behavioral healthcare for these individuals, first it is important to understand the microcosm of the military culture within the broader context of American LGBT history. The struggle for civil rights for LGBT persons is relatively new, formally tied to a several-day riot starting on June 28, 1969. The setting was the Chelsea District of New York City, and a small bar that catered to LGBT individuals in particular, the Stonewall Inn. After periodic police raids perceived as targeted harassment, the patrons and the larger LGBT community took to the streets, eventually leading to annual celebrations of “Pride,” traditionally held around the country in June to honor the leaders at Stonewall (Carter, 2004). To commemorate this seminal moment and the historic site, the Stonewall Inn and the adjacent park was designated a national monument in 2016 (Rosenberg, 2016). Stonewall followed years of subversive and blatant discrimination, such as the McCarthy-era of the 1950s and 60s. During this time, individuals suspected of practicing homosexuality, among other “social deviates,” were included in the social repression, and civil servants were purged from government service (Johnson, 2006). The mental health community conformed to the times and offered aversive change efforts in an attempt to undo the effects of homosexuality by use of hormone therapy, aver-

sive conditioning, electroconvulsive therapy (ECT), emetics, and institutionalization along with other more general treatments such as psychoanalysis and psychotherapy (American Psychological Association, 2009). In 1956, a breakthrough psychological study was presented at the American Psychological Association Convention in Chicago in which Dr. Evelyn Hooker offered data based on projective testing with a nonclinical sample of gay men using heterosexual controls showing no higher rate of psychopathology in the gay male sample (Milar, 2011). The depathologizing of homosexuality was placed into diagnostic nomenclature in 1973 when the diagnosis of homosexuality was removed from the Diagnostic and Statistical Manual (DSM) and replaced with Ego Dystonic Homosexuality. The implication of this change was that homosexuality itself was not pathological, but rather the emotional distress that may be associated with this sexual orientation should become the focus (American Psychiatric Association, 1974). The American Psychological Association (APA) passed a resolution in 1975 endorsing the DSM diagnostic change, as well as calling for an end to societal stigma for homosexuals, and instituting an APA antidiscrimination policy (Conger, 1975). Since that time, the APA has been on the forefront of promoting social science data to advance the behavioral health of LGBT persons.

In 1979, the internationally accepted authority on transgender health, the Harry Benjamin Society International Gender Dysphoria Association, later renamed the World Professional Association for Transgender Health (WPATH), instituted its first standards of care for medical and mental healthcare of patients who identify as transgender. Currently, we are working with the seventh iteration of such standards for treating transgender and gender nonconforming patients. WPATH adopted a formal statement depathologizing gender nonconforming expressions and identities in 2010 and published the following: “The expression of gender characteristics, including identities, that are not stereotypically associated with one’s assigned sex at birth is a common and culturally diverse phenomenon [that] should

not be judged as inherently pathological or negative” (World Professional Association for Transgender Health [WPATH], 2010). In 2013, with publication of its fifth version of the DSM, Gender Identity Disorder was replaced with Gender Dysphoria (American Psychiatric Association, 2013). This change was designed to depathologize persons who held a discordant gender identity from the gender assigned at birth. Instead, the new diagnosis was a recognition that transgender individuals may suffer from psychological distress because of this disparity between identity and assigned gender. While some transgender activists lobbied to strike any diagnostic label, others felt the need to retain a diagnostic label that would allow for a diagnostic code to be eligible for insurance reimbursement purposes.

The mounting progress for LGBT persons was not without opposition and setbacks. LGBT civil rights was struck a blow when Congress passed and President Clinton signed into law the Defense of Marriage Act (DOMA) in 1996, which, in part, defined marriage as the union of a man and a woman (US Congress, 1996). The law was designed to curtail any future federal attempts to promote marriage equality for same-sex couples. Subsequently, several states passed civil union laws, fewer recognized same sex marriages, and most passed State constitutional amendments restricting marriage to heterosexual couples. It was not until the Supreme Court’s ruling on June 26, 2015, following nearly 20 years of differential rights granted to same-sex couples that same-sex marriage was legalized nationally. In his majority opinion, Justice Anthony Kennedy wrote, “Their hope is not to be condemned to live in loneliness, excluded from one of civilization’s oldest institutions. They ask for equal dignity in the eyes of the law. The Constitution grants them that right” (US Supreme Court, 2015).

The American Military and LGBT Service Members

Reflecting prevailing American culture, the military has formally discriminated against LGBT service members until recently. There is documentation as early as 1778 that a member of the Continental

Army was dismissed for sodomy (US Naval Institute, 2016). Articles of War, the Manual for Courts Martial, and (DoD) regulations have formulated procedures for dismissal of LGBT Service Members (Fitzpatrick, 1931). From 1959 to 1982, DoD directives barred homosexuals from military service (US Naval Institute, 2016). In the early 1990s, Congress intended to pass a legislation to reiterate the banning of military service by homosexuals. President Clinton proposed a compromise, commonly called “Don’t Ask Don’t Tell (DADT).” Passed in 1994, US Code Title 10 sec 654 allowed gay and lesbian service members to remain in the military as long as their sexual orientation was not divulged and brought to the attention of commanders who could process administration separation (US Congress, 1993). Contrary to the intent of the legislation designed to make it easier for lesbian and gay soldiers to serve, there were approximately 1800 soldiers discharged per year for a total of 14,500 discharges over the 8 years DADT was enforced (General Accounting Office, 1992). Transgender service members have been banned from military service according to Army Regulation 40-501 Standards of Medical Fitness 3-35, 2007 and DoD Instruction 6130.03, 2010. Lumped in with a host of disqualifying medical and behavioral health conditions such as personality disorders, factitious disorders, and impulse control disorders, service members diagnosed with a range of “psychosexual conditions” relevant to gender identity could be administratively discharged. This precluded these service members’ ability to have their case go before a medical board to assess their fitness for duty and may have had the effect of denying benefits such as eligibility for medical care within the VA system upon discharge. With the revocation of DADT (United States Congress, 2010) open service by LGB service members was ushered in. Since 2013, following President Obama’s proclamation recognizing June as Pride Month, the DoD has officially been recognizing this event. Preceding this proclamation, the DoD hosted a panel discussion in June 2012 honoring Gay Pride entitled, “The value of open service and diversity.” As of June 30, 2016 the Secretary of Defense has announced a new DoD policy, which will allow transgender individuals to openly serve in the Armed Forces (Carter, 2016b). A phase-in

period over 12 months has been projected which will define policies and offer guidance for commanders relative to dress and grooming standards, eligibility for gender transition medical services, and the ability to change official gender markers in the Defense Enrollment Eligibility Reporting System (DEERS), among other policies (Carter, 2016a). The need for continued discussion regarding sexual and gender minorities does not end with policy changes—it is only the beginning.

Relevant Theory and Research Guiding Behavioral Health Practice

Military service members who identify as LGBT have the same challenges and considerations as civilians in any career field, but also face additional barriers. Like other minority groups subjected to discrimination and victimization, gender and sexual minorities whether civilian or service members experience higher rates of mental health issues (Institute of Medicine, 2011; Mollon, 2012; Quinn et al., 2015). In the military health system, even prior to the repeal of DADT, LGBT service members actively sought behavioral health treatment. As policies continue to progress, thereby increasing avenues for retention and recruitment of well-qualified potential personnel who identify as LGBT, behavioral health providers for the military are likely to see growing rates of LGBT service members seeking treatment. To fully explore each multifaceted area would be impossible within the constraints of this chapter. Highlighted are some relevant clinical concerns (e.g., identity development, the mental health of LGBT service members, and brief discussion related to providing care for transgender service members), as well as use of the Stress Minority Model as a way to better conceptualize the unique experiences of these individuals.

Clinical Considerations

Affirmative Approach The framework recommended for behavioral healthcare of LGBT persons is an affirmative and culturally competent

approach (American Psychological Association [APA], 2012, 2015; Association of Lesbian, Gay, Bisexual, and Transgender Issues in Counseling [ALGBTIC], 2010, 2013) with the full range of evidence-based practices applied based on a patient's presenting problem and unique needs. All aspects of behavioral healthcare from intake to intervention should occur within an affirmative framework that fosters collaboration, respects autonomy, and choice using a social justice and strengths-based approach (Amadio & Perez, 2008). There are various definitions of affirmative psychotherapy, as operationalized in this chapter it refers to the knowledge, awareness, and skills to address the unique needs of LGBT service members and facilitate coping in a nonaffirming environment using a patient-centered strengths-based approach during all aspects of the clinical encounters. An affirmative approach views variations in both sexual orientation and gender identity as normal and celebrates and advocates for the authentic expression of identity and relationships not just in the individual encounter but also through social justice and advocacy (Amadio & Perez, 2008; Bieschke, McClanahan, Tozer, Grzegorek, & Park, 2000; Heck, Flentje, & Cochran, 2013). Providers are functioning in a heterocentric society with various covert and overt homophobic (Morrow, 2000) and transphobic beliefs and attitudes (Austin & Craig, 2015). This cultural context, along with graduate training that may lag in affirmative attitudes (Pachankis & Goldfried, 2004), creates inherent challenges for behavioral health providers and the patients they evaluate and treat.

An essential foundational element of affirmative practice is examination of one's own sexual and gender identity as well as beliefs and biases related to sexual and gender variations (APA, 2012, 2015; ALGBTIC, 2013; Burnes et al., 2010; Heck et al., 2013; Sue & Sue, 2016). There are various self-assessment tools providers can use to guide self-examination and self-awareness. One must utilize personal awareness as a foundation for professional awareness and skill building. Dillon and Worthington (2003) developed the Lesbian, Gay, Bisexual Affirmative Counseling Self-Efficacy Inventory (LGB-CSI)

to measure providers' LGB-affirmative care. The measure looks at advocacy skills, application of knowledge and assessment of unique LGB issues, awareness of one's own attitudes, and building a relationship alliance with LGB patients. As an aspect of ethical and professional practice, behavioral health providers must remember that a component of self-awareness is making appropriate referrals when the limits of his or her experience and training preclude competent service delivery (APA, 2012, 2015; ALGBTIC, 2013; Burnes et al., 2010; Lasser & Gottlieb, 2004).

Increased Suicide Risk In addition to considerations of identity development and coming out, behavioral health providers working with LGBT service members must acknowledge LGBT persons' higher risk of suicide and negative mental health outcomes. The entire military cadre has struggled with an increase in suicide rates since 2005 (DoD, 2011) (See also Ghahramanlou-Holloway et al., Chap. 6, this volume). The DoD has invested resources to understand factors related to self-injurious thoughts and behaviors (SITB), but there has been little attention directed to sexual orientation and gender identity as a possible risk factor. Research with civilian sexual minorities suggests that sexual minority adults are twice as likely as their heterosexual peers to attempt suicide (Bolton & Sareen, 2011; King et al., 2008). The suicide attempt rates for gender minorities suggested by the National Transgender Discrimination Survey (NTDS) are significantly higher (41%) than the general population (1.6%) (Grant et al., 2010). Evidence suggests for veterans in the VHA with gender identity disorder in 2000–2011 had a risk for suicide-related events that was 20 times higher than for the general VA veteran population (Blosnich et al., 2013). In a review of research related to suicide risk in LGBT service members and veterans, Matarazzo et al. (2014) found only one study (Blosnich, Bossarte, & Silenzio, 2012) specific to risk factors for suicide with military members that pointed to decreased support and increased victimization as contributing to increased risk. Given the limited research, they focused on factors in the general LGBT population that could increase risk for

LGBT service members such as minority status, substance use disorders, mental health issues, and traumatic experiences. These risk factors are elevated for both gender and sexual minorities (King et al., 2008; Haas et al., 2010).

In a more recent study, Ray-Sannured, Bryan, Perry, and Bryan (2015) looked at a sample of veterans and service members who were sexual minorities with trauma exposure, emotional distress, and a history of SITB. They found those sexual minorities reported more severe depression, posttraumatic stress, and trauma exposure than military personnel who reported only other-sex partners. They also reported higher SITB and suggested this may be due to higher levels of trauma exposure and emotional distress. Awareness of increased suicide risk as well as assessment on initial contact and supplemental assessment for LGBT service members is clinically indicated (Porter & Gutierrez, 2013). Haas et al. (2010) among others, point to the importance of managing behavioral health issues that are typically increased in LGBT individuals as well as increasing advocacy efforts aimed at decreasing violence and discrimination that may contribute to these risks. Other studies provide further evidence of an increased prevalence of negative mental health outcomes for LGBT persons compared to their heterosexual counterparts (e.g., Cochran et al., 2013; Meyer, 2003).

Identity Development for LGBT Service Members

Identity development is a crucial stage between the ages of 17 and 24 (the typical age a service member may enter the military) and, for some, military service may be seen as a rite of passage to becoming an adult. During this phase of life, many individuals begin to gain personal insight into their gender identity and relational affections. These tendencies may have increased to more noticeable levels, and for many, this is their first time experiencing increased independence and freedom to express variations in identity and romantic attractions (Porter & Gutierrez, 2013). For LGBT service members, identity development

may be negatively impacted by overarching military norms associated with heterosexism, cisgenderism, and a traditionally masculinized culture (Allsep, 2013).

Behavioral health providers need to take into account the service member's developmental stage based on traditional lifespan trajectory, as well as with respect to sexual orientation and gender identity. There are different models of identity development for sexual minorities (e.g., Cass, 1979; Coleman, 1981/1982; Grace, 1992; Troiden, 1979), and much less research on gender nonconforming identity models (e.g., Devor, 2004; Gagné, Tewksbury, & McGaughey, 1997; Lev, 2004; Pollock & Eyre, 2012). While these models are helpful, the affirmative approach emphasizes that the experience, pace, and trajectory of the process is unique to each individual. Providers should meet the service member where they are in their identity development and offer interventions appropriate to their development stage and unique needs (Ritter & Terndrup, 2002; Hidalgo et al., 2013) while affirming them as a competent military member (Johnson et al., 2015).

An important aspect of identity development with respect to LGBT persons is the process of "coming out." Despite the changes in policies toward inclusion, this process still has unique challenges for LGBT persons in the military. On the whole, sexual orientation disclosure is associated with positive outcomes, and sexual concealment is associated with negative outcomes (Fassinger, 2008). However, providers should be aware that coming out at work is not always a positive experience and could disrupt relationships, create hostility, and limit career progression and opportunities (APA, 2012; Croteau, Bieschke, Fassinger, & Manning, 2008). For the LGBT service member (SM) in particular, disclosure has historically been associated with negative outcomes (e.g., administrative separation and/or dishonorable discharge). More recently, research suggests that LGBT individuals use both concealment and disclosure to cope with stigma and providers should not view them as all-or-nothing (Porter & Gutierrez, 2013), but as more of a continuum (Moradi, 2009).

The Military Partners and Family Coalition surveyed sexual minorities and found that 55% indicated that, despite the repeal of DADT, they continued to perceive that coming out would put them or their families at risk for negative reactions in the military (Gleason et al., 2012). Johnson et al. (2015) recommends providers working with LGBT individuals recognize that an important task for some service members is making an informed decision about when it is safe or unsafe to come out. The conversation to conceal or disclose should be led by the LGBTSM and should be collaborative and affirming and not be viewed as a determinant of psychological health (APA, 2012, 2015; ALGBTIC, 2013; Burnes et al., 2010; Johnson et al., 2015; Pinto & Moleiro, 2015; Porter & Gutierrez, 2013).

It is not uncommon during periods of identity development and coming out for individuals to experience conflicting emotions including distress, especially given the possible cultural and social challenges. Population data suggests an increased incidence of behavioral health concerns such as depression, obesity, substance abuse, anxiety, and posttraumatic stress disorder (PTSD) in LGBT individuals (Bostwick, Boyd, Hughes, & McCabe, 2010). Cochran et al. (2013) examined behavioral health characteristics of LGBT veterans compared to an existing VA sample and found significantly higher rates of depression, PTSD, and alcohol problems for LGBT persons. However, this distress does not suggest that minority identity is causal and that "reparative" or sexual orientation change efforts (SOCE) are indicated. The APA Task Force on Appropriate Therapeutic Responses to Sexual Orientation (2009) found no convincing evidence that SOCE are effective, especially in the long term. Further, research points to increased psychological well-being when individuals are able to integrate sexual (Levitt et al., 2009) and gender orientation into their identity (Kosciw, Palmer, & Kull, 2015). Research suggests those individuals who seek treatment based on SOCE typically do so based on individual factors such as religious beliefs, fear of implications, pressure from family, and community rejection of minorities (Glassgold, 2008). Given the evidence, the APA

(2009, 2012) suggests an affirmative approach to intervening with service members struggling with desire to change sexual orientation. This approach is described in detail in the APA Task Force report (2009). The components include: acceptance with a client-centered approach, comprehensive assessment that examines all the factors creating distress, and using these factors to inform treatment. Additionally, the affirmative approach requires helping patients develop active coping to manage distress using multiple evidence-based treatments such as cognitive behavioral therapy, mindfulness, dialectical behavior therapy, acceptance and commitment therapy, and religious strategies (APA Task Force, 2009).

Minority Stress Theory

One theoretical framework that has been suggested to help providers conceptualize the experiences of gender and sexual minorities is Meyer's (2003) Minority Stress Theory. The model was initially developed to describe stress in sexual minorities but, as Hendricks and Testa (2012) mention, a majority of the unique stressors experienced by sexual minority individuals are also experienced by gender minorities. Taken together, this theory postulates that LGBT individuals, as members of an oppressed social group, are stigmatized to such a degree that they experience excess stress and negative life events, which in turn can cause or exacerbate behavioral health problems. This model informed Marshal et al.'s (2011) minority stress theory, which hypothesizes that members of sexual and gender minority groups experience chronic stress resulting in part from prejudicial encounters, which contributes to an increase in behavioral health concerns such as suicide, depression, and substance use disorders (Mollon, 2012). This type of stress is unique to marginalized populations (Meyer, 2003) and is perpetuated by a conflict between an individual's self-expectations and the expectations of their social, cultural, and political environments. For LGBT service members, exposure to a heterocentric environment, heterosexist and transpho-

bic stereotypes, microaggressions, limited social support, increased victimization, and discrimination lead to pervasive experiences of minority stress that may contribute to the development of mental health concerns (Balsam, Rothblum, & Beauchaine, 2005; Grant et al., 2010; Quinn et al., 2015).

Research

While the prevalence of LGBT service members' experiences with discrimination and victimization is not known, empirical data support the existence of these stressors in the broader LGBT population. For example, Herek, Gillis, and Cogan (2009) found that approximately 20% of sexual minority women and 25% of sexual minority men reported they had been victims of an attempted or executed sexual orientation-based hate crime, which could include vandalism, robbery, and physical or sexual assault. Mays and Cochran (2001) found that a majority of LGB participants reported having experienced discrimination in some form. Drawing from LGBT individuals' experiences with their families, 34% of gay or bisexual men (Szymanski, 2009) and 36% of lesbian or bisexual women (Szymanski & Henrichs-Beck, 2014) reported being rejected by family members because of their sexual orientation. Further, 49% of men and 48% of women reported being treated unfairly by their family due to their sexual orientation, and 52% of men and 51% of women reported hearing antigay remarks from family members recently. Estimates of discrimination and victimization for transgender people are likely higher than for LGB people (Grant et al., 2010; Grossman & D'Augelli, 2007; Mizock & Lewis, 2008; Nuttbrock et al., 2010). Results from the National Transgender Discrimination Survey (NTDS) indicate that 53% of transgender people report being verbally harassed in a public place (Grant et al., 2010). Such discrimination begins early, as youth that express a transgender identity or gender nonconformity during Grades K–12 report quite high rates of harassment (78%), physical assault (35%), and sexual violence (12%) (Grant

et al., 2010). Thirty-one percent of transgender people report a moderate level of family rejection, and 14% report a high level of family rejection (Grant et al., 2010).

One of the most often studied mental health diagnoses of active duty military personnel is PTSD. While experiences of discrimination or victimization as an LGBT person may or may not meet criteria for PTSD, researchers have contributed to the discussion of a variety of experiences that culminate in a similar symptom picture. Insidious Trauma Theory (Root, 1992), posits that daily experiences of blatant and subtle oppression build up over time to produce trauma, which may culminate in posttraumatic symptoms. While these events on their own may not be considered traumatic, the effects of these events can be severe enough to bring on PTSD symptoms. Neisen (1993) and Balsam (2003) both conceptualized heterosexism, in its broadest form, as an ongoing traumatic exposure that can have an impact on behavioral health. Providing support for a variety of degrees of oppression contributing to similar symptomology, Bandermann and Szymanski (2014) found that sexual orientation-based hate crime victimization and heterosexist discrimination both had direct and unique links to PTSD symptoms.

Behavioral health providers working with LGBT service members should keep in mind that, while policies have created inclusion, these policies are functioning within a culture with conservative gender norms, heterosexism, and sexual stigma (Burks, 2011; Fassinger, 2008; Johnson et al., 2015). Given the barriers to surveying LGBT service members prior to recent policy changes, it is difficult to determine rates of harassment and victimization they may experience. However, some evidence suggests that military rates are similar to civilian rates (Moradi, 2006). Burks (2011) warns that with increased inclusion, victimization of LGBT service members may actually increase related to increased visibility among other factors. In the general population, hate-based crimes toward sexual and gender minorities are increasing (Ciarlante & Fountain, 2010; Shipherd, Mizock, Maguen, & Green, 2011), and given previous evidence of

similar rates in the civilian sector and military (Moradi, 2006), the military will likely follow similar trends for increased harassment and victimization. Evidence suggests that the presence of open LGBT service members may actually heighten discrimination (Burks, 2011). Openly serving sexual and gender minorities in the DoD may suffer exclusion, decreased access to advancement, and underutilization of talents (APA, 2012, 2015; Fassinger, 2008) resulting in a range of outcomes including decreased job satisfaction, withdrawal, lowered commitment to the military, diminished self-efficacy, various costs to personal health, and even vicarious traumatization for concealed members (Burks, 2011; Croteau et al., 2008). The clinical outcomes of such victimization often include guilt and self-blame—including intensification of internalized sexual stigma (Herek & Garnets, 2007), and a range of physical and psychological symptomatology including anxiety, anger, depression, and trauma syndromes. This is particularly concerning in the context of high rates of trauma exposure and posttraumatic stress disorder symptoms in the transgender community (Shipherd et al., 2011). On an institutional level, this can reinforce negative beliefs and stereotypes about minority groups by the majority and contribute to internalized social stigma for the minority, which can result in feelings of stress, fear, depression, and anxiety (Hatzenbuehler, Keyes, & Hasin, 2009; Herek, 2007; Herek et al., 2009; Rostosky, Riggle, Horne, & Miller, 2009).

Active and adaptive coping as discussed previously is not always the mainstay of LGBT victims of discrimination. Experiences with facing diversity as an LGBT person may form a predisposition toward negative coping styles, which may be the source of negative psychosocial outcomes. In the face of discrimination or other forms of heterosexism, LGBT persons may experience feelings of helplessness, powerlessness, and confusion, and may become more likely to be passive or engage in maladaptive coping (Szymanski & Henrichs-Beck, 2014; Szymanski & Obiri, 2011). One of these studies (Szymanski & Henrichs-Beck, 2014) theorized that more use of maladaptive coping strategies to deal with

heterosexism will lead to more PTSD symptoms, whereas use of adaptive coping strategies will lead to less PTSD symptoms. Previous research on coping style's relationships with individuals' mental health indicates that maladaptive coping methods may play a larger role in the development of psychological distress than do even more adaptive coping styles in their ability to ward off such distress (e.g., Bjorck & Thurman, 2007; Nyamathi, Wayment, & Dunkel-Schetter, 1993; Utsey, Ponterotto, Reynolds, & Cancelli, 2000; Szymanski & Owens, 2009). With PTSD already being a target of much intervention with regard to assessment, diagnosis, and treatment among military behavioral health providers, it becomes incumbent upon these providers to be aware of service members' variety of experiences outside of combat trauma, such as those with discrimination that may also play a role in the development of similar symptoms.

More general negative mental health outcomes for LGBT persons have also been the focus of much research. Using Meyer's (2003) Minority Stress Theory as a foundation, Hatzenbuehler et al. (2009) attempted to explain mental health disparities that exist between LGB and heterosexual persons using a psychological mediation model. The study first found that, compared to heterosexual groups, oppression targeted to LGB persons may lead to an increase in negative coping along affective, cognitive, and interpersonal dimensions (e.g., maladaptive coping responses, hyperarousal, rumination, negative self-schemas, and lack or loss of social support) that in turn increase an individual's risk for psychopathology. Secondly, the study found that these negative coping styles play a mediating role in the relationship between external and internalized heterosexist experiences and poor mental health outcomes. Bandermann and Szymanski (2014) further provided evidence for this mediation model that specific negative coping skills (i.e., internalization, detachment, and drug and alcohol use) mediated the link between heterosexist discrimination and PTSD symptoms. As important as behavioral health providers' awareness that discrimination can lead to negative mental health outcomes like PTSD, it

also is necessary for these providers to understand that the way a LGBTSM may cope with such oppression may play a role in establishing the symptoms. As such, especially with service members who may face direct oppression such as LGBT service members, behavioral health providers must be aware of not only a patient's symptoms and inciting factors, but also how they have been coping with the oppression.

Clinical Considerations Specific to Transgender Service Members

As previously discussed, the acknowledgment of the lack of homogeneity among LGBT persons is of utmost importance in facilitating treatment. This is especially true of those who identify as transgender. Sexual orientation and gender identity are mutually exclusive. Lesbian, gay, and bisexual persons have encountered more long-standing progress in their desire for social justice than have transgender individuals (for a review, see: Kerrigan, 2011; Yerke & Mitchell, 2013). Gender in the military has typically been viewed as binary such that a person born into a biological sex (natal male or female) is expected to express a gender identity as male or female. Gender identity is how a person personally identifies and gender expression is how a person expresses their gender identity to the others. Gender identity and expression can be a supercontinuum that is both fluid and multidimensional. As such, multiple areas of gender identity exist, including gender nonbinary, gender nonconforming, transgender, transsexual, gender queer, agender, bigender, gender fluid, Two-Spirit, transvestites, cross-dressers, androgynous, intersex, just to name a few (Brown & Rounsley, 1996; Israel & Tarver, 1997; Lev, 2004). The challenge of this venture is that such a vast dimension of identity makes quantitative research and the development of standardized/evidence-based practices more difficult. The strength, on the other hand, both socially and professionally, is that we have the opportunity to remind ourselves as behavioral health professionals that identity is as individual as each person and that, oftentimes, the utility of

categorical approaches is lost as it creates distance between us both interpersonally and therapeutically.

While a transgender identity is not a mental health disorder by any means, individuals who identify as transgender often face systematic barriers to meeting their goals with respect to their gender identity. As such, transgender individuals may benefit from clinical services, advocacy, and multidisciplinary consultation. Clinical psychologists, specifically, are uniquely poised to handle many of these tasks. Johnson, Shipherd, and Walton (2016), specifically with US Veterans, encourage psychologists to play an active role in the care of transgender veterans by, when appropriate, diagnosing and treating gender dysphoria (American Psychiatric Association, 2013), providing treatment for general behavioral health conditions that may otherwise be present, referring to medical services such as gender confirmation surgeries, voice modification, and cross-sex hormone therapies, serving as consultants to other providers, and acting as advocates for addressing systematic barriers and oppression. While these roles represent options for psychologists in the treatment of transgender veterans, it is important to recognize that treatment and the process of acknowledging and accepting gender identity is an individualized process. Thus, it is important not to fully prescribe what the role of the psychologist should be, but rather to highlight the multiple hats a provider may wear during an episode of care.

Austin and Craig (2015) suggest a particular set of skills and interventions that may assist behavioral health providers in facilitating therapy with transgender individuals (Transgender-Affirming Cognitive-Behavioral Therapy; TA-CBT). The team was concerned with the disconnect between the helping professions' guiding principles (APA Task Force, 2009; Burnes et al., 2010; National Association of Social Workers, 2008), as well as research indicating the importance of inclusive, nonpathologizing, and affirming care for transgender individuals (Bockting, Knudson, & Goldberg, 2006; Collazo, Austin, & Craig, 2013; Lev, 2009), as compared to the actuality of current practices with trans-

gender individuals (Barker & Wylie, 2008; Bess & Staab, 2009). Clients have historically viewed the clinician as an adversarial gatekeeper rather than an ally or advocate (Barker & Wylie, 2008; Bess & Staab, 2009; Lev, 2009). This includes transgender veterans (Lutwak et al., 2014). Alternatively, many of the aspects of a transgender individual's care, while calling on the provider to advocate for the patient, incidentally puts the provider in a position of privilege and power. While certain protocols and suggestions for advocacy exist within the standard of care for behavioral health providers working with transgender clients (e.g., conferring an appropriate diagnosis of gender dysphoria, assessing real-life experience, and writing a letter of support), these guidelines inadvertently place clinicians in a position of power, controlling if and when clients would be given "approval" to move forward with various gender-confirming interventions (Bess & Staab, 2009; Levine, 2009). This is especially true and especially troublesome should the provider lack a trans-affirmative perspective, and may even be deleterious to the therapeutic process. All providers must thus balance the desire for advocacy with empowerment, which is a strength of TA-CBT (Austin & Craig, 2015). In addition to basic concepts of CBT, patients undergoing TA-CBT should receive an introduction to the concept of minority stress, have the therapist facilitate understanding of the effects of transphobic attitudes and behaviors on stress as well as the effect of minority stress and transphobic attitudes/behaviors on social relationships, as well as undergo direct work on developing safe, supportive, and identity-affirming social networks (Austin & Craig, 2015).

Intersectionality

Intersectionality, or having the understanding that individuals are more than the sum of each aspect of their identity, is an important concept for those in helping professions to consider when facilitating culturally competent interventions. Research suggests that intersectionality affects important aspects of risk and resilience

(e.g., McFadden, Frankowski, Flick, & Witten, 2013; Singh, 2013). For example, when looking at gender identity and racial identity, women of color who identify as transgender show some of the highest risk levels for several traumatic experiences, including sexual assault, physical crime victimization, and exposure to HIV (Grant et al., 2010). Thus, helping providers should always be cognizant of the breadth of experiences of oppression or privilege an LGBT service member may encounter as a factor of also being a person of color, part of the dominant culture, female, or some other marginalized group (Singh, 2013).

A particular area of interest for this group is the intersection of gender identity and professional identity as a past or present US service member. Though open transgender service is only recently becoming a reality, individuals who identify as transgender have long served in many countries' Armed Forces. In fact, research suggests that transgender people may be especially interested in the military (e.g., Yerke & Mitchell, 2013). At least part of this focus may be the military's emphasis on traditional masculine values (Brown, 1988), and though it may be easy to envision this process for males who identify as transgender, having been assigned female at birth (female-to-male [FTM] individuals), evidence of a similar effect can be found in a variety of transgender individuals, irrespective of their sex assigned at birth. In fact, helping providers with military and veteran populations report higher rates of working with women who identify as transgender, having been assigned male at birth (male-to-female [MTF] individuals; Brown, 1988; Brown & Rounsley, 1996). For FTM individuals, the military's focus on traditional masculinity/hypermasculinity may represent the gender identity developmental stages that include sublimation, or an adaptive expression of one's desired gender identity (McDuffie & Brown, 2010). The hypermasculinity of the military may also appeal to MTF (male-to-female) individuals, given it could represent oppression of the female gender identity or expression and recognizes identity confusion as a stage in transgender identity development which may include attempts to

repress questions about one's gender identity. This identity confusion may include attempts to repress questions about one's gender identity. Joining the military is one way that such people can attempt to become "real men" (Brown, 1988). Military personnel, regardless of gender identity, sex assigned at birth, or sexual orientation, are reinforced for displaying masculinity. Prior to transition, female individuals who identify as male may find solace in military service since they are able to express gender behaviors consistent with their gender identity (Frye, 2004). Further, as an individual begins to explore the prospect of transitioning, the military may represent a safe place to engage in at least a partial transition (Yerke & Mitchell, 2013).

For MTF individuals, the desire to serve in the military may arise from an earlier stage of gender identity development. Such theories often include identity confusion stages of development involving attempts to repress a transgender identity or questioning as to gender identity (Devor, 2004; Shipherd, et al., 2011). During such stages, women who identify as transgender, having been assigned male at birth, may attempt to confirm their maleness (Brown, 1988) by engaging in activities that are viewed as masculine or hypermasculine in traditional gender roles. These activities may be associated with danger, excitement, and violence (Mosher & Sirkin, 1984), and the public perception of the military certainly exhibits all of these qualities. This process may be conscious or unconscious, and as such an individual may not gain this insight until long after enlisting or commissioning (McDuffie & Brown, 2010).

Some suggest in relationship to gender identity development that some transgender service members may pursue military service early in the stages of gender identity in an effort to repress experienced gender identity. It is suggested that this may be appealing given the traditional binary gender standards of military uniform and traditional masculine culture of the military. Others have suggested shame and self-loathing may cause an individual to pursue the perceived risks associated with active duty military service, especially those more dangerous parts of the

military (Brown, 1988; Brown & Rounsley, 1996). Such risk-seeking behavior may be seen as passive suicidal ideation, which shows at a higher incidence among individuals who experience depression and hopelessness (Beck, Rush, Shaw, & Emery, 1979; Cleveland Clinic Foundation, 2009), factors many transgender individuals may be prone to experience prior to living consistent with their gender identity (Brown & Rounsley, 1996; Clements-Noelle, Marx, & Katz, 2006; Grant et al., 2010; Israel & Tarver, 1997; Mathy, 2002).

Coordinated Care

WPATH provides Standards of Care (SOC) that assist clinicians with offering evidence-based ethical care to transgender individuals. These SOC are not only limited to mental health interventions, but also assisting in physiological transition (gender confirmation interventions). Transgender individuals coming to terms with a transgender identity may first seek help from a behavioral health provider, or any other discipline, and may be looking to pursue feminizing/masculinizing hormone therapy or gender confirmation surgery. It is important for providers of all disciplines to recognize that caring for transgender individuals is necessarily interdisciplinary, involving a high level of care coordination, many referrals, and cohesive support.

For behavioral health providers who assist with coordinating physiological medical care, the SOC provide criteria to guide clinical decision-making with individuals who are interested in pursuing feminizing/masculinizing hormone therapy and gender confirmation surgery. The SOC first recommends that behavioral health professionals assist transgender individuals to psychologically prepare for such transitions. This involves ensuring that an individual has made a fully informed decision, has clear and realistic expectations, is committed and ready to receive the service, and has included family and community as appropriate. Secondly, the SOC suggest ensuring the individual is practically prepared. As systemic barriers may be present based on the

healthcare system (i.e., Tricare), availability of resources, and even location, it may become incumbent upon the behavioral health provider to serve as an advocate as well as a clinician. As to hormone therapy, practical preparation involves being evaluated by a physician to rule out or address medical contraindications to hormone use and ensuring the individual has considered the psychosocial implications of beginning such a transition. As to gender confirmation surgeries, this involves making an informed choice about a surgeon to perform the procedure and arranging aftercare. Prior to initiating physiological interventions younger adults should receive reproductive counseling to consider options such as egg and sperm banking (section IX, WPATH SOC). Gender confirmation interventions can be initiated with a referral from a qualified behavioral health professional. Oftentimes, this referral takes the form of a referral letter written by the behavioral health professional. The recommended content of the referral letter is spelled out by the SOC.

It is absolutely necessary that this work not take place within a proverbial vacuum—both within and between disciplines. Behavioral health professionals should engage in consultation and discuss case conceptualization, advocacy, and case coordination progress with peers who are competent in the assessment and treatment of gender dysphoria. It is also necessary to engage in collaborative consultation with providers across other health professions who have had successful experience in treating transgender individuals. Open communication and cohesive care is necessary from referral, to consultation, to management, and to aftercare.

This section strives to present a theoretical foundation to approach clinical care with LGBT service members as well as introduce particular areas of relevance. This is not exhaustive, and behavioral health providers are encouraged to use this information as a springboard to fill in gaps in competencies (APA, 2012, 2015). Providers should be aware of the guidelines set forth by their professional associations. These include: Competencies for counseling with lesbian, gay, bisexual, queer, questioning, intersex, and ally

individuals (ALGBTIC, 2013); competencies for counseling with transgender clients (ALGBTIC, 2010); guidelines for psychological practice with lesbian, gay, and bisexual clients (APA, 2012); and guidelines for psychological practice with transgender and gender nonconforming people (APA, 2015).

Current Applications in the Military

Given the sheer size of the military and its long-standing traditions, implementing changes to accommodate new practices or categories of service members is monumental. This is certainly relevant to fully utilizing the talents of LGBT service members or integrating pending applicants for military service. For example, despite systemic changes with the repeal of DADT, several years later Mount, Steelman, and Hertlein (2015) found that in a small sample of lesbian Air Force, Army, and Navy service members, there continue to be perceived barriers to accessing behavioral health services. Some of these factors are not unique to LGBT persons, to include a perceived lack of confidentiality and fear of negative repercussions for seeking services. Other barriers are more particular to the LGBT service members, to include widespread heterosexism and transphobia and the fact that gender identity and sexual orientation has played a part in many service members' discharges. Nonetheless, there have been local attempts at providing culturally competent behavioral health and medical services to LGBT service members, which may have system wide implications in the future. The Human Rights Campaign (HRC) implemented the Health Equality Index (HEI) (Human Rights Campaign, 2016a) which is designed to provide a survey for healthcare organizations to establish nondiscriminatory practices relative to sexual orientation and gender identity. The four core criteria for inclusion in the HEI are: patient nondiscrimination, equal visitation, employment nondiscrimination, and training in LGBT patient-centered care. On March 24, 2016, Walter Reed National Military Medical Center became the first military medical facility to achieve the distinction of

Leader in LGBT Healthcare Equality, which places it among 114 Veterans Administration Medical Centers that have met the same standard (HRC, 2016b). The promise of the HEI is to offer a template for other medical facilities that wish to offer culturally competent services to LGBT patients consistent with The Joint Commission standards (2011). Also, in the absence of DoD-wide policies for the provision of affirmative LGBT behavioral health services Lesbian, gay, bisexual and transgender (LGBT) service members:, local policies have sprung up to foster services which extend to clinical, administrative, teaching, and research activities pertaining to LGBT service members and their dependents (Eisenhower Army Medical Center, 2013). Such local policies, once disseminated, also hold the promise of impacting the military healthcare delivery system to provide appropriate services for LGBT service members and their families. This commitment to affirmative behavioral health services at Eisenhower Army Medical Center has led to ongoing LGBT diversity training for staff and recurring didactics for interns and residents and has fostered collaboration with other relevant medical specialties such as endocrinology in advancing the medical care of transitioning transgender service members Lesbian, gay, bisexual and transgender (LGBT) service members:.

Relevance Beyond the Military

The military, while a unique system, is also a microcosm of the US population. The military sample represents a healthy subset of the broader population and presents the federal government with accessibility to outcomes of policy changes. The lessons learned from researching the military's shift from exclusive policies to a more inclusive culture for sexual and gender minorities will provide useful lessons for our society and organizations which wish to mirror these changes. Behavioral health providers in the military have a unique opportunity to facilitate a model for affirmative services not just for LGBT service members but for the wider military culture and even beyond. Behavioral health providers are the

linchpin for promoting awareness of LGBT health issues and highlighting barriers to care through education, research, and policy. With updated DoD policies that allow for advances such as gathering demographic data regarding sexual orientation and gender identity, there is a unique opportunity to create a welcoming and affirming environment for the provision of behavioral health services as well as eliminate healthcare disparities for LGBT service members (Ard & Makadon, 2012).

Elimination of health disparities has long been an overarching public health goal which surpasses the focus of military medicine. Health outcome data point to health disparities for sexual and gender minorities (Quinn et al., 2015; Shields et al., 2012). These disparities occur across a broad range of health outcomes to include cardiovascular disease, diabetes, and asthma (Fredriksen-Goldsen et al., 2013; Mayer et al., 2008; Ward et al., 2014), as well as health behaviors such as smoking (Grady et al., 2014), excessive alcohol use, and obesity (Conron, Mimiaga, & Landers, 2010; Mayer et al., 2008). With the intention of addressing health disparities for the LGBT community, the US Department of Health and Human Services' Healthy People 2020 initiative includes the goal of improving the health, safety, and well-being of LGBT persons. The US military and Veterans Health Administration have an opportunity to begin to implement system-wide policy changes, education at all levels, and research aimed at not just meeting this goal but also providing an example for other healthcare systems to help reach this initiative.

The Military Health System continues to work toward a model of care that is characterized as patient centered and fosters collaboration between the healthcare provider and patient. Patient-centered care requires competence to assess and incorporate sexual and gender identities of service members into their healthcare (Ard & Makadon, 2012). Preliminary research exploring LGBT individuals' experiences in healthcare is very limited within both the VHA and especially within the DoD. Lamda Legal (2010) in a civilian population survey found that over 50% of LGBT patients reported being treated disrespect-

fully by a provider and/or did not receive the required care. Additionally, LGBT patients reported having been refused care, were blamed for their health status, experienced abusive language with or about them, providers were physically rough, refused to touch them, and/or used excessive precautions. Even within behavioral healthcare, research suggests that during the last several decades many behavioral health providers continued to engage in practices that LGBT clients found to be biased, insensitive, and unhelpful (Herek & Garnets, 2007; Grant et al., 2010; Poteat, German, & Kerrigan, 2013). As an organization and healthcare system that values patient-centered care, the military must lead the way in improving LGBT service members' experiences in healthcare, and this will translate beyond the military.

As a whole, healthcare provider graduate education does not provide adequate training related to LGBT issues (Moll et al., 2014; Rutherford, McIntyre, Daley, & Ross, 2012). For example, Sherry, Whilde, and Patton (2005) found two thirds of psychology doctoral programs required a multicultural class; 29% of these did not incorporate LGBT issues. Only 10% of American Psychological Association members reported that they had been offered a course on LGBT clients in graduate school and 28% had no formal training whatsoever (Murphy, Rawlings, & Howe, 2002). Graduate education related to transgender people appears to be even less; in a recent survey of VHA behavioral health providers, over 85% reported a single class or less related to transgender issues and less than 40% reported competence to address transgender issues (Johnson & Federman, 2014). Further, medical training for transgender issues according to a recent study found variability in content, quality, and time related to LGBT topics and very little to no education related to transgender health issues in the curriculum of US medical schools (Obedin-Maliver et al., 2011). Grant et al. (2010) found similar to other reports that about half of all transgender individuals have to educate their medical providers on transgender care. Also reported was that transpeople delay preventative medical care 33% of the time and care for an

illness or injury 28% of the time related to fear of discrimination. Since there is such limited graduate level training for future providers in the provision of affirmative healthcare to LGBT persons, the US military and VHA training programs have a unique opportunity to advance the skill level of its providers who will benefit recipients both within the military and to the broader civilian sector. There is a lack of consensus on required competencies for all categories of healthcare providers (Shipherd, 2015) who care for LGBT individuals. The current policy changes within the DoD offer an unprecedented opportunity to explore the needed competencies and disseminate standards which would have broad applicability to both military and civilian sectors.

Future Directions

Within the past 5 years, the DoD has announced sweeping changes to end or limit discrimination based on sexual orientation and gender identity; yet the list of questions from service members and providers continues to grow. Research just prior to and following the changes in policy, in an effort to justify such efforts, has tended to have a narrow focus on acceptance of LGBT service members, their compatibility within the organizational culture, and the perceived impact of inclusion on unit cohesion, readiness, and effectiveness (Estrada, Dirosa, & Decostanza, 2013). From a behavioral health lens, we have an unprecedented opportunity of witnessing a military cultural shift toward greater inclusion and diversity which promises to transform the organization into a more cohesive, effective, and ready military force. Policy change alone has not translated overnight into a culture of inclusion that eliminates discrimination (Allsep, 2013; Burks, 2011). Victimization, harassment, and discrimination of LGBT service members may well continue and some argue will even exhibit an increase with lessened concealment (Burks, 2011). The impact on behavioral health may follow. While gone are the days where active duty providers may be caught in an ethical conundrum between beneficence to a patient and the call for proof of

gender or sexual memories for separation, increasing numbers of our LGBT service members will certainly mean increasing utilization of services. Thus, it becomes incumbent on behavioral health providers to seek out the training and competencies to work effectively with LGBT service members. Research focus should include investigation of the competencies required to provide patient-centered affirming care to these individuals. The DoD has a chance as well to investigate how recent policy changes and provider education impact patient outcomes, with the broader goal of improving the readiness of the combatant.

Effectively addressing individual psychological issues associated with serving as an LGBT service member with culturally sensitive and affirming behavioral health treatment will always be vital and should be informed by evidence-based practices. Given DADT, these individuals have not been well represented in social science research focusing on military populations (Trivette, 2010), and this has left a dearth of research on culturally sensitive evidence-based treatments for LGBT service members. However, until there is increased understanding of the societal or organizational factors that contribute to exclusion and discrimination and factors such as those featured in Meyers' (2003) Minority Stress Model, policy change will not translate into cultural change and individual LGBT service members will continue to experience undue adversity. Research must focus on the population-level factors contributing to exclusion and from there we can begin to address these organizational level factors to fully bring about inclusion and an environment where all service members can fully contribute to the military. Additionally, as mentioned earlier, LGBT individuals are at increased risk for mental health concerns. The National Academy of Medicine recognizes the LGBT community as underrepresented in research (IOM, 2011). The military with movement toward inclusion has opportunity with LGBT service members who have access to medical care to determine possible effective ways to reduce health disparities which subsequently could inform efforts to decrease health disparities on a

broader scale. One health outcome that can no longer be ignored is the increased risk of death by suicide. Efforts toward prevention must start with gathering of information related to LGBT service members who died by suicide and those who experience SITB. Research should continue to determine possible different interactive effects of stressors unique to being a sexual and/or gender minority individuals in the military, such as experiences of discrimination, sexual assault, and concealment to determine how these various experiences mutually interact to influence SITB, mental health, and military service.

As discussed throughout the chapter, gender and sexual minorities are a very heterogeneous group of service members. Research specific to transgender service member in general are almost none. Additionally, as the DoD embarks on implementation of inclusion and forthcoming guidance on affirming service members' gender identity through various possible processes research on implementation, healthcare provider attitudes, impact on service members' quality of life and military readiness, outcomes for transgender service members and the units they are assigned will be vital. Given the dearth of research related to transgender service members, the potential topics are endless and this research is essential to ensure component culturally sensitive care.

One place behavioral health providers are poised to play a role as we move into a future of inclusion is with an increasing emphasis on social justice. The skills a behavioral health provider possesses, knowledge of health and behavioral change, awareness of interpersonal dynamics, and an understanding of social psychology, are just the tools needed to facilitate these cultural shifts. Johnson et al. (2015) encourages those working in the military to move beyond the individual service member and consult with commanders and military policymakers regarding approaches to create a culture of inclusion. Given the nature of the military culture, unless key military leaders at both local and national levels support inclusion, the efforts will likely remain only at a policy level. Providers can point to the broader cultural shifts suggesting more positive

attitudes toward sexual and gender minorities. Additionally, post-DADT assessments of unit morale and cohesion indicate that many of the objections to the repeal related to unit cohesion have not been born out (Parco & Levy, 2013). The DoD's Comprehensive Review Working Group reported that 70–76% of military personnel reported repeal of DADT would have a positive, mixed, or no effect on task cohesion, and 67–78% predicted similar effects on social cohesion have not been found (Rostker et al., 2010). Rapid movement toward deliberate integration will likely only strengthen the unit through full access to a diverse force (Fassinger, 2008). Leadership support and system-level support for service members of all ranks as well as positive exposure and relationship development between LGBT and heterosexual, cisgender service members will be one of the most efficient means of achieving genuine integration of LGBT service members.

Conclusion

We are at the very center of revolutionary advances for sexual and gender minorities serving in the US Armed Forces. This chapter laid a foundation for providing behavioral healthcare to LGBT service members. A historical review of sexual and gender minorities in the military gave context to the chapter. A brief review of research and theory related to behavioral healthcare practices with LGBT service members was presented. This included some unique clinical considerations to include: use of affirmative approaches in behavioral healthcare, importance of attending to increase suicide risk, identity development, as well as the use of the Minority Stress Model as a theoretical foundation to better understand LGBT service members. Additionally, a brief discussion of clinical considerations for transgender service members was presented. Lastly, relevance of behavioral healthcare for LGBT service members beyond the military and future directions in research and behavioral healthcare were suggested to advance this exciting area of behavioral healthcare on both individual and broader population level.

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Understanding and Addressing Sexual Harassment and Sexual Assault in the US Military

21

Cynthia J. Thomsen, Valerie A. Stander,
Rachel E. Foster, and Jessica A. Gallus

The past three decades have seen increasing awareness and scrutiny of the problems of sexual assault and sexual harassment (collectively referred to here as “sexual violence” or “sexual

aggression”) within the US military. The Tailhook incident in 1991—in which 90 service members alleged sexual assault or harassment by officers during a convention (Newsweek Staff, 1992)—first attracted large-scale attention to the issue of sexual violence in the US military. Since that time, public concern about this issue has been kept alive by an ongoing series of high-profile incidents involving sexual aggression by service members, including scandals at the Aberdeen Proving Grounds in 1996 (Spinner, 1997), the Air Force Academy in 2003 (Thomas, 2003), and Lackland Air Force Base in 2012 (Dao, 2012), as well as repeated scandals involving service members stationed at military installations in Okinawa (Allen & Sumida, 2010; Wright, 2009). In addition to revealing systemic problems with the occurrence of sexual violence across all military branches, these events and others like them have highlighted deficiencies in how sexual assault cases have been handled within the military, including allegations that crimes were being covered up, offenders were not being appropriately prosecuted, and victims were being punished for coming forward (Parker, 2011). The documentary *The Invisible War* (Ziering, Barklow, & Dick, 2012) brought further attention to problems in how the military addresses sexual assault.

The primary purpose of the present chapter is to provide an overview of what is

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C.J. Thomsen (✉) • V.A. Stander
Health and Behavioral Sciences Department, Naval
Health Research Center, San Diego, CA, USA
e-mail: cynthia.j.thomsen.civ@mail.mil

R.E. Foster
Office of the Secretary of Defense, Family Advocacy
Program, United States Air Force,
Alexandria, VA, USA

J.A. Gallus
U.S. Army Sexual Harassment/Assault Response and
Prevention, Arlington, VA, USA

known about sexual assault and sexual harassment in the US military. We first define sexual assault and sexual harassment and provide evidence about rates of both types of sexual violence in the military. Next, we summarize research on risk factors for sexual violence and describe evidence regarding its effects on victims. In the following section, we briefly overview current Department of Defense (DoD) prevention and response efforts. Finally, we conclude with suggestions for future research and practice to address the problems of sexual assault and sexual harassment in the military.

Definitions and Prevalence

Definitions

Before discussing the prevalence of sexual harassment and assault within the military, it is important to understand how these terms are defined. In the DoD, “sexual assault” is an umbrella term encompassing a range of specific criminal offenses involving unwanted sexual contact, with or without penetration, as described in the Uniform Code of Military Justice (UCMJ). Specifically, the DoD defines sexual assault as:

...intentional sexual contact, characterized by use of force, threats, intimidation, abuse of authority, or when the victim does not or cannot consent. Sexual assault includes rape, forcible sodomy (oral or anal sex), and other unwanted sexual contact that is aggravated, abusive, or wrongful (to include unwanted and inappropriate sexual contact), or attempts to commit these offenses. (Department of Defense, 2013, p. 93)

Sexual harassment is defined as unwelcome sexual advances, requests, or other sexualized behavior pervasive enough to create a hostile working environment or involving the threat/promise of employment-related punishments/rewards (i.e., *quid pro quo*; Department of Defense, 1995).

Prevalence

The best available source of data for estimating the prevalence of sexual violence in the military is a large-scale, confidential survey assessing sexual victimization experiences, commissioned by the DoD, that has been periodically administered to representative samples of female active duty service members since 1988 and to male service members since 2006. (Similar surveys are regularly administered to Reserve Component members as well as to students at military service academies.) These surveys, entitled the Workplace and Gender Relations Survey of Active Duty Members (WGRA), are currently administered every 2 years by the DoD’s Research, Surveys, and Statistics Center (RSSC). In an exception to this pattern, the RAND Corporation was asked to design and conduct the 2014 survey due to congressional concerns about DoD objectivity. The most recent 2016 WGRA adopted new measures developed for the 2014 RAND Military Workplace Violence survey to more closely align with legal definitions of sexual assault and sexual harassment. Because different measures were used to assess sexual assault and sexual harassment prior to 2014, 2016 findings are not directly comparable to findings of WGRAs conducted prior to 2014 (Davis, Grifka, Williams, & Coffey, 2017).

Results of the 2016 WGRA (like those of previous WGRAs) support two conclusions consistently found in research on civilian samples: sexual harassment is substantially more common than sexual assault, and women are much more likely than men to experience both types of victimization. Specifically, in the past year, more than 1 in 5 women reported sexual harassment experiences, and about 1 in 23 women reported sexual assault experiences (21.4% vs. 4.3%). Among men, approximately 1 in 17 reported sexual harassment and 1 in 167 reported sexual assault (5.7% vs. 0.6%; Davis et al., 2017). In interpreting these estimates, it is important to bear in mind that they include the full range of sexual assault and sexual harassment experiences; that

is, sexual assault encompasses nonpenetrative as well penetrative unwanted sexual contact, and sexual harassment includes reports of sexually hostile work environments as well as more serious quid pro quo forms of harassment. A positive finding, based on repeated administrations of the WGRA, is that rates of sexual assault and harassment have generally declined over time (Davis et al., 2017; Morral, Gore, & Schell, 2016). For example, the annual incidence of sexual assault declined for both female and male service members between 2006 and 2016, and the decline between 2014 and 2016 was statistically significant for both groups (Davis et al., 2017).

A minority of sexual assault victims make official reports. There are many reasons why victims may decide not to report a sexual assault incident, including fears that they may not be believed, the stigma of being labeled a “victim” in a warrior culture, and concerns about possible reprisals or adverse effects on their careers (Childress, 2013; Mengeling, Booth, Torner, & Sadler, 2014). Over time, however, the number of victims making official sexual assault reports has increased, more than doubling between 2007 and 2016 (from 2846 to 6172, although note that some of these reports were for incidents that occurred more than 1 year in the past; Davis et al., 2017). The fact that the number of official reports has increased while the estimated number of victims (based on survey responses) has declined indicates that military victims of sexual assault are more likely to make an official report now than they were in the past; indeed, the DoD estimates that the percentage of victims making an official report has increased from 11% in 2012 to 32% in 2016 (Department of Defense Sexual Assault Prevention and Response Office [DoD], 2017). Increases in official reporting may be a result of heightened attention to and education about sexual assault within the DoD. Another contributing factor may be changes over time in military policies related to sexual assault. One change in particular that is likely to influence reporting of sexual assault is the introduction of a new restricted reporting option in 2005. Before that time, reporting a sexual assault would automatically initiate an investigation, and members of the victim’s command would be

informed on a need-to-know basis. The new policy provided another alternative: victims of sexual assault can file a restricted report. Restricted reports, which can only be given to certain individuals (healthcare providers, SAPR Sexual Assault Response Coordinators, and SAPR Victim Advocates), allow victims to access healthcare and other support services without requiring that their command be informed or that a criminal investigation be conducted.

Interestingly, despite the fact that survey results reveal sexual harassment to be much more common than sexual assault, harassment is less likely to be reported. Limiting reports to those for events that occurred within the past year, sexual assault is eight times more likely to be reported than sexual harassment (4794 vs. 601 in 2016; Davis et al., 2017, Appendix H; DoD, 2017). Given that protocols for sexual harassment (but not sexual assault) dictate resolution at the lowest possible level, it could be that many sexual harassment cases are resolved without the need for escalation to an official report. This is consistent with the survey-based finding that women and men are more likely to have discussed a sexual harassment complaint with someone in their chain of command (50% of women and 37% of men) than they are to have made an official report of sexual assault (31% of women and 15% of men; Davis et al., 2017). Victims also may be less likely to report sexual harassment because they perceive it as less serious than sexual assault, more difficult to prosecute, or as an experience that does not require leader or organization-level intervention.

Military-Civilian Comparisons

It has often been suggested that rates of sexual violence are higher in the military than in the civilian population (e.g., Allard, Nunnink, Gregory, Klest, & Platt, 2011; Bostock & Daley, 2007; Turchik & Wilson, 2010). However, it is difficult to make such comparisons in the absence of studies employing the same measures and methods with both populations, which are rare. An exception is the 2010 National Intimate Partner and Sexual Violence Survey (NISVS;

Black & Merrick, 2013), which compared rates of sexual assault experienced by three groups: active-duty women, wives of active-duty men, and women in the general population. Rates of sexual assault victimization did not differ significantly across these groups. Although we are unaware of any similar studies comparing rates of sexual assault victimization among military and civilian men, the DoD will study victimization among servicemen as well as servicewomen in an upcoming administration of the NISVS.

For sexual harassment, the best available comparison (although somewhat dated) is between military personnel and civilian government employees who completed the same measures of sexual harassment. Estimates based on these data reveal that total *annual* prevalence rates of sexual harassment among active duty men and women are substantially higher than *2-year* prevalence rates among civilian federal employees (Antecol & Cobb-Clark, 2001; Lancaster, 1999; Settles, Buchanan, & Colar, 2012). A meta-analysis comparing rates of sexual harassment of women across academic, private sector, government, and military samples also showed that rates of sexual harassment were highest in military samples (Ilies, Hauserman, Schwochau, & Stibal, 2003). In sum, the best available evidence, while scant, suggests that sexual harassment is more common in military than civilian settings, whereas rates of sexual assault are similar across both settings. In 2016, the DoD created and fielded a civilian version of the WGRA for the first time, which will yield more current information about differences in rates of sexual harassment and sexual assault between military and civilian federal employees.

Gender Differences in Sexual Harassment and Assault Experiences

As discussed previously, both sexual harassment and sexual assault are broad terms covering a wide range of experiences. Thus, even if rates of sexual victimization were the same for military and civilian personnel, or for servicemen and servicewomen, the nature of their sexual victimiza-

tion experiences could be very different. In fact, evidence from the 2014 RAND survey (Morrall et al., 2016) and the DoD's WGRAs (e.g., Davis et al., 2017) about service members' self-identified worst sexual assault experience suggests that the experiences of military men and women differ substantially. Among those reporting sexual assault experiences in the 2016 WGRA (Davis et al., 2017), women, compared to men, were more likely to describe experiences involving penetration (48% vs. 35%), when they had been drinking alcohol (48% vs. 30%) and the perpetrator had been drinking alcohol (49% vs. 26%). Compared to men, women also were more likely to report that their assailant was a friend or acquaintance (58% vs. 43%) and a man or a mixed-gender group (98% vs. 69%). Conversely, servicemen were more likely than servicewomen to have been assaulted at work during duty hours (45% vs. 27%) and less likely to have been assaulted at their own or someone else's home or quarters (25% vs. 45%). Finally, evidence suggests that sexual assault victimization experiences occurred in different contexts or were interpreted differently by men and women; specifically, men were more likely than women to consider their most distressing sexual assault event to be hazing or bullying (44% vs. 25%). These substantial differences in the sexual assault experiences of servicemen and women, and the pervasive myths surrounding male experiences of sexual assault (i.e., that men cannot be raped, that male-on-male rape is a reflection of sexual orientation; Turchik & Edwards, 2012), may help to explain the greater reluctance of servicemen to make official reports of sexual assaults occurring during military service (17% of men vs. 43% of women; Davis et al., 2017, Appendix B).

Risk Factors for Sexual Violence

Surprisingly little research has attempted to characterize risk and protective factors for sexual violence in military contexts. The research that does exist has primarily examined risk factors identified in civilian research rather than exploring military-specific factors that may increase or

decrease the likelihood of sexual violence. In addition, studies have most often focused on risk factors for victimization rather than perpetration and on the normative case involving a female victim and a male perpetrator. Finally, although research on the predictors of sexual harassment in the military often has considered institutional and environmental risk factors, research on sexual assault has primarily focused on individual difference factors. Below, we briefly review existing evidence regarding risk factors for sexual violence in the military, including both environmental characteristics and individual differences.

Environmental Risk Factors

The influential model of sexual harassment developed by Fitzgerald and colleagues (1994) identifies two primary contextual factors affecting the likelihood of sexual harassment within an organization. The first, “organizational climate,” refers to perceptions of the extent to which the organization tolerates sexual harassment; the second, “job gender context,” describes the gendered nature of the work group as manifested by its gender composition, as well as the gender with which the work is traditionally associated. Thus, the model suggests that sexual harassment of women is more likely to occur when it is tolerated by the organization, when women work in predominantly male groups, and when they perform work that is stereotypically masculine. The latter two conditions generally characterize military workplaces, although there are differences across services and occupational specialties.

In support of this model, Fitzgerald, Drasgow, and Magley (1999) showed that organizational climate and job gender context predicted the likelihood of sexual harassment for both servicemen and women (cf. Harris, McDonald, & Sparks, 2017). Subsequent research has replicated this finding and extended it to show effects of organizational climate and job gender context on likelihood of sexual assault (Harned, Ormerod, Palmieri, Collinsworth, & Reed, 2002; Sadler, Booth, Cook, & Doebbeling, 2003). Moreover,

Sadler and colleagues (2017) recently provided evidence that even negative leader behaviors not directly related to sexual aggression (e.g., showing favoritism, embarrassing service members in front of other service members, being more concerned with mission accomplishment than with ethical behavior) were associated with an increased likelihood of sexual assault.

Individual Risk Factors for Perpetration

Almost no military research has studied potential perpetrators to determine risk factors for perpetrating sexual aggression; as a result, much of our knowledge on this subject comes from reports of military victims or is extrapolated from civilian studies of risk factors for sexual violence perpetration. Risk factors for perpetration based on victim reports (e.g., in the WGRA; Davis et al., 2017) are generally limited to demographic and military characteristics (e.g., gender, rank). Civilian studies of risk factors based on the responses of perpetrators reveal a broader range of predictive factors, including adverse childhood experiences (e.g., physical or sexual abuse), attitudinal variables (e.g., hostility toward women, rape myth acceptance), personality traits (e.g., hypermasculinity, psychopathy), and high-risk behavioral patterns (e.g., delinquent or aggressive behavior, high numbers of sexual partners, heavy alcohol use; Abbey, Jacques-Tiura, & LeBreton, 2011; Abbey, Wegner, Pierce, & Jacques-Tiura, 2012; Greene & Davis, 2011; Groth, 1979; Murnen, Wright, & Kaluzny, 2002; Parkhill & Abbey, 2008; Tharp et al., 2013; White & Smith, 2004).

The first large-scale study to assess self-reported perpetration of sexual assault by service members was the Navy Survey of Recruits' Behavior (SRB; Merrill, Thomsen, Gold, & Milner, 2001; Stander, Merrill, Thomsen, Crouch, & Milner, 2008). In this study, incoming Navy recruits (5969 males and 5226 females) were surveyed during basic training between 1996 and 1997. The survey assessed a wide range of attitudinal, experiential, and behavioral factors, includ-

ing sexual assault (victimization for females, perpetration for males). Approximately half of the sample was invited to participate in a longitudinal effort, with follow-up surveys at 6, 12, and 24 months after baseline. Analyses of these data showed that men who entered the military with a history of premilitary sexual assault perpetration, compared to men without such a history, were dramatically more likely to commit sexual assault while in the military (McWhorter, Stander, Merrill, Thomsen, & Milner, 2009), replicating a finding that previously had been demonstrated in civilian contexts (Abbey & McAuslan, 2004; Gidycz, Warkentin, & Orchowski, 2007; Lisak & Miller, 2002; Loh, Gidycz, Lobo, & Luthra, 2005; White & Smith, 2004; but see Swartout et al., 2015). Most recently, Stander et al. (in press) used data from the SRB to test a model of risk factors for perpetration of sexual assault and sexual harassment during the second year of military service. After statistically controlling for men's prior history of sexual assault and sexual harassment, several factors predicted future perpetration; these included delinquency and misconduct, hostility toward women, a large number of sexual partners, and heavy drinking. Interestingly, these factors were equally predictive of perpetrating sexual assault and sexual harassment. Finally, perpetration of sexual harassment in the second year of service also predicted second-year sexual assault perpetration and partially mediated the effects of all other risk factors on the risk of sexual assault perpetration.

More recently, drawing on data from the Army STARRS study, Rosellini et al. (2017) analyzed the survey responses of 21,832 soldiers entering the Army between 2011 and 2012 to predict administratively recorded sexual violence perpetration (among other negative outcomes). Although this report did not focus exclusively on sexual assault, it did identify several risk factors for sexual violence perpetration. These included childhood physical abuse, childhood behavioral disorders, family history of mental illness, insecure attachment style, high religiosity, anxiety disorders, physical assault victimization, higher number of sexual partners, and history of self-harm. It is noteworthy that both the Navy SRB

and the Army STARRS studies focused on individual difference factors rather than contextual factors associated with increased risk of sexual violence perpetration and that neither considered military-specific risk factors (vs. risk factors identified in the civilian literature).

Individual Risk Factors for Victimization

To date, research on risk factors for sexual victimization has focused primarily on female victims. As previously discussed, female service members are more likely than their male counterparts to experience sexual assault and harassment. It is noteworthy, however, that because the military population is predominantly male, there are numerically more male than female military victims of sexual violence (Morrall et al., 2016). As in the civilian world (Humphrey & White, 2000), youth is a risk factor for sexual assault victimization in the military (Surís & Lind, 2008). Further, within the military, age is somewhat confounded with institutional power in the form of rank. Not surprisingly, personnel in the junior enlisted ranks are most likely to experience both sexual harassment and sexual assault in the military (Morrall et al., 2016; Sadler et al., 2003).

Another risk factor that has been well established among both servicewomen (Merrill et al., 1999; Sadler et al., 2003; Stander, Rabenhorst, Thomsen, Milner, & Merrill, 2006; Wilson, Kimbrel, Meyer, Young, & Morissette, 2015) and civilian women (e.g., Gidycz, Hanson, & Layman, 1995) is a prior history of victimization (e.g., childhood abuse, prior adult sexual assault). Relatedly, having been sexually harassed in the military is also a risk factor for being sexually assaulted in the military (Firestone, Miller, & Harris, 2012; Sadler et al., 2003). Indeed, it is uncommon to find a victim of sexual assault who was not previously sexually harassed (Firestone et al., 2012). Likewise, the perpetrator who sexually assaults a servicewoman typically sexually harassed her first (Sadler et al., 2003). Importantly, the link between sexual harassment and sexual

assault victimization has been documented for servicemen as well as women, and it appears to be even stronger for servicemen. In the 2016 WGRA, women who had been sexually harassed in the past year, compared to those who had not, were 16 times more likely to have been sexually assaulted as well; among men, those who had been sexually harassed were 50 times more likely to have been sexually assaulted (DoD, 2017; cf. Morral et al., 2016).

In female civilian samples, research has identified a number of other individual differences that may be associated with increased risk of sexual assault; these include behavioral factors, such as high numbers of sexual partners and risky patterns of alcohol use (MacGreene & Navarro, 1998; Parks, Hsieh, Bradizza, & Romosz, 2008; Testa, VanZile-Tamsen, & Livingston, 2007; but see Gidycz et al., 1995), poor recognition of risk in potentially dangerous sexual situations (Wilson, Calhoun, & Bernat, 1999), low sexual refusal assertiveness (Livingston, Testa, & VanZile-Tamsen, 2007), and low assertiveness with men (MacGreene & Navarro, 1998). Unfortunately, little research has examined whether these (or other) factors increase the risk of sexual assault victimization among service-women or among men (whether civilian or military).

In the military, the likelihood of sexual victimization varies by branch of service; these between-service differences may be the result of both individual and environmental factors that differentiate the services. That is, different types of individuals may be attracted to, recruited by, or retained by each service, and the services may also differ in culture, norms, and organizational structure. In the 2016 WGRA (Davis et al., 2017), as in previous iterations of the survey, men and women in the Air Force reported the lowest rates of sexual assault and sexual harassment. Among women, rates of sexual assault and sexual harassment were highest in the Marine Corps and Navy; for men, rates were highest in the Navy. In part, these differences might be attributable to cross-service differences in job gender context. First, the proportion of female service members is lowest in the Marine Corps and highest in the Air

Force. In addition, it might be argued that the Marine Corps is the most stereotypically masculine branch of service. At the same time, other differences in the demographic profiles of the services could also explain between-service variation in estimated rates of sexual violence. For example, given that youth is a risk factor for both victimization and perpetration of sexual violence, the greater youth of the Marine Corps, compared to the other services, may also help to explain between-service differences in rates of sexual violence.

Effects of Sexual Harassment and Sexual Assault

Research on civilian populations has documented adverse effects of sexual trauma on the mental and physical health of (primarily female) victims, and they are considerable. In the general population, rape has the highest victim cost of any non-fatal crime (Miller, Cohen, & Wiersema, 1996). McCollister, French, and Fang (2010) concluded that the average cost of a sexual assault to society is \$240,776 (cf. Post, Mezey, Maxwell, & Wibert, 2002; for a review of research on the cost of different types of victimization, see Wickramasekera, Wright, Elsey, Murray, & Tubeuf, 2015). It is likely that sexual assault and sexual harassment also pose significant financial costs to the military. These costs include those associated with providing support and treatment to victims and prosecuting alleged offenders, as well as lost duty time or the complete loss of highly trained and well-qualified personnel to attrition. At a broader level, sexual violence also may result in reduced morale, unit cohesion, and operational readiness.

Evidence for many of these outcomes in military populations remains largely anecdotal. However, there is substantial evidence that both sexual assault and sexual harassment in the military are linked to adverse mental and physical health outcomes. Posttraumatic stress disorder (PTSD) has been the most commonly studied outcome of sexual trauma in both civilian and military samples. Among civilians, sexual assault is more likely than any other type of trauma to

result in PTSD (Breslau, Davis, Andreski, & Peterson, 1991; Creamer, Burgess, & McFarlane, 2001; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Schnurr, Friedman, & Bernardy, 2002). Furthermore, sexual trauma may have even stronger adverse effects when it occurs in the military context. Several studies have shown that PTSD is more likely to result from sexual trauma that occurred during military service than in civilian life (Himmelfarb, Yaeger, & Mintz, 2006; Surís, Lind, Kashner, & Borman, 2007; Surís, Lind, Kashner, Borman, & Petty, 2004). In addition, compared with other operational stressors, including combat exposure, sexual trauma has a greater impact on PTSD symptoms (Bell, Roth, & Weed, 1998; Fontana & Rosenheck, 1998; Wolfe et al., 1998; Yaeger, Himmelfarb, Cammack, & Mintz, 2006). Many possibilities have been advanced to explain why sexual violence in the military may be particularly traumatic. For example, service members, compared to civilians, may feel a greater sense of betrayal after an assault by a fellow service member because of the military's emphasis on teamwork, cohesion, and trust. Also, military victims may be more likely than civilian victims to work with the perpetrator, and they may be forced to continue working together after the assault. Further, if the perpetrator was above the victim in the chain of command, he or she is likely to have greater power over the victim than would be the case for a civilian supervisor. Unfortunately, empirical research has not evaluated the relative importance of these potential military-specific vulnerability factors. It should also be noted that many military victims of sexual violence experience multiple incidents of sexual harassment and/or sexual assault (Davis et al., 2017). It is likely that service members with multiple sexual victimizations will exhibit more severe cumulative effects and that operational stressors such as combat exposure may further compound the impact of sexual victimization on service members (Smith et al., 2008; Street, Gradus, Giasson, Vogt, & Resick, 2013).

Beyond PTSD, sexual victimization in the military is associated with a wide range of other serious adverse effects. These include increases

in risk for other mental and behavioral health problems (e.g., depression, substance abuse, eating disorders), as well as physical health problems (e.g., chronic health problems, chronic pain, obesity) and other life difficulties (e.g., relationship problems; Harned et al., 2002; Kimerling, Gima, Smith, Street, & Frayne, 2007; Luterek, Bittinger, & Simpson, 2011; Magley, Waldo, Drasgow, & Fitzgerald, 1999; Millegan et al., 2015; Millegan, Wang, Leardmann, Miletich, & Street, 2016; O'Brien & Sher, 2013; Street, Stafford, Mahan, & Hendricks, 2008; Surís et al., 2004; for a review, see Surís & Lind, 2008). Although fewer studies have examined the effects of sexual victimization on male service members or compared the impact of sexual victimization on servicemen and women, evidence to date suggests that the consequences of military sexual trauma are as bad or even worse for military men than for military women (Bell, Turchik, & Karpenko, 2014; Firestone et al., 2012; Himmelfarb et al., 2006; Kang, Dalager, Mahan, & Ishii, 2005; O'Brien, Gaher, Pope, & Smiley, 2008; Shipherd, Pineles, Gradus, & Resick, 2009; Street, Gradus, Stafford, & Kelly, 2007; Street et al., 2013; Voelkel, Pukay-Martin, Walter, & Chard, 2015; Vogt, Pless, King, & King, 2005). Similarly, some research on the effects of civilian sexual assault has shown greater adverse effects on male than on female victims (Elliott, Mok, & Briere, 2004; Kimerling, Rellini, Kelly, Judson, & Learman, 2002).

In addition to its effects on health, sexual victimization likely undermines the readiness of service members. First, sexual harassment reduces work satisfaction among both male and female service members (Fitzgerald et al., 1999). Further, among servicewomen, working in an environment where sexual aggression was tolerated was associated with reduced work satisfaction, even for those who did not personally experience victimization (Harned et al., 2002). In turn, low work satisfaction has been associated with lower productivity and organizational commitment (Fitzgerald et al., 1999; Harned et al., 2002), as well as increased absenteeism and reduced worker retention (Somers, 1995). Consistent with these findings, results from the

large-scale, longitudinal Millennium Cohort Study (Millegan et al., 2015, 2016) showed adverse career effects of sexual victimization on servicewomen (greater reported work difficulties due to emotional problems, greater likelihood of demotion; Millegan et al., 2015) and on servicemen (more likely to leave the military; Millegan et al., 2016). In the longer term, servicemen who experienced sexual aggression, compared to those who did not, were more likely to be disabled or unemployed (Millegan et al., 2016). Finally, emerging evidence suggests that service members who were sexually victimized while in the military may be at an increased risk of homelessness following separation from service (Pavao et al., 2013) and that the association between military sexual trauma and veteran homelessness may be significantly stronger for men than for women (Brignone et al., 2016).

Prevention and Response

Over the years since the Tailhook incident (Newsweek Staff, 1992), a series of federal panels, committees, and task forces have been convened to address issues related to sexual violence within the military and service academies, each culminating in recommendations for change to policy and practice. The resulting legal and policy alterations are too numerous to describe here but include mandates for the DoD to develop comprehensive programs and policies addressing sexual assault; new annual reporting requirements regarding rates of sexual assault and progress in prevention and response; changes to UCMJ sexual assault statutes; the creation of additional support systems and advocates for sexual assault victims; and new standards for the level of authority and training required to oversee and adjudicate sexual assault cases. Because of these changes, sexual assault prevention and education initiatives within the DoD have expanded, as have the options available to military victims of sexual assault.

In the civilian world, sexual assault and sexual harassment are typically handled through different administrative mechanisms (e.g., criminal

courts vs. equal opportunity offices), and this practice has been carried over into the military context. In the DoD and most of the services, sexual assault is a crime prosecuted within the military legal system, and programmatic efforts to address the problem of sexual assault are coordinated by SAPR offices. In contrast, sexual harassment falls under the purview of diversity management and equal opportunity programs and is to be reported to equal opportunity offices if it cannot be resolved informally through the chain of command. In a departure from this separation, about 10 years ago the Army combined its sexual harassment and sexual assault programs to create the Army Sexual Harassment/Assault Response and Prevention (SHARP) program.

The relative advantages and disadvantages of a unified approach to sexual harassment and sexual assault have not been systematically explored. From a prevention perspective, at least, it makes good sense that both problems be addressed in parallel. As discussed previously, for both victims and perpetrators, sexual assault seldom occurs without sexual harassment (DoD, 2017; Firestone et al., 2012; Harned et al., 2002; Sadler et al., 2003; Stander, Thomsen, Merrill, & Milner, *in press*), and there is evidence of common risk factors for both types of violence (Harned et al., 2002; Stander et al., *in press*). Although the Army may have most enthusiastically embraced the idea of an integrated approach to preventing both sexual harassment and sexual assault, the DoD and the other services have also incorporated this idea into universal prevention and education efforts via continuum of harm models. These models suggest that tolerating relatively minor sexist or sexual harassment behaviors is likely to increase rates of sexually hostile or aggressive behaviors, including sexual assault. Current trainings attempt to create cultural change by emphasizing the need for all personnel to intervene at the first sign of sexism or sexual aggression in order to ensure the safety of fellow service members and contribute to the creation of a culture in which sexual aggression is unacceptable. These bystander intervention training programs have

been widely implemented throughout the DoD as part of SAPR efforts.

From the perspective of supporting and treating victims, there may also be little advantage to differentiating sexual harassment from sexual assault, given that both have similar effects on victims (Magley et al., 1999; Street et al., 2008; Surís & Lind, 2008). Indeed, the Department of Veterans Affairs (VA) does not distinguish between the two, using the term military sexual trauma (MST) to encompass both types of sexual violence (Kimerling et al., 2007). Medical care for victims of MST is not dictated by the nature of their victimization experiences, but rather tailored to each individual's symptoms and mental or physical health needs. As discussed earlier, PTSD is the mental health condition most common among victims of MST, although a wide range of other psychological health problems also are common (Surís & Lind, 2008). Both the DoD and VA have identified gold standard, evidence-based treatments for PTSD and other common mental health problems. It is unknown whether the therapeutic needs of service members or veterans with PTSD differ depending on whether the index trauma was MST or another type of trauma. Nor do we know whether the same treatments are equally effective for male and female victims of MST, although recent studies have begun to examine these issues (e.g., Tiet, Leyva, Blau, Turchik, & Rosen, 2015; Voelkel et al., 2015).

The challenge of an integrated approach to sexual harassment and sexual assault is greatest when it comes to responding to alleged perpetrators. As discussed previously, the two issues are handled through entirely separate systems in both military and civilian contexts. Anecdotal evidence suggests that many service members worry that linking the two types of sexual aggression will lead to overreactions, as relatively minor forms of sexual harassment may be linked to more extreme forms of sexual assault, and workplace infractions are considered under the same rubric as serious criminal offenses. It clearly would require major revisions to current thinking about the consequences of each type of offense, as well as to organizational structures and poli-

cies, if it were determined that responding to the perpetrators of sexual harassment and sexual assault should occur within a single unified system.

Conclusions and Future Directions

Sexual assault and sexual harassment are clearly significant problems, not only in the Armed Forces but also in society as a whole. These issues are particularly critical in the military, however, because in addition to their well-established and long-term effects on individual health and well-being, they also may erode unit cohesion, degrade military readiness, and ultimately undermine the effective performance of the Armed Forces. Unfortunately, research to date has focused primarily on health outcomes, so empirical evidence regarding the effects of sexual violence on military readiness and performance is limited (but see Fitzgerald et al., 1999; Harned et al., 2002; Millegan et al., 2015, 2016). In addition, because research examining the effects of sexual violence has primarily focused on female victims, knowledge of the effects of sexual violence on male service members is scant. A better understanding of how servicemen are impacted by sexual victimization is particularly important given evidence that more men than women experience sexual assault in the military (Morrall et al., 2016).

Development of effective prevention programs critically depends on comprehensive information regarding risk and protective factors for sexual violence that are both salient and modifiable in the military context. For example, as discussed previously, there is currently a consensus within the DoD (as elsewhere) that a sexist environment creates opportunities for sexual harassment and that sexual harassment in turn is a risk factor for sexual assault. However, more research is needed on the best ways to reduce sexism within military environments in order to inhibit sexual aggression. Similarly, optimal prevention requires empirical evidence on how to best disrupt escalation across the continuum of harm, from sexism to sexual harassment to sexual

assault. Although current military prevention and intervention efforts targeting sexual harassment hold promise for reducing sexual assault as well as harassment, there is little published evidence on this point.

It is noteworthy that very little empirical research has examined risk and protective factors for sexual violence victimization or perpetration in military contexts and that most existing research of this type has examined risk factors identified in the civilian research literature rather than testing military-specific factors. Key military-specific factors may include individual differences (e.g., characteristics common to individuals who elect to serve or remain in the military) as well as characteristics of military life (e.g., frequent changes of geographic location including deployment, leader attitudes or behaviors). In addition, many existing studies have included either individual differences or contextual predictors in their models, but not both; this is an important limitation because it is clear that a complete understanding of the dynamics of sexual aggression and victimization cannot be achieved without considering both types of factors and evaluating their interplay. This is implicitly acknowledged by the DoD SAPR Office's adoption of the social ecological model of risk, which highlights predictive factors at every level, ranging from broad societal influences to specific individual differences (see Department of Defense Sexual Assault Prevention and Response Office, 2016, p. 21). Finally, most of the limited existing literature has focused on risk factors for the normative case in which a female is sexually victimized by a male; an important and under-addressed question is whether the factors that increase the risk of sexual victimization and sexual violence perpetration are the same regardless of victim and perpetrator gender.

Over the past several years, the DoD's primary efforts to prevent sexual assault have consisted of annual trainings educating service members about sexual violence and available SAPR resources, reinforcing military norms contrary to the perpetration of sexual violence, and promoting bystander intervention. Although these efforts clearly have face validity as sexual

assault prevention strategies, and some evidence from the civilian sector supports the utility of prevention efforts based on bystander intervention (e.g., Coker et al., 2017), there is no military-specific research evidence establishing that these prevention efforts target the modifiable risk factors that are most important and impactful in the military context. Likewise, very few empirical evaluations have been conducted to determine whether these interventions significantly reduce risk of sexual harassment or sexual assault, and some of the limited research that has been done remains unpublished and inaccessible to the broader scientific community.

Reviews of the civilian sexual assault prevention literature (Anderson & Whiston, 2005; DeGue et al., 2014; Vladutiu, Martin, & Macy, 2011) suggest that relatively brief annual trainings such as those provided through SAPR are unlikely to have a major impact on rates of sexual assault. To be maximally successful, interventions will likely need to be longer-lasting and more intensive. Successful programs are also likely to require multipronged efforts with a variety of strategies targeting multiple socioecological levels to change environmental/contextual factors (culture, policy) as well as individual factors (attitudes, behaviors). In a highly successful and well-publicized example of such a program, a multifaceted intervention launched at Naval Station Great Lakes in 2011 reportedly reduced sexual assault by more than 60%, at a time when rates in the Navy as a whole were increasing (Shanker, 2013). This program—which includes exposure to a variety of prevention materials and trainings over time as well as a range of environmental interventions (e.g., patrols to identify sailors engaging in risky behavior, changes in regulations to limit alcohol sales on base, outreach to local bars)—has since been implemented at other Navy bases (Hlad, 2013). Unfortunately, rigorous and systematic empirical study of the program has not been conducted, reducing the reach and impact of these results on other sexual assault prevention efforts.

It might be useful to augment current universal interventions aimed at reducing risk among the military population as a whole with other tar-

geted prevention efforts. The most widely considered approaches in this regard involve screening to identify individuals at particularly high risk of sexual assault perpetration or victimization. If valid and reliable screening instruments were available, they could be used either (a) to provide targeted interventions to those at high risk of victimization or perpetration or (b) (in the case of likely perpetrators) to prevent them from entering the military. Recent studies conducted under the auspices of the Army STARRS research program suggest that it may be possible to use survey responses to identify service members at heightened risk of both sexual assault perpetration (Rosellini et al., 2017) and victimization (Street et al., 2016). It is important to note, however, that responses to the STARRS survey were confidential and not part of official military records. Given evidence that service members are dramatically more likely to report sensitive information when responses are confidential or anonymous than when they are not (Olson, Stander, & Merrill, 2004; Warner et al., 2011), it is uncertain whether likely perpetrators or victims could still be identified using nonanonymous data collected for official military purposes.

A second concern about screening, either to implement targeted interventions or to exclude those at high risk of perpetration from service, is the possibility that it might have unintended negative consequences. With respect to providing targeted interventions, if not done with care and discretion, identifying individuals at risk of victimization in order to provide them with targeted prevention programs may re-traumatize victims or reinforce the idea that victims are responsible for their own sexual victimization, when in fact the blame must lie squarely with the perpetrator. Likewise, screening to identify and intervene with potential perpetrators runs the risk of stigmatizing them or even increasing their risk of perpetration through self-fulfilling prophecy or behavioral confirmation effects (Chen & Bargh, 1997; Kassin, Goldstein, & Savitzky, 2003).

Screening incoming service members to exclude those at high risk of sexual violence perpetration from service also requires careful

consideration. More specifically, it is important to broadly consider the potential impact of screening, not only on rates of sexual assault and other antisocial behaviors but also on the prevalence of characteristics that may in some cases be critical to successful mission performance (e.g., aggression, dominance). Further, screening may be ethically problematic if it is based on risk factors that are beyond the individual's control (e.g., a history of childhood abuse). Unless a screening tool shows high levels of both specificity and sensitivity, it could end up disqualifying potentially valuable recruits while failing to significantly reduce the number of personnel at high risk for sexual violence entering the military. These potential hazards suggest the need to carefully evaluate the utility of screening approaches prior to their implementation to ensure that they are maximally accurate and that their use would not result in unanticipated negative consequences. Finally, evidence that leadership plays a key role in setting the tone with respect to whether sexual harassment and sexual assault will be tolerated (Sadler et al., 2003, 2017) raises the interesting possibility that screening leaders to eliminate those at risk of tolerating sexism and sexual aggression might be easier to implement and might have an impact on rates of sexual aggression equal to or greater than that of screening incoming service members.

Ultimately, maximally effective efforts to prevent sexual harassment and sexual assault in the military will need to be multipronged, employing a variety of strategies that target multiple socioecological levels and include both environmental/contextual factors (culture, policy) as well as individual factors (attitudes, behaviors). These efforts will have to be sustained over time through a consistent investment of both attention and resources toward solving the problem of sexual violence within the military. Although there are many ways in which there is still room for improvement, the US military already has established a program to prevent and respond to sexual aggression among its ranks that is arguably more systematic and wide-reaching than that of any other institution of its

size and complexity. In the future, it will be important for the DoD to remain in the vanguard of this fight and to make additional strides in evaluating and documenting programmatic elements that are essential to best practice. Although it is unlikely that sexual harassment and sexual assault will be completely eliminated, in the military or in any other context, these types of intensive efforts hopefully can minimize it and can also inform efforts to address the problem across other sectors of society.

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America's service academies endeavor to achieve two simultaneous purposes. On the one hand, they honor and encourage the civilized pursuit of knowledge in a range of academic disciplines; on the other, they must train the nation's sons and daughters for war (McGuire, 1990). This unavoidable tension in the service academy mission was nicely articulated by former Naval Academy Superintendent Vice Admiral James Calvert who compared the academy's task to "...striking a delicate balance between culture and might, between intellect and finely-honed brawn, between Athens and Sparta" (DeCamp, 1974, p. 5). Psychologists have long played instrumental roles in this challenging mission as educators, clinicians, researchers, consultants, and mentors for service academy students – *cadets* at Army and Air Force and *midshipmen* at Navy – as well as for uniformed instructors and institutional leaders. In this chapter, we offer a brief synopsis of the varied roles filled by service academy psychologists.

In 1946, the US Military Academy (West Point) created an Office of Military Psychology and Leadership and began to develop academic

courses in applied psychology (McGuire, 1990). Over the years, West Point continued to build a robust academic department and several majors in the behavioral sciences. The Naval Academy (Annapolis) did not follow the Army's example. Instead, it continued to emphasize an engineering curriculum. The Navy's leadership curriculum continued to emphasize applied military leadership skills as opposed to an evidence-based, behavioral science-infused curriculum. This distinction between West Point and Annapolis in the emphasis on behavioral sciences may come down to striking difference in the institution's perceived academic missions. According to DeCamp, "At West Point, the goal was laying a foundation upon which an officer could build throughout a career. West Point was preparing future Generals, not just Second Lieutenants. In contrast, at Annapolis, the mission was that of producing immediately available junior officers" (1974, p. 54). At its founding in 1954, the United States Air Force Academy (USAFA) followed West Point's example.

West Point and Air Force each have an academic department that grants bachelor of science degrees in a variety of behavioral sciences disciplines. At West Point, cadets may major in psychology, engineering psychology, sociology, or management. The behavioral sciences department at USAFA offers degrees in leadership, human factors, and systems design and a general behavioral sciences major. West Point also offers

M.D. Matthews (✉)
The United States Military Academy,
West Point, NY, USA
e-mail: lm6270@usma.edu

W.B. Johnson
The United States Naval Academy, Annapolis,
MD, USA

a degree in leadership, as a separate track within its psychology program. Both institutions have offered academic majors in the behavioral sciences since the 1970s and attract large numbers of cadets to their various academic majors. At Annapolis, midshipmen take two core leadership courses that are infused with modules from the behavioral and social sciences. Midshipmen may also take a range of electives in psychology and sociology as well as independent research courses in the behavioral sciences. To date, the Naval Academy does not offer a major in psychology.

To serve the primary function of cadet education and development, the behavioral sciences departments at West Point and USAFA employ large numbers of psychologists and sociologists. Altogether, over 80 behavioral scientists are employed as faculty at these two institutions. They are composed of a mix of both military and civilian faculty. An added aspect of faculty diversity is that both institutions utilize a model where relatively junior military officers – mostly captains and junior majors – are sent to graduate programs in various subdisciplines of the behavioral sciences to earn a master's degree and then serve 3- to 4-year tours teaching in their specialty at their respective service academy and complete the remainder of their military careers in operational assignments. The Naval Academy employs a much smaller cadre of psychologists, primarily rotational Medical Service Corps officers with doctorate degrees in clinical psychology.

This faculty composition model is significant when considering the role of the service academies in military psychology. Because the junior military faculty serve relatively short tours, both academies must constantly put officers into graduate school in order to replace departing members. This has the impact of greatly increasing the number of master's-level educated officers who continue to serve in the Army and Air Force, many of whom eventually rise to the ranks of strategic leaders. At all three service academies, the faculty composition model also includes doctoral-educated officers. At West Point and USAFA, officers who excel in their initial academy assignments may be selected later to attend graduate schools, complete their doctorates, and

return to their respective academies to serve in more senior positions. At Annapolis, there are several senior naval officers with doctorates in industrial/organizational psychology and military sociology. These permanent military professors (PMPs) are selected from the fleet communities following their successful tours as commanding officers. PMPs are sent to complete their PhDs in the behavioral sciences and then return to the Naval Academy to teach for the remainder of their careers. At each of the service academies, civilian professors holding doctorate degrees round out the composition of the faculty. Doctoral-level faculty help train and mentor junior faculty, direct majors programs and courses, and engage in scholarship, to include mentoring junior faculty in this domain. Altogether, this faculty mix provides cadets and midshipmen with a blend of operationally experienced and highly educated officers, complemented by high-quality civilian professors, to educate, train, and inspire the next generation of military leaders.

The following sections provide a brief review of the different domains in which military psychologists assigned to faculty duty at service academies contribute to military psychology in general. As is clear from this summary, their contributions are broad and diverse.

Roles of Military Psychologists at US Service Academies

Education

The primary mission for military psychologists assigned to faculty duty is to educate future officers about the scientific basis of human behavior, particularly as it relates to leadership. Together, the service academies graduate and commission over 3000 officers each year, all of whom have a basic understanding of behavioral sciences and leadership. At West Point, cadets take a core course in introductory psychology during their first or "plebe" year. The course uses a standard introductory psychology textbook and covers a wide variety of topics typically found in basic

psychology courses at all institutions of higher learning, but the topics are framed wherever possible in ways that underscore the relevance of psychology to leading others. For example, lessons on the biological basis of behavior emphasize the neurobiological substrate of stress, attention, and traumatic brain injury. Lessons on social psychology link those constructs to understanding group dynamics in small teams. The Air Force Academy requires the same course of its first-year cadets. At the Navy Academy, all plebes take a core leadership course infused with key research studies and evidence-based principles from the behavioral sciences.

Also at all three institutions, during the third or junior year of study, all students take a core course in leadership. This course is grounded in social and organizational psychology. Besides learning about theories of leadership, cadets are given assignments that require them to reflect and refine their own leadership philosophy. They also compare their own experiences in the field, from summer military training or in some cases from their prior enlisted experience, to the theories and approaches to leadership they are learning formally in class. At the Navy, midshipmen are encouraged to take elective courses – primarily offered during the summer – in experiential leadership. For instance, some students attend the National Outdoor Leadership School (NOLS) to apply their Naval Academy leadership education to demanding real-world leadership challenges in the context of mountaineering expeditions.

Thus, every graduate of a service academy has two semesters of formal study of behavioral sciences and leadership upon graduation and commissioning as an officer. At West Point and USAFA, the formal psychology aspect of this preparation is much more in-depth. In addition, cadets may choose psychology or other behavioral sciences disciplines as their academic major. At West Point, more cadets elect to major in a discipline offered by the Department of Behavioral Sciences and Leadership than in any other academic major offered by the institution. Moreover, West Point and USAFA produce over 200 graduates each year that major in a military psychology-related discipline. These officers are

particularly well prepared for the challenges and demands of leading soldiers and airmen in the twenty-first century.

Like faculty in other academic departments at the service academies, psychologists at Navy, Air Force, and West Point serve as key mentors for cadets and midshipmen. One study revealed that service academy students report being mentored during their 4-year program at rates that far exceed those for the typical undergraduate student (Baker, Hocevar, & Johnson, 2003). Because service academy students must graduate in exactly 4 years, and because they must be ready to immediately lead enlisted men and women in combat, strong developmental relationships – including personalized and individual extra instruction and coaching outside of the classroom – are imperative for achieving the critical mission of service academies.

Clinical Practice

All the military academies employ both uniformed and civilian clinical and counseling psychologists to support the needs of cadets and midshipmen. The service academies can be challenging and stressful. The academic standards are high and many students are extremely high-achieving and self-demanding (collectively, West Point, Air Force, and Navy have produced 168 Rhodes scholars). The transition from civilian life to the military is especially challenging, and psychologists must be on hand during initial military training at these institutions. And, throughout the year, students are presented with difficult military and physical training, all the while trying to excel in their academic studies. Modal concerns for service academy students who present to the counseling center include adjustment disorders (situational anxiety and depression), anxiety about academic or military performance, eating problems, and stress associated with homesickness or relationships back home. Clinical and counseling psychologists play a critical role in supporting all cadets and midshipmen – as well as the overarching mission of the academies – by providing acute psychological

trriage, ongoing counseling, and frequent psycho-education services in the form of workshops on topics such as stress management and suicide prevention.

Coaching and Performance Enhancement

At West Point, psychologists are also employed by the Center for Enhanced Performance (CEP). The mission of the CEP is to help cadets improve their performance across multiple domains, from reading comprehension to psychomotor skills. Psychologists in the CEP also work with intercollegiate athletes and coaches to maximize on the field performance. Much of the instruction in the CEP is one-on-one. For example, at West Point, a graduation requirement is that each cadet must jump off a six-meter diving board, while dressed in combat uniform, and then complete a series of underwater obstacles before surfacing. Almost all cadets find this very challenging and stressful. For the smaller number of cadets who cannot initially make the jump, CEP psychologists are on hand to offer coaching, visualization, and stress management strategies to facilitate a successful jump. At the Naval Academy, one of the full-time psychologists in the Midshipmen Development Center (MDC) is employed primarily to provide both individualized and team-oriented sports psychology consultation to all the NCAA varsity athletes.

Supporting Stakeholders

Military psychologists at the service academies are uniquely situated to leverage their expertise to support research and development needs identified by their parent service. These stakeholders include headquarters, laboratories, and other operational and institutional entities. Military academy faculty, in particular, are viewed as important resources because they are experienced both in military affairs and culture and also in the science of their discipline. Thus, they can function as a bridge between operators who identify a

need and scientists who have possible solutions to that need.

At West Point, for example, the Army solicited assistance from faculty assigned to the Department of Behavioral Sciences and Leadership (BSL) in forming policy attendant to the repeal of the so-called “don’t ask, don’t tell” policy that prohibited nonheterosexuals from serving openly in the Army. Over the past 15 years, both the Army and Navy solicited faculty with expertise in gender issues (as the services rescind the combat exclusion rule banning women from serving in direct combat jobs and work to openly integrate transgender personnel into the armed forces) and in formulating leadership doctrine. The Naval Academy is identified as a center of excellence in the area of leadership education and development within the Navy.

Service academy military psychologists conduct basic and applied research to help a wide array of Army and DOD agencies in their research and development efforts. The Engineering Psychology Program at West Point, for example, conducts research funded and sponsored by laboratories and agencies including the US Army Public Health Center, Natick Soldier Systems, US Army Research Institute of Environmental Medicine, US Army Research Development and Engineering Command, Army Research Laboratory, Training and Doctrine Command, US Army Simulation and Training Technology Center, US Army Tank Automotive Research Development and Engineering Center, Training Brain Operations Center, Program Executive Office Simulation Training and Instrumentation, Defense Advanced Research Projects Agency, US Army Medical Research and Materiel Command, Defense Threat Reduction Agency, and HQ US Army. In addition, the Engineering Psychology Program sponsors two DOD laboratories within the Department of Behavioral Sciences and Leadership (BSL) to support cadet capstone projects and to broaden the diversity of education in the program. The laboratories are the US Army Simulation and Training Technology Center (scientists from STTC and its university partners teach segments of a seminar course in engineering psychology) and the

Institute for Creative Technologies, an Army University Affiliated Research Center (guests lecture on special topics in support of senior design projects).

Individual faculty are sometimes invited to serve in fellowships or other special assignments that may influence Army programs and policies. A senior psychologist at West Point recently completed a 1-year assignment working directly for the Chief of Staff of the Army, tasked with providing him guidance on developing programs to optimize soldier performance. This same psychologist had earlier consulted with a previous Army Chief of Staff in developing the Army's Comprehensive Soldier Fitness (CSF) Program, a program aimed at training soldiers in skills designed to build resilience and adapt to the stress experienced from many years of war (Cornum, Matthews, & Seligman, 2011).

At the Naval Academy, psychology faculty are often called upon to consult to important entities within the government on topics around both leadership and ethics. For instance, faculty have recently served as special consultants and educators for a wide range of Navy and Marine Corps commands, the National Security Agency (NSA), the Central Intelligence Agency (CIA), Customs and Border Protection (Department of Homeland Security), and the Food and Drug Administration (FDA), not to mention numerous universities both within the United States and abroad.

Conducting Basic and Applied Research

Like their counterparts at traditional colleges and universities, faculty members at the Service Academies engage in scholarly research as a normal part of their professional duties. The nature and topics of this research span the breadth of military psychology. Faculty regularly publish in peer-reviewed journals, write and contribute chapters to books, and participate on a regular basis in professional societies, including conferences of the American Psychological Association, the Association for Psychological Sciences, and the Human Factors and Ergonomics Society.

Service academy psychologists are nearly always represented among the associate editors of military psychology's flagship journal, *Military Psychology*.

Many of the research problems addressed by service academy psychologists are applied in nature. For instance, the academies are heavily invested in character development as institutional goals and turn to their own psychologists for insights into how to better assess and develop character in cadets. To support this effort, psychologists at West Point have launched a 5-year longitudinal study of character – called *Project Arete* after the Greek term for *moral virtue* – in a collaborative effort with Dr. Rich Lerner and his Institute for Applied Research in Youth Development at Tufts University and funded by the Templeton Foundation. The results from Project Arete will inform and guide the senior leadership of West Point in grounding its character development programs in empirically derived principles. At Annapolis, psychologists contribute to capstone workshop experiences for midshipmen designed to enhance character, and they conduct research on the efficacy of experiential leadership experiences across the 4 years of the educational curriculum.

Like Project Arete, many research projects at the service academies involve partnerships with scientists and faculty from top-tier institutions. These collaborations enhance the reputation of the service academies in the academic and scientific community. For example, psychologists associated with West Point's Engineering Psychology Program are partnering with Nobel Prize laureate Dr. Paul Greengard of Rockefeller University on a research project linking a protein to affect in cadets. Previous research on this topic had been conducted exclusively with nonhuman animals. Establishing a link between this protein and depressive behavior in humans would represent a significant step in developing a biomarker for vulnerability to depressive disorder, a tool that would be of immense value to a military involved in prolonged war. The Naval Academy has long collaborated with Dr. Charles Morgan, a Yale researcher, on the connection between stress biomarkers (e.g., cortisol levels) and resiliency

among midshipmen during particularly stressful elements of plebe summer.

Not all service academy research is applied. Psychologists at the Air Force Academy, for example, conducted a series of experiments aimed at developing an animal model of Alzheimer's disease (Matthews et al., 1986). Partnering with scientists at the Scripps Institute, researchers examined the effects of two neurochemicals – acetylcholine and somatostatin – as possible contributors to the cognitive deficits associated with Alzheimer's disease. Employing a variety of methods, researchers systematically depleted brain acetylcholine or somatostatin levels and then presented the rats with a variety of behavioral tasks. Overall, the results contributed to the emerging understanding of dementia in human beings.

A signature role of service academy psychologists in research is providing a bridge between the often arcane culture of the military and the more general scientific community. While military personnel are subject to the same general laws of behavior as anyone else, the context in which these laws and principles play out can be quite different. Military members, especially in an era of persistent war and conflict, often must perform under conditions of high stress and mortal danger and are far removed from the social support of friends and family. Moreover, military culture has its own lexicon, often riddled with acronyms that are dauntingly obscure to civilian scientists. Military psychologists play an important role simply as translators. With advice from military psychologists, for instance, the developers of the Army's Comprehensive Soldier Fitness Program framed its resilience building protocols in terms of "fitness," an idea and term that military personnel relate to and understand better than "resilience." To a nonmilitary observer, this may seem like a trivial distinction. But couching psychologically based programs in language suitable to the end user – the soldier, sailor, marine, or airmen – is vital to buy-in and program effectiveness.

A thorough review of service academy contributions to military psychology in general is beyond the scope of this chapter. The interested

reader may, however, get a sense of the scope and breadth of these contributions by reading the journal *Military Psychology* or perusing one of the excellent handbooks on the topic including the *Oxford Handbook of Military Psychology* (Laurence & Matthews, 2012) and *Military Psychology: Clinical and Operational Applications* (Kennedy & Zillmer, 2012).

Involvement and Leadership in Professional Societies

Through the years, many service academy psychologists have served in leadership roles in professional societies. The list of past presidents of the Society for Military Psychology, Division 19 of the American Psychological Association, is replete with many such individuals. Service academy psychologists also regularly serve in key committees in both APA and other professional and scientific associations. The very first psychologist ever appointed to the Naval Academy, Dr. John L. Conger, went on to become a president of the American Psychological Association. Dr. Conger set the pattern for psychologists at Annapolis by spreading his work between teaching the core leadership course, providing clinical services in the counseling center, serving on the midshipmen aptitude board, and consulting to Naval Academy leaders on all manner of educational and organizational matters.

Summary and Concluding Comments

The role of psychologists at US service academies is quite broad. Through teaching cadets and midshipmen, military psychologists shape the leadership competence of a substantial proportion of the nation's future officers, and they influence and develop the next generation of military psychologists. Through research, they establish dynamic networks that span military, traditional academic, and nongovernment agencies that can be leveraged to bring creative solutions to problems. They provide psychological support,

performance consultation, and psychoeducation in resiliency to service academy students. Because of the faculty composition model at the service academies, psychologists educate and develop relatively large numbers of new military psychologists through programs designed to educate military faculty. Moreover, the service academies generate “churn” in the larger field of military psychology by cycling former faculty back to other laboratories and agencies or the operational force and, in turn, provide an exciting and dynamic alternative assignment to uniformed psychologists seeking a broadening professional assignment.

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Military Psychology Students: Contributions, Pathways, and Opportunities

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Jennifer A. Barry and David M. Barry

Interest in the science and practice of psychology in military contexts has undoubtedly risen during the past 14 years of war. Issues such as posttraumatic stress disorder (PTSD), traumatic brain injury (TBI), and veteran suicide routinely make headlines and inspire current and future researchers and clinicians to improve the well-being of service members and their families. A growing number of undergraduate and graduate students, some of them barely in preschool when the twin towers fell on 9/11, are dedicating their studies and careers to the field of military psychology. This chapter's intent is to highlight the many contributions students have made to the advancement of military psychology, and to serve as a guide for current and future students interested in pursuing such a career. It should be noted that while students in non-clinical psychology programs bring important and complementary benefits to the field of military psychology, this chapter will primarily focus on clinical and counseling psychology in the Department of Defense (DoD) and the Department of Veterans Affairs (VA).

J.A. Barry (✉)
American School of Professional Psychology, Argosy
University, Northern Virginia, Arlington, VA, USA
e-mail: jennbarry@gmail.com

D.M. Barry, PhD
United States Army, Niceville, FL, USA

A Nation in Need

The record-setting backlog of claims and lengthy wait times for appointments in the VA system has been well publicized. A massive influx of new patients leaving military service has added strain to an already taxed VA system, and several systemic problems in access to care and claims processing have been identified. In response to a presidential directive to meet this increased demand for care, the VA hired 1600 new mental health workers between August 2012 and May 2013 (Southern Arizona VA Healthcare System, 2013). Aided by a 2015 budget increase from the federal government, the VA continues to actively hire behavioral health providers of all varieties: psychiatrists, psychologists, social workers, substance abuse counselors, marriage and family therapists, and more (Farley, 2014).

Similarly, there has been growth in the number of job opportunities with the Department of Defense (DoD) for uniformed and civilian behavioral health providers. Although modest gains have been made in the past several years, the overall demand for military behavioral health providers far outweighs the current supply. In a November 2009 interview, then Vice Chief of Staff of the Army General Peter Chiarelli attributed the Army's shortage of mental health providers to a nationwide shortage, estimating that the Army alone needed to hire approximately 750–800 additional providers (Wright, Chiarelli,

Cornum, & McGuire, 2009). Behavioral health professionals are also highly sought by the Navy and Air Force.

Despite the increased demand for DoD and VA clinicians, the vast majority of psychologists are not obtaining employment in military or VA settings upon graduation. According to the most recent graduation statistics available via the American Psychological Association's (APA) website, the 2006–2007 academic year saw a total of 1560 new psychologists graduate from APA-accredited clinical and counseling psychology doctoral programs (Kohout & Wicherski, 2009). Another APA Workforce study, the 2007 Doctorate Employment Survey, collected data on nearly 3800 doctoral graduates and found a mere 33 respondents reported working for the VA, 11 reported working at a "military hospital," and 1 respondent endorsed employment by the "military" (Wicherski, Michalski, & Kohout, 2009). Most recently, only 4.5% of full-time working psychologists in 2014 endorsed employment by the government (APA Center for Workforce Studies, 2015). Given that this 4.5% includes those who work at the state and local government levels, as well as non-DoD and VA federal government agencies, the actual percentage employed as military psychologists is even lower. While the aforementioned statistics represent only psychologists – and do not take into account the increasing numbers of graduates from social work, counseling, psychiatric nursing, and psychiatry residency programs – there is clearly a need for more licensed clinical psychologists in DoD and VA settings.

With such a full-scale and highly publicized push to swiftly increase the number of mental health providers in the DoD and VA systems, appropriate concern has centered on the possible limitations of rapidly expanding care. A 2014 RAND study reported that only one-fifth of community mental healthcare providers provide culturally competent, evidence-based care in military and veteran populations (Tanielian et al., 2014). While this news is deeply troubling, the same study reported that newer graduates were more likely to regularly use evidence-based practices (EBPs) with their patients due to an

increased focus on EBP training in graduate schools and internships. For graduate psychology students in general, this is excellent news. For students of military psychology in particular, such research is highly valuable information as the DoD and the VA require their providers to receive training in EBPs. Pursuing education and training opportunities to learn EBPs while still in school can greatly increase students' marketability in securing relevant internships and otherwise preparing for a military psychology career.

The Student Experience

Students are increasingly making a lasting impact on the field of military psychology through research, clinical training, volunteering with service members and veterans, and engagement in professional organizations. Not only have 14 years of war coverage likely influenced today's college students, but so too have transitioning military veterans returning to college. Student veterans bring with them a unique worldview and set of values that very likely influence their peers, the faculty, and the entire academic environment as they share their experiences in class and engage in leadership activities around campus. Many of these veterans' academic and career goals have been greatly informed by their service, resulting in an uptick in the number of military veteran students pursuing careers in healthcare. In a study following 900,000 veterans between 2002 and 2010, 9.3% of veterans using GI Bill benefits earned an initial associate's degree in a health sciences concentration, 4.9% earned an initial bachelor's degree in health professions concentration, and 17.8% earned an initial associate's or bachelor's degree in a science and engineering discipline (Cate, 2014). Within this sample, 15.7% earned a terminal master's degree and 1.6% earned a doctorate.

An interest in pursuing behavioral health-related degrees seems particularly salient among transitioning military veterans. From a recent survey of Student Affiliates of the Society for Military Psychology (Division 19 of the American Psychological Association), 39–53%

of respondents endorsed current or prior uniformed military service (Barry & Barry, 2013). As the US military continues to reduce its force size, the number of transitioning veterans enrolling in behavioral health programs may steadily rise. With this trend, we are likely to continue seeing growth of interest among behavioral health students in working with service members, veterans, and military families.

For students whose interest has been piqued, there are countless opportunities to develop knowledge and experience in military psychology. Prospective psychology students have the greatest flexibility as they may investigate and select a graduate program with a clear career trajectory in mind. Current graduate students, however, still have considerable options at their disposal to tailor their academic experience to their particular professional development needs. In doing so, students not only better prepare themselves for their eventual career but also make significant contributions to the field of military psychology as a whole.

Selecting the Right Graduate Program

Military planners often use “backwards planning” where one begins by thinking of the desired end state and identifies key tasks in a reverse order to the beginning of the operation. Becoming a military psychologist – a clinical/counseling or research psychologist within DoD or VA settings – is no different. Prospective graduate psychology students have many considerations to weigh as they plot their academic course, including cost of attendance, location of the school, faculty-to-student ratio, graduation and internship placement rates of graduates, and faculty research interests among many others. The pathway to becoming a military clinical psychologist begins with the selection of one’s graduate psychology program, and is followed by which branch of the armed forces to enter (if considering uniformed service), which internship site to attend, and in which state to obtain licensure.

Though some considerations differ slightly, future military research psychologists must also approach the development of their academic and career trajectory with considerable thoughtfulness; however, unlike their clinical counterparts, research psychologists are not required to attend an APA-accredited clinical internship. It should be noted that there are ample opportunities for both civilian and uniformed research psychologists to work in DoD/VA settings (see Krueger, 2010, for an excellent, open-source chapter on Army research psychology). New graduate students may not yet know what population they would eventually like to treat or research upon graduation; however, those who develop an interest in military psychology later in their graduate school experience still have ample opportunity to explore and pursue such a career.

Considerations for Program Selection

The choice of where to attend graduate school directly impacts one’s future employment options within the DoD/VA. Prior to applying to any graduate psychology program, potential military clinical psychologists should carefully review programs’ APA accreditation status, APA-accredited internship match statistics, and licensing examination pass rates of graduates.

First and most importantly, one must hold a doctoral degree from an APA-accredited graduate program in clinical or counseling psychology to be eligible for employment as a clinical or counseling psychologist in the Army, Navy, Air Force, or VA system (U.S. Air Force, n.d.; U.S. Army, n.d.; U.S. Department of Veterans Affairs, 2014b; U.S. Navy, n.d.). It is the authors’ experience that many students who are passionate about working with military populations are unaware of this fact until they have already enrolled in a terminal master’s program or non-APA-accredited doctoral program. To avoid this dilemma, future graduate clinical psychology students should review the APA’s website (<http://www.apa.org/ed/accreditation/programs/>) to identify accredited doctoral psychology programs prior to applying for graduate school. As

of February 10, 2015, there were 373 APA-accredited doctoral clinical, counseling, and school psychology programs in the United States and Canada (American Psychological Association [APA], 2015a).

In addition to attending an APA-accredited graduate school, clinical and counseling psychologists in DoD/VA settings are also required to have attended an APA-accredited psychology internship (U.S. Air Force, *n.d.*; U.S. Army, *n.d.*; U.S. Department of Veterans Affairs, 2014b; U.S. Navy, *n.d.*). Unfortunately, at the time of this writing there are perennially far more applicants to APA-accredited internships each year than there are available slots, resulting in an annual gap in which many qualified students do not match to an internship program, accredited or not. Students who choose to take unaccredited internships render themselves permanently ineligible for employment by the federal government (Munsey, 2010).

While the “internship crisis” is well known among graduate students (Clay, 2012), recent research indicates a major knowledge gap at the undergraduate level about the paucity of clinical psychology internship slots relative to annual applications (Parent & Oliver, 2015). As such, it is essential that students choose graduate programs with strong track records of matching their students to internships. All students are encouraged to review graduate program match statistics online through the Association of Psychology Postdoctoral and Internship Centers (APPIC) website (<http://appic.org/Match/Match-Statistics>). At the time of this writing, match rates by doctoral programs from 2011 to 2014 can be reviewed. The website allows one to sort doctoral programs by state/province or university, and view match rates to APA-accredited internships. Additionally, one can review results from annual post-match surveys with useful qualitative and quantitative information about students who matched versus those who did not.

In addition to reviewing a doctoral program’s accreditation status and match rates, one should also review alumni licensing examination performance as an indicator of a program’s quality. After completing an APA-accredited doctoral

program and internship, clinical and counseling psychology graduates must pass the Examination for Professional Practice in Psychology (EPPP), a prerequisite for obtaining a DoD/VA-required state license to practice psychology (U.S. Air Force, *n.d.*; U.S. Army, *n.d.*; U.S. Department of Veterans Affairs, 2014b; U.S. Navy, *n.d.*). The Association of State and Provincial Psychology Boards (ASPPB) website (<http://www.asppb.net/>) provides valuable information to students, whether they are preparing to take the EPPP or applying to graduate school. Currently, ASPPB (2012) offers a document with EPPP pass rates by doctoral program. While the data is pooled from EPPP candidates who tested between August 2007 and July 2012, the document nonetheless provides psychology students with expectations about a program’s preparation for licensure.

Several other factors should be weighed when deciding where to attend graduate psychology school. First, it is recommended students review differences between Ph.D. (doctor of philosophy) and Psy.D. (doctor of psychology) programs to determine goodness of fit in training style. While both types of programs produce doctoral-level psychologists, there are important differences in training philosophies and costs between the two types of programs (Tartakovsky, 2013). Based on a 2012 survey, the median debt accrued as a consequence of attending graduate school in psychology (including tuition, fees, living expenses, books, etc.) was \$30,000 for Ph.D. programs and \$120,000 for Psy.D. programs (Keilin, 2014).

Prospective students should review a program’s faculty biographies to identify possible mentors that share research and clinical interests. A program’s location and proximity to clinical training opportunities (e.g., practicum sites, externships) at military-relevant sites (e.g., VA hospitals, crisis centers, trauma centers) should be considered. Linnerooth and McNabb (2013) recommend training at VA outpatient mental health or PTSD treatment programs, general psychiatric centers serving both acute and chronic inpatients, sites specializing in crisis services, and centers with opportunities for group therapy and marital/family therapy. It is highly

recommended that students carefully review a program's website and contact faculty, staff, current students, and graduates for additional information and guidance prior to applying. Additionally, the APA's graduate education webpage (<http://www.apa.org/education/grad/apply-ing.aspx>) provides excellent resources for students applying to graduate school.

Uniformed Services University of the Health Sciences

For those prospective graduate students who have predetermined their path will lead to military service, Uniformed Services University of the Health Sciences (USUHS) is a particularly relevant and advantageous option to consider. Founded in 1972, USUHS serves as the nation's military medical training center. Located in Bethesda, Maryland on the grounds of the Walter Reed National Military Medical Center, the Medical and Clinical Psychology Department at USUHS offers Ph.D. degrees in clinical psychology and medical psychology. Unlike most civilian institutions, the majority of USUHS students are active duty military. Military-track students commission as officers prior to attending USUHS and accrue a seven-year service obligation to be met after completion of their licensing examination (McGeary & McGeary, 2013). A limited number of civilian students also attend the program. The training is tuition-free and military students are paid based on rank and time in service.

Psychology training at USUHS focuses heavily on the science-practitioner model, emphasizing strong foundations in EBPs. Furthermore, the close proximity to medical and nursing schools allows for psychology students to develop interdisciplinary skills and enhance their understanding of biopsychosocial interventions. For students interested in pursuing prescription privileges, the USUHS program offers several advanced courses in psychopharmacology. Selection for the graduate psychology programs at USUHS is highly competitive with only 9–10 students being admitted each academic year. Typically, cohorts are

comprised of 2–3 Army students, 1–2 Navy students, 1–2 Air Force students, and 1–3 civilian students. Upon completion of graduate school requirements, the military clinical psychology students typically attend branch-specific internship programs, while civilian students attend internships of their choosing. Medical psychology students either work as research psychologists within their service branch or pursue postdoctoral training opportunities of their choice. What makes the clinical psychology program at USUHS so unique is its inherent focus on military psychology. Academic and clinical advisors encourage students to work with military populations and advance military medicine through psychological science and practice. The coursework, research opportunities, and clinical experiences offered at USUHS are designed to develop future leaders in military psychology.

Civilian Programs

For those prospective students who are undecided about serving in uniform, an increasing number of civilian graduate psychology programs offer military "tracks" or concentrations to prepare students for work with service members, veterans, and their families. It is unknown whether this trend reflects students' growing interest in the field, a response to the increased need for military behavioral health providers, or an opportunity to appeal to transitioning military veterans returning to academia. At the time of this writing, Adler University (formerly known as Adler School of Professional Psychology), University of Texas-San Antonio, William James College (formerly the Massachusetts School of Professional Psychology), Tennessee State University, and West Virginia University offer master's or doctoral-level counseling/clinical psychology degrees with military concentrations. The Graduate School of Professional Psychology at Denver University is also developing a specialty education and training track in military psychology. It is important to note that this list is not exhaustive; many graduate programs offer courses and opportunities for clinical and

research training with military populations. For example, a large number of graduate psychology programs have externship/practicum memorandums of understanding (MOUs) with nearby DoD and VA facilities, enabling students to gain clinical experience directly with service members, veterans, and military families. Other programs have contractual relationships with nearby DoD or VA facilities to collaborate on psychological research of mutual interest to the military and students of military psychology.

Health Professions Scholarship Program

Once enrolled in an accredited graduate program, clinical/counseling psychology doctoral students who wish to work with service members upon graduation may apply for the F. Edward Hébert Armed Forces Health Professions Scholarship Program (HPSP). The scholarship helps qualified graduate students to finance their education in exchange for active duty service in the Army, Navy, or Air Force (Bartone & Landes, 2017). Scholarship recipients' tuition, books, lab fees, and other academic expenses are fully covered by their selected branch of the military for the duration of their scholarship. When not receiving active duty officer's pay during 45 days of annual training, HPSP students receive a monthly stipend of over \$2100 to offset living expenses (McGeary & McGeary, 2013).

Although there are some individual differences between the service branches, all HPSP students must be enrolled at an APA-accredited school and complete an APA-accredited clinical psychology internship. Preferentially, students must pursue training at the internship sites governed by their respective service branch; however, students who do not match at a military site must otherwise complete an APA-accredited internship of their choosing. HPSP scholars typically complete several weeks of basic training for medical officers and must maintain acceptable health and fitness standards required of an officer in the armed forces. The contracted active duty service obligation for graduates depends upon

the length of their scholarship. Once that commitment is fulfilled, military psychologists opting to continue serving in the military qualify for a range of additional benefits, including specialty pay, board certification pay, Loan Repayment Program eligibility, and more. Students interested in applying for the HPSP scholarship should contact a local military medical recruiting station (Army: www.goarmy.com/amedd.html; Air Force: <http://www.airforce.com/contact-us/recruiter-locator/>; Navy: <http://www.navy.com/locator.html>).

Student Research

Perhaps one of the most consistent contributions students make to the field of military psychology is scholarly research. From theses and dissertations to assisting faculty as research assistants, to working as research institute fellows, students contribute a great deal of scientifically supported knowledge to the field. Students who are interested in performing military psychology-related research are growing in numbers. A recent review (performed March 15, 2015) of PsycINFO, APA's database of scholarly research, demonstrates the growth of student interest in military psychology-related topics. Consistent with our view that overall interest in the science and practice of military psychology has increased since 9/11, searches for social science theses and dissertations with the combined keywords of "Military + Psychology OR Behavioral Health" for each year from 2002 to 2014 yielded a 170.2% increase over 12 years. It should be noted that the number of overall social science theses and dissertations did not change during the same time period.

Beyond the required dissertations and theses that graduate psychology students must complete are many opportunities to engage in scholarly research both within and outside academia. Large public or private universities are more likely to have dedicated labs for behavioral science research, or may otherwise be able to support ongoing or grant-funded research. Students at smaller institutions, including many schools of

professional psychology, often do not have such ample opportunities to conduct research directly through their university program. Those who do typically work as research assistants for faculty members conducting studies independently or in conjunction with colleagues at other institutions. As a result, prospective students should explore the research interests of full-time faculty members at schools they are considering attending, and should also ask whether any faculty are current or prior-service military or VA psychologists. It is important to remember that although faculty may not be engaged in research directly with service members, veterans, or military families, experience researching certain topics such as TBI or PTSD is highly relevant, timely, and valuable.

Prospective students should also inquire about ongoing research collaborations between universities and outside entities, such as research institutions or consortiums. Based in the Washington, D.C. area, for example, the Consortium Research Fellows Program (CRFP) offers both undergraduate and graduate students the opportunity for paid work as research assistants and fellows (CRFP, n.d.). Founded in 1981 as a joint endeavor with the Consortium of Universities of the Washington Metropolitan Area and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), the CRFP grooms the next generation of DoD researchers by providing both mentorship and invaluable hands-on experience conducting federal research. In addition to ARI, CRFP fellows and research assistants have had the opportunity to work with the Air Force's 711th Human Performance Wing/Human Effectiveness Directorate, the Defense Manpower Data Center, and National Defense University at work sites in Virginia, Maryland, Ohio, Georgia, Texas, Kansas, and Washington, D.C. In coordination with their respective university programs, CRFP students work 20 h a week during the academic year and 40 h per week during the summer. Opportunities for students to collect data for theses and doctoral dissertations are also available.

Programs such as the CRFP are especially valuable for students in psychology programs without a substantial research focus. Psychology

students who intend to become clinicians rather than researchers, however, should weigh the time commitment of outside research opportunities against the training requirements of their respective programs. Limited opportunities to perform military psychology-related research should not necessarily dissuade a prospective student from attending a particular university. As this chapter aims to highlight, students contribute to the field of military psychology in many ways with research being a single type of contribution. To become well-rounded psychologists, students should seek a breadth of academic and training experiences while enjoying the unfettered access to supervision and mentorship that graduate school provides.

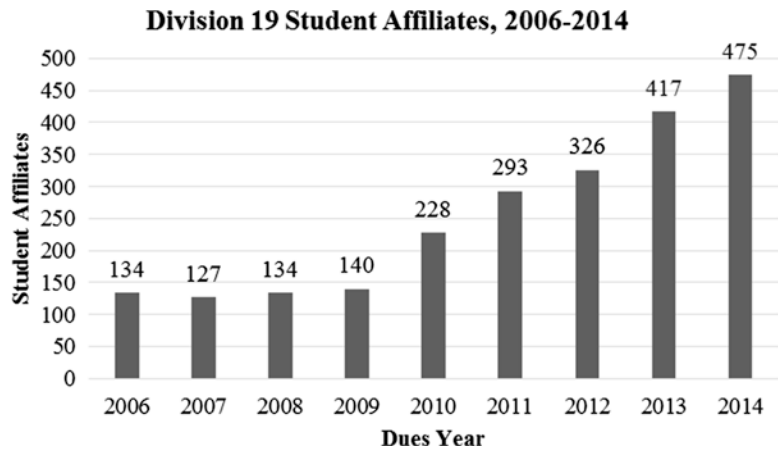
Student Professional Development

As shown in Fig. 23.1, an increasing number of students are joining the Society for Military Psychology (APA's Division 19), the premier professional organization for military psychology. Joining Division 19 as a student affiliate gives students several benefits. First, Division 19 student affiliates receive hard copy and digital access to the journal *Military Psychology* and the tri-annual division newsletter. Importantly, student affiliates may apply for division-sponsored research grants and travel awards to attend the annual APA convention. Student affiliates have access to email distribution lists and other social networking venues that many utilize to gain research participants. Membership in Division 19 also provides students with opportunities to become involved in the field of military psychology and develop relationships with military and civilian researchers and clinicians.

Division 19 Student Chapter Network

Increasingly, a growing number of graduate psychology programs have seen the creation of student interest groups dedicated to the study and advancement of the field of military psychology. These groups serve several purposes, including

Fig. 23.1 Division 19 student affiliate membership data (Source: Division 19 final dues year membership reports, 2006–2014) (Note: Final dues year numbers are compiled in August of each year)



growing interest and awareness of military and veterans' issues on campus, creating professional development opportunities, as well as developing leadership and volunteer activities for student members. Many of these groups are dual-designated as official student chapters of the Society for Military Psychology (i.e., Division 19 Student Chapters). With the support of Division 19, these chapters provide students with networking opportunities, access to timely information about the field, mentoring opportunities, educational programming, and leadership development opportunities. For more information about becoming a Division 19 Campus Representative and starting a student chapter at your graduate program, see Appendix 1.

Other Professional Development Opportunities

Within the APA, additional opportunities exist for interested students to learn about military and veterans' issues, notably with Division 18's (Psychologists in Public Service) Veterans Affairs section. Divisions specializing in subfields of psychology particularly relevant for the military community also tend to enjoy high membership and participation by military psychologists, such as Divisions 13 (Society of Consulting Psychology), 14 (Industrial/Organizational

Psychology), 17 (Society of Counseling Psychology), 38 (Health Psychology), 40 (Society for Clinical Neuropsychology), 41 (American Psychology-Law Society), and 56 (Trauma Psychology). State psychological associations offer yet another opportunity to engage in military psychology-relevant programming. The District of Columbia Psychological Association (DCPA), for example, has hosted an annual military psychology workshop in recent years. The DCPA benefits from an increasingly active and engaged student membership, many of whom are interested in military psychology due to the significant military presence in the DC area.

Professional organizations offer psychology students an abundance of opportunities for professional development. The more active student members are, the more likely their interests and professional development goals will influence the organization's activities. Most professional psychology organizations desire greater student involvement as they appreciate the value of integrating and engaging future psychologists into the organization early in the career pipeline. Students are the future of any profession, and students of military psychology who pursue such learning opportunities through engagement in interest groups and professional organizations will be well suited to hit the ground running upon graduation.

Clinical Internships

As mentioned previously, future military clinical psychologists must complete an APA-accredited psychology internship. As of 2015, there are APA-accredited internships at 11 military installations (5 Army, 3 Navy, 3 Air Force) and 106 VA medical centers (U.S. Department of Veterans Affairs, 2014a). Future DoD and VA psychologists need not complete a DoD or VA internship per se; however, the relevance and generalizability of such training to future work with a military population is readily apparent. Internship descriptions and application criteria can be found on the online APPIC directory (<https://membership.appic.org/directory/search>). We recommend that students review several internship programs' application criteria early in their graduate studies and take note of required clinical training hours, expected clinical competencies, and other important factors. Such vital information will dictate which training opportunities in graduate school to pursue in order to improve one's eventual competitiveness for internship placement at sites of interest.

As highlighted in Fig. 23.2, the number of matched applicants to DoD and VA internships has steadily risen since 2008. VA internship programs account for 16–18% of all matched applicants while DoD internship programs account for

2–3% of total matched applicants. As shown in Fig. 23.3, nearly 27% of all matched students from clinical psychology Ph.D. programs match at VA internships, compared to roughly 18% of counseling psychology Ph.D. programs and 11% of clinical psychology Psy.D. programs. Based on this APPIC survey data (Keilin, 2014), there appear to be higher rates of students from Ph.D. programs matching at VA internships than Psy.D. programs. The differences between clinical psychology Ph.D., clinical psychology Psy.D., and counseling psychology Ph.D. program representation in DoD internships are less pronounced.

All students who attend DoD internships commission as officers and serve on active duty in the Army, Navy, or Air Force (Bartone & Landes, 2017). No such postgraduation service commitment is required of VA interns. According to McGeary and McGeary (2013, p. 119), internship training experiences in DoD settings “vary by site and can include general mental health assessment and treatment skills, consultation, health psychology, neuropsychological screening, drug and alcohol abuse counseling, research, and military-specific health practice (command-directed evaluations, medical evaluation board assessment).” See Table 23.1 for a list of DoD internships and their APPIC codes.

Due to the service requirement, all applicants to DoD psychology internships must contact a

Number of Matched Applicants to DoD/VA Psychology Internships, 2008-2012



Fig. 23.2 APPIC match survey results (Note: DoD numbers represent 2–3% of total matched applicants each year; VA numbers represent 16–18% of total matched applicants each year)

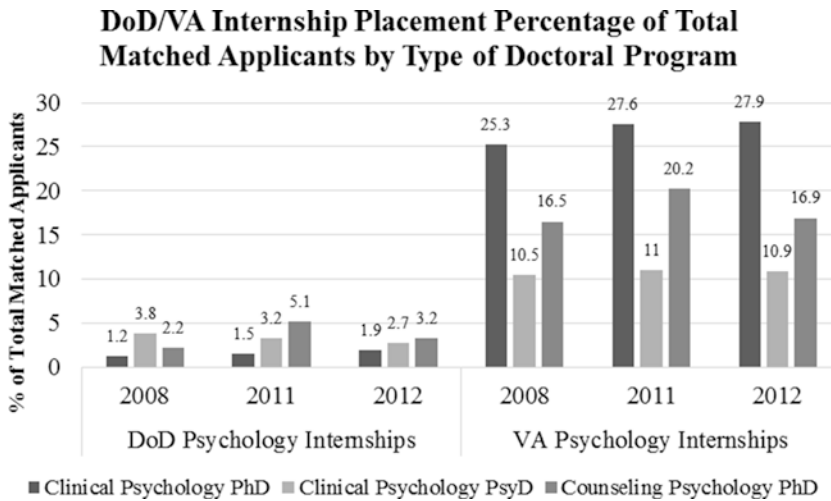


Fig. 23.3 Placement of matched applicants by type of doctoral program (Note: Data from 2009 and 2010 not available)

military recruiter during their application year and ensure that all required medical criteria to join the military are met. The process of accessing into military service is time-consuming and arduous, typically taking several months to complete. It is recommended that potential DoD psychology internship applicants contact a military medical recruiter in June or July of the application year in order to allow ample time to ensure completion of all military accession criteria (e.g., health physicals, medical waivers). Each service branch has unique requirements, and applicants to internships across multiple branches of service should plan accordingly.

Postgraduation

As previously noted, graduates who successfully complete their APA-accredited internship must then pass the Examination for Professional Practice in Psychology (EPPP) in order to become a licensed clinical psychologist. Depending on which state a student wishes to apply for licensure, there may be additional requirements in training above and beyond passing the EPPP. Since the military and VA systems are federal institutions, graduates employed by the DoD or the VA may obtain licensure in a

state of their choosing regardless of their actual location of employment. It is recommended that graduates consider costs and benefits of licensure for several states before determining where to get licensed, especially if interested in pursuing prescription privileges. DoD clinical psychology interns are increasingly being required by their respective branches to complete a one-year postdoctoral rotation to afford graduates the time and supervision to obtain licensure, unhindered by deployments, cross-country moves, and other distractions inherent in establishing one’s military career. Many VA clinical psychologists complete postdoctoral clinical residencies at other VA facilities or sites of their choosing.

Psychologists who are interested in becoming a DoD or VA clinical psychologist must be currently licensed and have completed an APA-accredited internship. Research psychologists, however, require neither licensure nor an accredited internship for federal employment. It is common for military research psychologists to apply for postdoctoral research positions with a funded research laboratory within the DoD, VA, or institutions conducting military-relevant research.

It is possible for clinical and research psychologists to become commissioned military

Table 23.1 DoD psychology internships

Internship site	APPIC code	Approximate location
<i>Army Psychology Internships</i>		
Brooke Army Medical Center	1738	San Antonio, TX
Dwight D. Eisenhower Army Medical Center	1236	Augusta, GA
Womack Army Medical Center	^a	Fayetteville, NC
Madigan Army Medical Center	1965	Tacoma, WA
Tripler Army Medical Center	1242	Honolulu, HI
<i>Navy Psychology Internships</i>		
Walter Reed National Military Medical Center	1348	Bethesda, MD
Naval Medical Center-San Diego	1152	San Diego, CA
Naval Medical Center-Portsmouth ^b		Portsmouth, VA
<i>Air Force Psychology Internships</i>		
Malcolm Grow Medical Clinics and Surgery Center	1343	Washington, DC
Wright-Patterson USAF Medical Center	1514	Dayton, OH
Wilford Hall Ambulatory Surgical Center	1589	San Antonio, TX

^aNot available at time of publication

^bDoes not participate in APPIC match; only accepts USUHS and HPSP students

psychologists after licensure and/or postdoctoral training. Similar to prospective DoD interns, psychologists who wish to join a uniformed service via direct accession must meet all physical (i.e., age, height/weight, fitness) conditions required of officers in the branch to which one is commissioning. Those interested in civilian employment with the DoD or the VA are not required to meet the same physical requirements as those pursuing uniformed service; however, the accreditation, training, and licensure (for clinicians) stipulations are the same. Psychologists seeking civilian employment with the DoD or the VA may search and apply for open positions via the USAJOBS website (www.usajobs.gov).

Conclusion

Through research, clinical training, and other activities on campus and in professional organizations, students continue to contribute to the advancement and growth of the field of military psychology. Now more than ever, students are directly addressing a grave national concern: the mental health and welfare of our brave men and women in uniform. It seems clear that the growth of military psychology interest among college students is keeping pace with the oft-cited increase in mental health concerns in our armed forces. This is good news for military leaders who have struggled to explain the lack of available and qualified behavioral healthcare providers to lawmakers. With interest in working with service members and veterans growing among emerging professionals, significant opportunity exists for more widespread advertisement of the pathways and many benefits to pursuing a career in military psychology.

In the authors' experience, many mid- and late-career psychologists express that they had never considered, or even heard about, opportunities in military psychology while in school. Indeed, graduate school seems to be where the majority of psychologists explore and ultimately determine their career path. Some psychologists cite the influence of a professor or other mentor in helping determine their path. Others attribute their interest to a training (i.e., practicum) or research experience that allowed them to learn more about a particular population or topic. To increase the availability of quality behavioral healthcare in the military, students must be exposed to the mental health issues facing our service men and women. To the fullest extent possible, students should also be exposed to military culture through participation in military psychology interest groups, regular interaction with student veterans, and volunteering in their local community with veteran support groups. The authors believe that the earlier students learn about the many benefits and pathways to becoming a military psychologist, the more likely they will choose to work with service members, veterans, or military families after graduation.

The continuing increase of student interest in military psychology is evidenced by the rapid growth in student membership in the APA's Division 19, the Society for Military Psychology. This surge in student membership growth has contributed to Division 19 being recognized as the APA division with the second largest membership growth (42%) from 1998 to 2014 (American Psychological Association [APA], 2015b, April). As Division 19's Student Chapter Network expands into more psychology programs across the country, interest and activity in military psychology among students will continue to grow. The surge in interest will undoubtedly develop a larger recruiting pool of psychologists, competent in military culture and trained in EBPs and research techniques, that can enable the DoD and VA systems to improve and increase access to quality behavioral healthcare.

It is our belief that the future of military psychology rests with the next generation of clinicians and researchers. The solutions to the pressing needs of our nation's warfighters and veterans will be solved by future generations of military psychologists, many of whom are current or future students. With the appropriate guidance and information, students interested in military psychology can make informed decisions about graduate school selection, internship or postdoctoral training, and serving their country through uniformed or civilian employment.

Appendix 1: How to Become a Division 19 Campus Representative

Interested students who wish to supplement or tailor their formal education with military psychology-specific training are often limited to the clinical training or research opportunities already developed at their institutions. For students who do not attend programs near military installations or VA centers, or whose programs lack well-established research collaborations with the DoD, there are fewer if any opportunities to learn about the military or become engaged within the field of military psychology. For those students in particular, the establishment of military

psychology student interest groups on campus can provide a valuable introductory experience to career options in the military, as well as the opportunity to learn about military culture.

History of the Program

In 2013, the Division 19 Student Affairs Committee proposed the establishment of an official Student Chapter Network of campus affiliations. On January 1, 2014 the Division 19 Student Chapter Network was officially formed, and by the year's end it boasted 35 active military psychology student chapters across the United States.

By forming a network connected to the premier professional organization for military psychology, these student groups became able to communicate and coordinate with like-minded peers, engage in sponsored educational and training opportunities, receive immediate support from an established chain of command, and seek mentorship from uniformed and civilian military psychologists. As of this writing, there are currently 38 active Division 19 Student Chapters in the United States. A comprehensive list of both active and inactive chapters seeking new student leaders may be found in Appendix 2.

Becoming a Campus Representative

The Division 19 Student Affairs Committee accepts applications from prospective campus representatives on a rolling basis (applications can be found on the Division 19 Student Affiliate website, www.div19students.org, or can be requested from the Student Affairs Committee directly). Each university psychology or counseling program may have one to two Division 19 Campus Representatives who serve a liaison function, facilitating communication between the division and their university program. Campus reps report to regional representatives on the status of their chapter, providing information about activities, relaying needs and soliciting support, and collecting information about Division 19 educational/training opportunities to disseminate to their peers. Campus representatives are care-

fully selected for their projected leadership capabilities, interest level in pursuing a military psychology-related career, and overall character. Many campus reps have a well-documented interest in the military; however, this is not necessary a prerequisite for the position, nor is military experience. All must have a drive for personal leadership development and a desire to facilitate the sharing of knowledge about military psychology and military culture among their peers.

If one is not already established, new campus representatives are strongly encouraged to develop a Division 19 Student Chapter on their campus; however, this is not a requirement of the position. Should a new campus rep decide to do so, he or she is provided with an electronic copy of the *Military Psychology Student Group Handbook* (Barry, 2013), and offered support and mentorship throughout the development process by Division 19 student leaders.

Creating a Student Chapter

The *Military Psychology Student Group Handbook* is divided into two main parts: development and operations. In the development section, campus reps learn how to create a sustainable student organization from scratch, based upon the specific operational environment of that particular university program. Topics covered include assessing for the appropriateness and plausibility of developing a student chapter; researching the administrative processes necessary to create and operate a student group; gauging student interest; selecting a faculty sponsor; soliciting departmental support; marketing the group and advertising meetings; and generating membership growth.

The handbook's operations section contains helpful guidance on the following topics: planning and executing events; structuring and recording business meetings; developing a leadership team; securing operational funding; growing and documenting institutional knowledge; and collaborating with other school, community, and military organizations. Also included is a sustainability section to ensure new chapters are established with longevity in mind.

Materials to support chapter development and operations are available in the appendix of the handbook, on the Division 19 Student Affiliate webpage, or can be requested directly from the current Division 19 Student Affairs Committee members. Although funding for student chapter operations is not immediately available from the division, the handbook does provide advice and ideas to campus reps in researching potential funding sources. Student chapters that are consistently active both within and outside their university programs, and that are regarded by the Student Affairs Committee as exemplifying the Division 19 mission and core values, may be selected for awards and/or special recognition by the division. Leaders of these high-performing chapters are particularly well qualified for promotion to regional representative and/or Student Affairs Committee positions.

Appendix 2: Society for Military Psychology Student Chapters Since 2014

Arizona

Midwestern University

California

Biola University—Rosemead School of Psychology

California School of Professional Psychology (Alliant International University)—Los Angeles*

California School of Professional Psychology (Alliant International University)—Sacramento

California School of Professional Psychology (Alliant International University)—San Diego

California School of Professional Psychology (Alliant International University)—San Francisco

Palo Alto University

The Chicago School of Professional Psychology (Los Angeles Campus)

The Wright Institute

Colorado

Colorado State University*

District of Columbia

American School of Professional Psychology at
Argosy University
Catholic University*
Gallaudet University*
George Washington University
The Chicago School of Professional Psychology
(DC Campus)

Florida

Carlos Albizu University
Florida Institute of Technology
Florida School of Professional Psychology at
Argosy University
Nova Southeastern University

Illinois

Adler School of Professional Psychology
The Chicago School of Professional Psychology
(Chicago Campus)

Indiana

Ball State University*

Iowa

University of Iowa

Kansas

University of Kansas*

Maryland

Loyola University Maryland
Uniformed Services University of the Health
Sciences

Massachusetts

Boston University
William James College

Minnesota

University of St. Thomas Graduate School of
Professional Psychology

Mississippi

University of Southern Mississippi

Missouri

Forest Institute of Professional Psychology

Nebraska

University of Nebraska—Lincoln

New Hampshire

Antioch University (New England)

North Carolina

North Carolina State University
University of North Carolina—Charlotte

North Dakota

University of North Dakota

Oklahoma

University of Tulsa

Oregon

George Fox University*

Pennsylvania

Chatham University
Drexel University

Tennessee

Tennessee State University

Texas

Sam Houston State University
Texas A&M University
Texas Tech University*

Virginia

Old Dominion University
The Virginia Consortium Program for Profes-
sional Psychology
University of Virginia

Virtual/Multiple Locations

Fielding Graduate University

West Virginia

West Virginia University

Wisconsin

University of Wisconsin (Milwaukee)

*Inactive/seeking new campus
representative(s) as of September 28, 2016.

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Arlene R. Saitzyk, Sally Harvey, Ann Landes,
Carla Long, and Rebecca Porter

"I am Amber," she told the frightened group, looking at the women directly as the interpreter translated. "I'm an American soldier and we are here to help keep you and your children safe. We will make sure none of the soldiers come near here." As she tried to let her "combat braids" spill past her scarf to "prove she was a female," Amber donned her gloves, and searched the women and children. She gave the children some candy, and when at last the group realized she was not going to harm them, they started telling her about nearby Taliban activities. As Amber gathered information, one of the Rangers radioed her, wanting to know the "count" (the number of local individuals reported presently on site). The Ranger called back a few more times, as Amber's number did not match his. Amber's more accurate count (provided by the Afghani women to her) allowed the Ranger to search for and locate the "missing"

insurgent, though the evolution erupted in gunfire, and unfortunately, one was wounded. When at last the medevac helicopter arrived, it was high time for Amber and the Rangers to make a five mile sprint back to their base before daylight, and while still under fire. As they reached base, one of the Rangers remarked, "Oh yeah, hey, CST, good job out there ... you corroborated the fact that we were missing somebody." In that moment, Amber truly felt part of the team. And she thought, "I love this job." (*From the book Ashley's War* (Lemmon, 2015)).

The female soldier described above served in a combat support role, though the narrative suggests a fine line between combat and combat support. This soldier effectively engaged with the local women, obtained the needed intelligence, and kept up with the Ranger team without anyone needing to slow down or take care of her, and her input was an integral part of the mission's success. Amber (likely not her real name) was one of several women embedded with special operations forces in Cultural Support Teams (CSTs) that helped units work with local Afghani females operating in the villages. As Lieutenant General Mulholland, prior commander of the US Army Special Operations Command, said, CSTs serving alongside Army Rangers and Special Forces "provided enormous operational success to us on the battlefield by virtue of their being able to contact half of the population we normally do not interact with" (Lemmon, 2015).

This chapter will discuss women's increasingly expanded and integrated roles in the military, examine women's experience as leaders in the

A.R. Saitzyk (✉)

Behavioral Sciences Department, Marine Corps
Embassy Security Group,
27277 Browning Road, Quantico, VA, USA
e-mail: arlene.saitzyk@usmc.mil

S. Harvey

U.S. Army Integrated Disability Evaluation System
(IDES) Clinic, Building 36036, Fort Hood,
TX 76544, USA

A. Landes

North Florida/South Georgia VAMC,
6900 Southpoint Drive North, Jacksonville, FL
32216, USA

C. Long

Arlington, VA, USA

R. Porter

U.S. Army Medical Command, San Antonio, TX,
USA

military, and highlight the challenges for women in garrison, in deployed settings, in combat, and as they transition out of the military. We conclude by providing guidance for individuals and commanders on the conditions necessary for women (and men) to succeed in integrated units and beyond.

Historical Background

Women comprise about 20% of new military recruits and 15% of service members (Henderson, 2015). The history of women in combat and combat support roles is well documented, and dates back to the Revolutionary War (Naclerio, 2015). Women join the military for many of the same reasons voiced by men – an opportunity to serve, or give back to their nation, a chance to challenge themselves professionally and personally, and the potential to gain educational benefits and achieve economic parity. On average, in the civilian sector, the average working woman earns 78 cents for every dollar that a man makes. In the military, a woman makes the same base salary as her male peer. It is also of note that women in the military represent an increasingly diverse racial group – for example, while 16% of the men in uniform are African American, African American women constitute 31% of military women (Bensahel, Barno, Kidder, & Sayler, 2015).

Recently, women's roles have received heightened attention, as the military began to use women to support counterinsurgency (COIN) operations focused on destabilizing and defeating insurgents and creating secure environments supporting government rule (Harding, 2012). Women's involvement in this arena was born of necessity, as male soldiers were simply unable to gain intelligence from women and children due to the strict cultural rules surrounding gender in Muslim countries.

More specifically, starting in 2003, commanders used female service members to search Iraqi women at checkpoints for weapons and to defuse tensions with Iraqi women and children as part of an Army program called Team Lioness (Harding, 2012). The Marines also developed two programs in Iraq to interact with the female population, the Lioness Program and the Iraqi Women's Engagement Program (IWE). While

the Lioness Program was largely comprised of searches at entry control points and while on patrol with soldiers, IWE was aimed at identifying sources of instability such as insurgents, through the Iraqi women. The IWE worked to connect the women together who could influence the social networks that insurgents use to disrupt civil and government operations, as well as support each other and coordinate with local government, civil affairs personnel, nongovernment organizations, and provincial reconstruction teams to facilitate reduction of instabilities.

In 2009, the Lioness Program expanded, as female military units increasingly engaged directly with women in occupied communities, including humanitarian engagement and provision of medical care. The new teams were called Female Engagement Teams (FETs), and the work resulted in more positive relationships with the community (Moore, Finley, Hammer, & Glass, 2012). As well, Provincial Reconstruction Teams, though not designed to provide dedicated FETs, also used women to perform similar duties when they were available and permitted (Holliday, 2012). Such duties included opening women's centers and vocational training schools – efforts designed to build goodwill in Iraq. Interestingly, an Army requirement released in 2011 mandated FETs for all brigades deploying to Afghanistan – this was the direct result of successes the teams experienced (Nicolas, 2015).

Building on the achievements of the FET program, the Army Special Operations Command created a more in-depth training program to support their missions, the CST program, as mentioned above. The CST program consisted of a demanding and competitive two-week assessment and selection period, followed by six weeks of training and qualification. Upon graduation from the course, students were awarded a project development skill identifier (PDSI) and the title "cultural support specialist." CSTs generally served up to eight months overseas, attached (not assigned) to an Army special operations unit in support of contingency operations. While Army Special Operations had been deploying women to hostile areas in many types of roles before CST, including intelligence and psychological operations, CSTs were distinct because they were specifically assessed, selected, trained,

and educated to support particular Special Operations missions (Harding, 2012).

In January 2013, the Department of Defense (DoD) rescinded the Direct Ground Combat and Assignment Rule, which removed barriers for assigning women to combat units and occupations, and mandated implementation of gender integration by January 1, 2016. Though not yet fully integrated, the military services are in the process of reviewing and validating performance standards (Kamarck, 2015). The Government Accountability Office (GAO) provided an update on positions open to women since the January 2013 directive, and noted marked differences among the services (Government Accountability Office [GAO], 2015). While almost all positions in the Air Force have been open to women since before 2013, there was a notable increase in openings to women in the Army and Navy since 2013. However, at the time of the 2015 GAO report, the Marine Corps still had 25% of jobs closed to women, and the US Special Operations Command (USSOCOM) had 41% of positions closed. That being said, in 2016, the first three women graduated from Ranger School, the Army's most elite combat training course, previously closed to women. Ideally, the other services' operational commands will follow suit in the near future. USSOCOM reported they want to stand behind decisions of the Secretary of Defense, and "fully support opening all special operations specialties and units to women service members" (Votel, 2015). Table 24.1 provides a summary of key events regarding the integration of women in the military over the past century.

Current Challenges for Women in Garrison, on Deployment, and in Leadership Roles

Without question, the confluence of societal changes in expectations, policies, and protections, combined with the realities of the wars waged in Iraq and Afghanistan, have led to significant changes in the military. Over the past several years, women have graduated from Ranger School; Air Force General Lori Robinson became the first woman to lead a combatant

command, and female Sailors began to serve on submarines. This is clearly not the military of 1966 – then, federal laws restricted the number of women who could serve at any one time, and career progression was halted at the rank of O-5 (lieutenant colonel in the Army, commander in the Navy), and O-6 (colonel) in the Marine Corps (Women's Armed Services Integration Act, 1948). In contrast, gender-based barriers to occupational specialties were removed in 2016, and several women have been promoted to four-star ranks.

Many popular books (Gray, 1992; Tannen, 1991) and research studies (Maccoby & Jacklin, 1974) report differences between men and women, and likely an equal number criticize these assertions (Archer, 2004; Carothers & Reis, 2013; Hyde, 2005). While it is not our intent to argue that an absence of differences is essential to equality, it must be noted that expectations regarding prescribed stereotypical behaviors for men and women in the workplace impact women in garrison, in deployed settings, and in leadership roles. For example, women who violate the stereotypes associated with nurturance and assertion may be penalized in hiring and evaluations, more so than male leaders with the same traits (Heilman, Wallen, Fuchs, & Tamkins, 2004). Awareness of stereotypes and associated biases is essential as leaders strive to integrate new service members, both men and women. Initial impressions and leaders' immediate reactions are key. A female service member, especially in an organization in which her male counterparts outnumber her, tends to draw more attention from the moment she arrives to a new duty assignment. One female command sergeant major (CSM) said it this way when she and four male CSMs signed in at the same time:

It is difficult to show up at the same time as a guy - sometimes there's a biased opinion. I felt like I was automatically judged. Quite often they think I'm not good enough or I'm too assertive. It's a fine balance between two negatives. And without letting that affect your performance. It gets tiring.

Because of the negative perceptions and gender stereotypes of female service members' abilities and performance, some women view success as an uphill battle, and place additional pressure

Table 24.1 Key events for integration of women in the armed services

1901	Army Nurse Corps established
1908	Navy Nurse Corps established
1948	Women's Armed Services Integration Act of 1948 passed, making women permanent part of the military, albeit prohibited from assignment to combatant aircraft and naval vessels, and limiting women in the military to 2% of enlisted and 10% of officers
1967	Limits on percent of women in the military repealed
1975	Women allowed admission to military service academies
1978	Women permitted permanent assignment on noncombatant Navy ships and temporary duty up to 6 months on other ships
1988	DoD implements the "risk rule," excluding women from noncombat units or missions if the risk of exposure to direct combat, hostile fire, or capture were equal to or greater than the risks in the combat units they support
1991	Presidential Commission on Assignment of Women in the Armed Forces established. Congress repeals prohibition of women flying combat aircraft
1993	Congress establishes requirements for gender-neutral occupational standards and repeals prohibition of women serving on combatant vessels
1994	"Risk rule" rescinded, and DoD issues the Direct Ground Combat and Assignment Rule, limiting women from being assigned to units below the brigade level whose primary mission is to engage in indirect combat on the ground
2000	Based on recommendations by the Defense Advisory Committee on Women in the Services (DACOWITS), efforts were made by the Pentagon to open up assignments for women on submarines. Any concerns in this arena were more centered on issues of privacy and habitability, rather than on the dangers of combat. Congress mandates a 30-day (in-session) notice of any change that would open assignment of women to Navy submarines
2005	Sergeant Leigh Ann Hester, an Army soldier, became the first female soldier awarded the Silver Star since World War II and the first to be cited for close combat action
2006	Congress mandates 30-day in-session notification for changes to 1994 Direct Ground Combat and Assignment Rule or opening or closing of military career fields to women
2008	The Military Leadership Diversity Commission is established to review promotion and command opportunities in the armed services by ethnicity and gender
2009	Duncan Hunter National Defense Authorization Act established the Military Leadership Diversity Commission, and was tasked with studying the "establishment and maintenance of fair promotion and command opportunities for ethnic- and gender-specific members of the Armed Forces." Focused on officers at the O-5 or higher level. The Commission recommended DoD take deliberate steps to open additional career fields and units involved in direct ground combat to women
2010	DoD notifies Congress of intent to allow women to serve on submarines.
2011	Congress mandates review of the Direct Ground Combat and Assignment Rule
2012	DoD eliminates co-location restriction from Direct Ground Combat and Assignment Rule
2013	DoD rescinds Direct Ground Combat and Assignment Rule, removing barriers to assigning women to combat units and occupations, and directs implementation by January 1, 2016. Exception to policy requires approval by the chairman and the joint chiefs of staff and then the secretary of defense
2015	Congress issues validation criteria to develop gender-neutral occupational standards

Adapted from Kamarck (2015)

on themselves to succeed. Mediocre performance may be attributed to gender rather than individual weaknesses. Further complicating the picture, women who succeed in nontraditional environments, and as such do not fit stereotypes of incompetence or physical weakness, may actually encounter social rejection (Heilman et al., 2004).

Notably, it can be a fine line for female service members in terms of physical ability. In some environments, a woman may be socially rejected if she is more fit than her male peers, or perceived as incompetent and ostracized if she isn't fit enough. Despite the conundrum associated with fitness, physical ability can serve as one method

for a woman to establish herself within a nontraditional military environment. However, there are unique historical issues associated with this performance arena for women. For example, in the past, women service members had to contend with poorly fitting gear, which weighed them down, and female soldiers were 20% more likely than their male counterparts to report musculoskeletal disorders (Hefling, 2011). As well, a 1998 Institute of Medicine subcommittee report noted factors such as increased stride length as shorter women worked to maintain the same stride length as taller men while marching and mixed-gender training to meet fitness standards as contributing factors to increased injuries for women service members (Subcommittee on Body Composition, Nutrition, and Health of Military Women, 1998). Combat uniforms and equipment have recently been sized for the female anatomy and proportions, though some women asserted they did not want equipment changes, because it would separate them from their male peers (Hefling, 2011).

Despite being technically excluded from combat positions in the Army until very recently, since 2001, 9123 women have received the Combat Action Badge, which is awarded for actively engaging or being engaged by the enemy. Of the service members who deployed since September 11, 2001, 11.8% were women, and 100 paid the ultimate price. The deployed environment is obviously associated with unique stressors, and service members – both men and women – often turn to their teammates as a source of support. A strong team can increase performance in the deployed environment and reduce combat-related stress (Cawkill, Rogers, Knight, & Spear, 2009). As such, depreciated unit cohesion is one of the chief concerns raised by those who oppose the expansion of women into direct combat roles. Many question if women can successfully integrate into a traditionally male population. That being said, research has demonstrated unit cohesion and performance are not dependent on common traits like race, ethnicity, sexual orientation, or gender (Haring, 2013), and that diversity increases creative problem solving, improved professional-

ism, and results in better performance. For example, mixed-gender Army basic combat training (BCT) companies performed as well as, if not better than, single-gender basic training companies (Chapman, 2008). Further, having women on a team can mitigate groupthink and excessive social cohesion. That is, high social cohesion – especially when it is based largely on elite group membership, social aspects, and attractiveness, rather than on competence or task completion – can actually undermine the effectiveness of group decision-making processes, promoting a state of groupthink (RAND Corporation, 2010).

Another potential concern or challenge regarding the expansion of women into combat roles is boundaries, or rather boundary violations. Some fear that men will be distracted from the mission due to the presence of women in nontraditional assignments, rendering men less effective on the battlefield. As well, behaviors in male units that were previously viewed as normative and formative for team building (such as teasing, storytelling, and sometimes sexual references) may not be appropriate in mixed-gender environments (National Research Council, 2014). As female service members seek to integrate on a team and gain support, they may become de facto arbiters of boundaries. It can certainly be a challenge to maintain appropriate boundaries while also garnering necessary support from peers during deployment. As women work to maintain boundaries, they may begin to feel isolated from their male teammates (Doan & Portillo, 2016) and less likely to feel they have support (Haslam & Ryan, 2008). Separate sleeping quarters on training exercises and on deployment can isolate leaders from their teammates and subordinates, and potentially hamper team integration. That said, shared experiences will enhance team cohesion despite separate billeting.

As noted above, women have proven they are value-added in the combat environment. They can sometimes reach out to local nationals and noncombatants to obtain information that male service members cannot. Female service members are eager to contribute and to maintain high

standards. Many have proven they are the right service member for the job, regardless of gender.

Despite the increasing presence of women in the military – in garrison and in deployed settings – significant challenges remain in terms of leadership, including both structural obstacles and those of an institutional mindset, not unlike those facing women in corporate America (Bensahel et al., 2015). The military is not an exception when one compares the number of women in senior leadership positions versus those in the rest of the workforce – women constitute only 7% of the military’s general or flag officers across the services (Zenger & Folkman, 2012). This discordance is the result of multiple factors, as outlined below.

Firstly, and understandably so, the military is steeped in a “warrior culture.” While the successful completion of being in command is identified as key to credibility and potential, the types of commands held serve as a discriminator. The value placed upon leadership within combat units is clear when one considers the background of senior leaders. Of all the senior officers across the services, 65% who hold the rank of O-7 (i.e., one-star generals or admirals) have held leadership positions in combatant commands – that percentage increases to 80% for those attaining the rank of O-10 (four-star generals or admirals) (Military Leadership Diversity Commission, 2010). While the Air Force and Navy opened many of their tactical fields to women in 1993, the Army and Marines excluded women from assignments to such units below the brigade level, if the primary mission was to engage in ground combat, or if the units were in close proximity to direct combat. As a result, the vast majority of the “career-enhancing” assignments – those within tactical or operational units – were, until 2016, closed to women. While women are now eligible to enter those fields, it will take years, if not decades, for them to gain the experience and expertise needed to be considered for the senior ranks. On average, an officer promoted to O-7 has completed approximately 23 years of service (Schacherer, 2005). Women who do serve in the top ranks of the military continue to be promoted less frequently than their

peers. When compared to male peers, approximately half as many female O-6 s (colonels) are selected for promotion to O-7 (brigadier general) in the Army, and only 37% of female O-7 s, compared to 41% of their male peers, are promoted to O-8 (major general) (Military Leadership Diversity Commission, 2010).

Secondly, while the elimination of the combat exclusion ban may remove one structural barrier for women’s promotion opportunities, other confounding factors remain. In the past, graduating from one of the service academies, or being identified as a “ring-knocker,” was seen as providing considerable advantage for officers. While research has suggested that the source of commissioning has become less of a factor over time, graduates of the service academies do enjoy several advantages early in their careers – that of graduating with a sizable cohort of peers with whom relationships have been forged over four years of academic, physical, and leadership challenges. The first women graduated from the military’s service academies in 1980, and included just 213 women (Army: 62, Navy: 54, Air Force: 97). In addition to providing a built-in network for problem-solving, advice, and key assignments, graduates have the benefit of an appreciation of some of the rigors of military life. While the number of women graduating from the service academies has grown, it remains a fact that only between 17% and 22% (depending on the service academy) of the recent graduates have been women.

In addition to assignments, relationships play a key role in one’s career, whether based in mentorship or rating chains. As an example, the networks developed when serving as an aide-de-camp¹ for a senior leader can often lead to other career-enhancing opportunities. Women, however, face two obstacles in obtaining these positions: the first based upon a lack of experience in combat-related fields – having an aide-

¹An aide-de-camp serves as a general’s or admiral’s executive assistant, typically managing correspondence and taking notes at meetings, planning travel, itineraries, and social events, coordinating protocol, and assisting in personal matters, depending upon the individual’s preferences.

de-camp who is “Ranger-qualified,” for example, is a desired qualification for many senior Army leaders. The second is based upon perception. Senior leaders in the military, more so than in the civilian sector, live in a “glass bubble,” where their actions and behaviors are subject to considerable scrutiny. The near-inevitable speculation that arises when a senior male has a younger woman as his aide-de-camp can be intolerable for a flag officer and his spouse (Priest, 1997), particularly given well-publicized issues of sexual misconduct within the ranks.

The third challenge for women obtaining leadership roles is associated with mentorship. Mentorship, a key for growth in one’s profession, is intrinsically tied to leadership – it is a rare occasion when someone rises to senior leadership without that experience, and it is an expectation that senior leaders will share their wisdom and guidance. However, it should be noted there are really two types of mentorship – mentorship and sponsorship, with sponsorship, or the use of influence to advocate for the mentee, being the “higher” level. Studies suggest women’s mentors have “less organizational clout” (Ibarra, Carter, & Silvas, 2010). Given the known relationship between assignments in tactical commands and senior positions, this finding has implications for women in the military as well. Although the Ibarra et al. (2010) study suggested that both genders report receiving valuable career advice from their mentors, it was the men who described being “sponsored,” or having a mentor plan career moves and endorse their capabilities publicly. Women, on the other hand, spoke about how mentors “helped them understand themselves, their preferred styles of operation and way they might need to change as they move up the leadership pipeline.” The authors concluded that high-potential women may actually be over-mentored and under-sponsored when compared to their male peers.

The fourth challenge for women involves the difficulties inherent in maintaining and blending work demands with family (Konrad, 2003). Women leave the military between their fifth and eighth year of service at double the rate of their male counterparts, reducing the number of

women with the requisite skills and potential to fill leadership positions. Demanding assignments, operational deployments, and geographic separations are factors absent from the equation used by most civilians, as are the very real issues of risk in training and combat. While there are men who are single parents and stay-at-home fathers, military women, like their civilian colleagues, bear a disproportional degree of family responsibilities. As an example, Zellman, Gates, Cho, & Shaw (2008) noted that over 50% of military mothers were late to work at least once during the previous month due to childcare issues, compared to 7% of fathers. Demands common to the military, to include unpredictable schedules, training exercises, and extended deployments, can be exacerbated by the availability and affordability of childcare, especially for single and dual-military parents. Twenty percent of families with children cited the above issues as primary considerations in determining whether the military would become a career, and said that time away from families due to deployments was the primary reason soldiers leave the Army (Zellman, Gates, Moini, & Sutturp, 2009).

It should also be noted that for married service-women, nearly half are married to another service member, whereas only 7% of active duty males fall into that category (Office of the Deputy Assistant Secretary of Defense, 2014). Dual-military families experience a unique set of challenges (see also Najera et al., Chap. 11, this volume). Service members typically rotate through jobs every two to three years, a change that often results in a geographic move, and a request for a joint domicile, even if granted, can limit job opportunities which, in itself, can have an adverse impact upon career progression. While deployments are challenging for all families, dual-military families are affected to an even greater extent, as it is not uncommon for one spouse to redeploy (i.e., return from deployment) only to see their spouse deploy. As a military woman is seven times more likely to be married to a service member than a man, these factors have a disproportional impact upon women. Women in dual-military marriages are almost 50% more likely to leave the military than their male coun-

terparts. As a female service member works to establish herself within her organization, she also has to contend with differing expectations. She must balance her role as a spouse and parent with that of a service member.

A female CSM stated:

You always get criticized for working on Army instead of working on marriage or kids. I've always chosen to deploy. Family can resent you for it. Success is within yourself. It has been a huge personal sacrifice. When the dust settles and you retire, you have to be OK with your personal sacrifice. You have to be OK with the cost of what you've done.

This is not just a “woman’s problem,” as noted by Vice Admiral (Ret) Ann Rondeau (2015), but “a challenge to the stability and health of the entire all-volunteer workforce.” There is a growing body of research that speaks to the career preferences of the “millennial generation,” a cohort that appears to equally value work and lifestyle above financial compensation in making career decisions (Pew Research Center, 2013). It certainly can be argued that addressing the challenges women face will likely benefit both genders. As Zenger & Folkman’s study (2012) comparing 16,000 male and female leaders highlights, women rated better than men on 12 of the 16 competences, to include traditional measures for effective leadership, taking initiative and “driving for results” – as well as more human competencies – development of self and others as well as collaboration and relationship building. That being said, the authors postulated women were less frequently represented in senior leadership roles because while men have historically felt compelled to sacrifice their families to advance their careers, many women believe the cost to their families too great to pay. This has much relevance to the military.

In addition to the aforementioned obstacles, there are also barriers centered on perceptions, attitudes, and beliefs. For example, there is the perception, still held by some, that women have no role in the military or that their roles should be constricted to more “traditional” settings. There continue to be incidents where women are chided for “taking a man’s job when he needs to support a family,” and told their military career is “shortchanging” their

children. While a discussion of the prevalence and impact of sexual assault, harassment, and discrimination is beyond the scope of this discussion, the subtleties of gender-based bias continue (see also Thomsen et al., Chap. 21, this volume). “Until women are fully accepted in the military’s warrior culture, this minority status will put them at greater risk” for abuse and discrimination (Laughlin & Haring, 2013).

A final potential barrier for women to attain senior leadership is an internal one – a sense of competence and willingness to “take a seat at the table.” The book *Lean In* (Sandberg & Scovell, 2013) makes the argument that women often unwittingly undermine themselves; while men often overvalue their strengths, women too frequently undervalue theirs, resulting in a confidence gap.

It can be argued that the military provides women with a skill set to “lean in,” if women are empowered by the command culture to do so. The military demands that individuals work as a team. The ability to look past gender, just as for race, religion, and sexual orientation, to identify strengths and minimize weaknesses while mentoring and guiding individuals is essential. Strength – physical, psychological, and emotional – is enhanced by challenges, in moving beyond one’s comfort zone, in order to achieve growth and develop competence. Whether in a war zone, during a physical fitness test, when faced with inappropriate behavior, or given the opportunity to break down another stereotype, military service offers women multiple opportunities to exercise their strength – to address issues, lead and make decisions, stand up, and use one’s command voice if they are willing to take a “seat at the table” (Sandberg & Scovell, 2013).

Women Leaders’ Experience in the Military: Predicting Success

A review of the historical background and leadership challenges for women in the military quite understandably leads the reader to consider the characteristics of women who succeed in this environment. While a randomized controlled trial on the topic is beyond the scope of this chapter, previ-

ously conducted research in the field of Grit offers a convenient rubric for hypothesizing some of the underlying processes and attributes (Duckworth, 2016). Grit is not the only characteristic that has been explored as a possible explanation for success. Related to Grit, but different from it is Hardiness. Grit can be considered to be one's ability to sustain interest and effort for a passion over time, rather than succumbing to disappointment or boredom (Duckworth, 2016). Hardiness, on the other hand, is a person's response to stress as being a challenge for growth, rather than cause for becoming discouraged or quitting (Maddi, Mathews, Kelly, Vilarreal, & White, 2012). Both contribute to success, though likely in different ways. For example, Kelly, Matthews, & Bartone (2014) found significant differences in Grit and Hardiness scores among US Military Academy cadets who attrited from initial training versus those who persisted through graduation. Notably, the Grit "interest factor" of the scale is what differed significantly between the two groups; those with higher Grit interest at entry were more likely to graduate. With respect to Hardiness scores, differences among cadets emerged during the more novel and demanding aspects of their initial training, but not during extended and more academically focused periods.

For the purposes of this chapter, we consider that success over the course of a military career might require a sustained effort that is characteristic of Grit. In developing and studying the topic of Grit, psychologist Angela Duckworth (2016) asked herself and others such questions as: Who is successful and why? Is there a characteristic that is predictive of success? After interviewing countless exceptionally successful individuals, such as world-class swimmers, premier chefs, renowned cartoonists, graduates of the US Military Academy at West Point, and winners of the National Spelling Bee, Duckworth identified "perseverance" and "passion" as the common themes in their journeys to eminence, and called the combination of these two traits endemic to achieving very long-term goals "Grit." Regarding the first trait, perseverance, or hard work, Duckworth suggested that simply discussing talent is a distraction, whereas effort can be thought

of as contributing twice to eventual success; effort can improve one's basic talent to develop skill, and putting additional effort into the skill one has developed leads to even greater achievement. Passion, the second component of Grit, is related to one's unwillingness to let setbacks or distractions prevent them from achieving particular goals. The Grit scale (Duckworth, Peterson, Matthews, & Kelly, 2007) provides a valid measure of grittiness, shown to be predictive of success among diverse groups, such as new cadets at West Point, National Spelling Bee competitors, and teachers.

The authors of this chapter wondered whether successful military women are similarly "gritty." Rather than administer the Grit scale to them, we developed a few open-ended questions to elicit narratives that might illustrate how they succeeded. These questions included the following: (1) How do you respond to setbacks? (2) How would you describe your focus/attention on projects and goals? (3) To what do you attribute your success? Can you provide examples of these?

Several successful military women answered the questions. We heard from noncommissioned officers who had served at the top of their military specialty, such as a CSM for several thousand people, officers who had successful careers as flag/general officers, and other senior officers who had excelled in their fields. Time and again, these women commented on how both the perseverance and passion aspects of Grit allowed them to achieve their goals.

One retired senior officer expressed it this way:

When I was much older I heard my father contemplating how he raised us kids and he said, "I knew if they got into the best college, they'd find it challenging and would survive it." I found it interesting he said survive, not thrive in it. So, with that, you learn to have high expectations of yourself. You drive yourself to succeed. That explains me – regarding raw horsepower of my brain – I have an average brain but I work a lot harder than the average person. For example, at West Point and later at business school – I was scared silly and worked my ass off. It was one of the most affirming events in my life. I was successful because I worked my butt off – be it work, physical training, whatever – determination is what is important.

Arguably one the most influential aspects of Grit behaviors is that of practice. Most have heard that leaders in their field are shown to have spent over 10,000 h practicing in order to achieve mastery (Gladwell, 2008). But putting in the hours is not enough; practice must be goal directed and, for greatest effect, aimed at responding to feedback or identified shortcomings.

The military trains its members from early on to examine how outcome or performance can be improved. An Army officer wrote:

Being the good Army officer that I am, I conduct an After Action Report. I look at what went well and what went not so well. For the things that did not go so well, I dissect into what I can control and what factors I could not have controlled. For the ones I could have controlled, I brainstorm how I might have done those activities better. For the ones I could not have controlled, I look hard at them – are they really out of my control, or could I have shaped them with other entities to serve me better in the long run?

A senior officer said:

Finding trusted advisors who will be frank is critical. The higher I've gone in rank, the more difficult it has become to find people who will tell me when they think I'm about to make a mistake or an uninformed decision. Without critical and honest feedback, how will I improve? In every situation and in every job, I am trying to learn more and do better. I'm always watching how others lead – and I try to take every opportunity to make my thought processes explicit to my subordinates. I think it's important to model and cultivate an environment of continuous development.

The women we interviewed also seemed to have struck a balance between pursuing their passion and knowing when to adjust their short-term goals. A senior noncommissioned officer noted:

A good example is when I was working on a new program, it was a tough road to work through the numerous stovepipe signatures that needed to sign off on the program. I had to justify every dollar, hour, material, and asset being put into the program. I was blocked at a certain junction and sent back to the drawing board. Did I stop? No, I engaged with my team and asked, "What will it take to get this program approved?" I wouldn't take no for an answer and after a couple years, the program finally got through all the appropriate authorities and is working even today!

Just as important, however, is the ability to adjust one's short-term goals and put one's energy and efforts toward something that will pay off. A master sergeant in the Marine Corps recalled:

I remember there was once a program I really wanted to do – it was a joint special program. I was qualified, and the joint unit wanted me, but the Marine Corps wouldn't let me go. I fought really hard for a while, and then I quit fighting, it just must not have been meant to be. I was disappointed, but I moved on. That's what I do, I move on, I don't dwell. Interestingly, last week someone brought up another disappointment and asked me if I remembered that. I didn't! So, when I have setbacks, I don't dwell on it – I move on.

If the immediate goal, however, could be seen as an important step toward achieving one's long-term passion, these women were willing to work hard and take risks to achieve it:

I was hesitant to interview for a new position working with a joint service (the boss was in another service). So I took the chance and won the job! I had to learn about the differences between the services and the administrative portion which was a lot of work. I feel this set me up for the ultimate top job that I interviewed for a couple years later and won! I showed that I was teachable, flexible, and customer service oriented. I truly feel that because of the way I treated people and cared for their well-being and satisfaction, this was and will always be my key to success!

Another officer who also switched services attributed her success to her initial training, and said:

From your first job in the military, you are saddled with leadership responsibilities that continue to train you – the Marine Corps teaches you not to quit. If you allow yourself to be uncomfortable, you will achieve. I took a risk and completely changed careers, I may not have gotten to retire from the military, but I felt I could do more for the military in my new role.

These accounts suggest characteristics that contribute to success in military women are not necessarily different from characteristics we might uncover in elite athletes or world-renown scholars. The women we interviewed demonstrated numerous aspects of Grit – a willingness to work very hard with lots of practice, and use critical feed-

back, input, and passion to achieve long-term goals. What may be different for these women, however, is the context in which they need to be gritty. The challenges and resistance they experience (e.g., working in oftentimes male-dominated, hazardous/combat environments, with frequent moves) may require additional Grit, or may require they solicit feedback for growth in a different way. Additional exploration of Grit in military women is needed to help understand how many grow to be so extraordinarily successful. The next section delves into the lives of women service members as they transition to civilian life. True to form, when faced with unique challenges women service members are able to employ many of the aforementioned skills in order to successfully achieve their personal and career goals.

Women Transitioning Out of the Military: Challenges for Female Veterans

As of 2014, two million of the 21.9 million veterans were women, representing 9% of the entire veteran population (National Center for Veterans Analysis and Statistics, 2016). It is anticipated that women veterans, specifically those of minority status, will continue to be the fastest growing veteran population (Miller, 2015). Because representation of women in the military continues to grow, it is predicted that by year 2035, women will comprise 15% of all living veterans (National Center for Veterans Analysis and Statistics, 2011).

A profile of the post-9/11 military force indicates some differences in the experiences of female and male veterans (Patten & Parker, 2011). In terms of positive effects, a significant portion of women veterans report feelings of pride for having served their country (Patten & Parker, 2011). They recognize benefits of having served, communicating they gained both personally and professionally through their military affiliation. For example, being a service member assisted them in preparing for a career, achieving a sense of self-improvement and self-confidence, and excelling in life. Impressively, the majority of female veterans reported that they would

strongly encourage and guide a young individual they cared about to join the military.

Concerns, however, include the following: Though female veterans are less likely to have served in combat, been deployed away from their permanent duty station, or served with someone who was killed in the line of duty, they are equally as likely to have experienced an emotionally traumatic event during service. A comparable percentage of women and men report struggling with posttraumatic stress disorder (42% and 35%, respectively), strained family relations (50% and 48%), and low motivation (27% and 33%) post-discharge. Both female and male veterans described this transition as very or somewhat challenging (43% and 45%) (Patten & Parker, 2011).

Regarding the last statistic, transitioning out of military duty can result in increased stress for some due to the many questions that arise in three critical areas: personal identity, loss of a cohesive and supportive military community, and employment. First, in case of personal identity as a military member, when one chooses to join the military, they make a commitment to a significant life change. Starting in boot camp – the established training ground for all military personnel – recruits are indoctrinated into military culture, and trained on the shared values and goals of the organization. They learn how to accomplish a common mission, maintain a collective, versus an individualistic, worldview, and kill another individual, if need be, in keeping with allegiance to their nation (Demers, 2013). Military indoctrination is essentially a process of stripping away the old identity and introducing the new. The values accentuated include duty, integrity, allegiance, and dedication to one's comrades, unit, and country. Successful induction into the military is a complex calling on both a personal and a professional realm. This personal transformation becomes apparent when an individual discharges from military service and returns to civilian life. They may experience what has been described as a "civil-military cultural gap" – the difference between persons who have served and those who have not. In actuality there can be several gaps, representative of divergences in values, norms, attitudes, and culture. Transitioning to a civilian life may be complicated for women ser-

vice members in particular; not only will they encounter the normal challenges of reintegrating back into civilian society, they may also contend with barriers related to negotiating a world that commonly holds women in traditional feminine roles and images. Hence, female veterans have expressed consternation about being caught between two worlds: being a warrior, devoid of feminine traits, and returning to a society where there are fairly rigid and distinct gender norms. Other issues noted in the literature concerning reintegration into civilian life and involving loss of identity are associated with recently acquired or newly diagnosed physical and/mental health disorders upon discharge. Women service members who had to separate from the service due to medical problems report grief over the loss of their earning potential, their roles as providers and caregivers, and concerns about short-term and long-term fiscal security. Consequently, they may struggle with feeling weak, dependent, lacking purpose, and ashamed – all quite the opposite of the masculine warrior ethos.

Loss of identity may also be experienced within the context of community. Female veterans describe a sense of isolation and ineptness regarding communication and social engagement with civilians. Feelings of emotional insecurity are commonplace during the transition/reintegration period as service members learn how to (re)engage with others outside the service.

Another well-documented concern among veterans is the issue of homelessness, and women veterans are four times more likely to be homeless than their nonveteran counterparts (Hamilton, Poza, & Washington, 2011). Explanations for this disproportionate representation by female veterans include traumatic military experiences, substance abuse, pre- and/or post-military adversity (e.g., interpersonal violence, unstable housing, loss of income due to illness, mental illness), and unemployment. The combination of these factors increases the likelihood of homelessness, and the path to homelessness generally begins after discharge and lasts an average of ten years before the women actually become homeless (Belcher, Greene, McAlpine, & Ball, 2001). Notably, women often join the service to make a

better life for themselves by leaving behind violence and abuse. Their inherent will for survival and independence is likely what helped them escape these bad situations. However, strong will and independence, two characteristics generally enhanced in the military, may readily prevent female veterans from requesting or securing assistance when needed, especially with regard to maintaining or seeking adequate shelter. Another relevant risk factor for homelessness is the lack of transferrable skills that female veterans acquire during their military service. Though the skills are valuable within the military, they may be ineffectual in the civilian workforce. Alternatively, it may be that the skills are more appropriate for a predominately male field. This inability to translate skills and experience gained from one's military occupational specialty may hinder the female veteran's ability to gain employment, directly impacting the post-separation adjustment.

The picture for female veterans is not all negative. Looking at educational attainment, for instance, a greater percentage of female veterans are enrolled in or have attained higher education compared to women nonveterans (National Center for Veterans Analysis and Statistics, 2016). In 2009 it was estimated that Montgomery GI Bill benefits were used by 284,000 women veterans, representing 19% of the total population of women veterans (National Center for Veterans Analysis and Statistics, 2011). Over 80% of female veterans applied these benefits toward education in undergraduate or junior college and 12% used these benefits for graduate-level education. In the same year, female veterans comprised 20% of veterans who participated in the Vocational Rehabilitation and Employment (VRE) program. Through the GI Bill and VRE program, female veterans are obtaining the education and skills training necessary for the transition to civilian life. Perhaps consequently, female veterans tend to possess a higher median household income than female nonveterans (\$54,993 versus \$44,999, respectively). Furthermore, employed female veterans are more likely to hold positions in management and professional occupations, and to be employed by the government than female nonveterans

(National Center for Veterans Analysis and Statistics, 2011).

Because there are differences between military and civilian/private sector work environments, it is imperative that female veterans are adequately prepared to transition into civilian jobs. Women veterans do not lack confidence, but potential barriers to their successful transition into the private sector relate more to issues regarding civilian salary and promotion negotiations, which is distinct from the military personnel system (Bensahel et al., 2015). Additionally, women veterans may need assistance in the actual process of creating a resume, applying for jobs, and preparing for job interviews. Within the civilian work environment, learning about rules of behavior, work ethic, and workplace climate may prove essential as well.

The following list outlines some of the available Department of Defense, Veteran's Affairs (VA), and community-based services to help female veterans in addressing the barriers that may exist. Female veterans may apply for a variety of supports, including health care, insurance, disability compensation, pension, education and training, VRE, home loans, and burial (for more information on this topic, see <http://www.benefits.va.gov/persona/veteran-women.asp>).

1. Women Veteran Coordinators (WVCs) are located in every regional office and function as a primary contact for women veterans. WVCs are trained to provide specific information and comprehensive assistance to women veterans, their dependents, and beneficiaries concerning VA benefits and related non-VA benefits. Additionally, WVCs may assist in the claims intake, development, and processing of military sexual and personal trauma claims.
2. VA Health Care for Women Veterans: At each VA medical center nationwide, a Women Veterans Program Manager (WVPM) is designated to advise and advocate for women veterans. The WVPM can help coordinate all the services female veterans may need, such as primary care, specialized care for chronic conditions, and reproductive health.

3. VA Benefits for Survivors of Military Sexual Trauma (MST): There are special services available through the VA to help women who experienced MST. Services include free and confidential counseling and treatment for mental and physical health conditions related to the military sexual trauma. To receive this benefit there is no need for a service-connected disability/injury, to have reported the incidents when they happened, or to have other documentation to prove that they occurred. Individuals may be able to receive this benefit even if they are not eligible for other VA care. Every VA facility has a designated MST coordinator who serves as a contact person for MST-related issues. They are available to assist veterans in locating and accessing VA services and programs, state and federal benefits, and community resources.

Where Do We Go from Here? Recommendations for Leaders

This chapter highlighted the expansion of roles for women in the military, along with numerous associated challenges experienced in garrison, in combat, as leaders, and in transition out of the service. Such challenges include structural or policy/procedural obstacles, along with outdated stereotypes and perceptions that have implications for all service members and their leaders. As “gritty” service members, women’s presence “at the table” will continue, and as we have emphasized here, to the benefit of all we serve. The following are offered as recommendations for service members and their leaders as women’s integration proceeds:

1. Emphasize the duties and responsibilities of service members based on military occupational specialty and ensure it is not based on gender. Make certain all service members have opportunities to excel, and that women service members are not limited to office positions or jobs outside of their specialty.
2. Ensure objective performance criteria help organizations reduce and eliminate gender and

racial discrimination. Leaders need to know what “right” looks like. By clearly defining and communicating performance evaluation criteria, everyone knows what is expected, and when those expectations are met. This leaves no room for subjectivity in performance evaluations.

3. Make sure your service members are physically and mentally prepared as they pursue nonstandard training. Before a woman service member attends nonstandard training events, offer pre-training. Ensure that an appropriate fitness standard is achieved. As Kamarck (2015) highlighted:

Whenever the Secretary of Defense establishes or revises a physical requirement for a military career designator, a member serving in that military career designator when the new requirement becomes effective, who is otherwise considered to be a satisfactory performer, shall be provided a reasonable period, as determined under regulations prescribed by the Secretary, to meet the standard established by the new requirement. During that period, the new physical requirement may not be used to disqualify the member from continued service in that military career designator.

4. Be aware of personal and collective stereotypes and biases within the organization. Are women service members being penalized for being “harsh” or “not a team player”? Would a male service member be viewed similarly?
5. Maintain professionalism. Discuss the issue of maintaining boundaries with service members. Jokes and levity help some build relationships, as does disclosing personal information, but both can also violate boundaries and diminish professionalism, or be misconstrued. Teammates need to know when to say when, regardless of gender.
6. Find good mentors. Seek women mentors to guide women service members through their leadership development. Educate managers and employees about gender stereotyping, and showcase the success of women leaders in the workplace. Have guest speakers who

cover a spectrum of demographics. Find out if they are available for consultation or mentorship.

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Part V

Research Advances for Enhancing Performance and Treatment

Gerald P. Krueger and Joseph B. Lyons

The focus of the present book is on clinical and organizational practice, which encompasses a broad range of behavioral science topics related to protecting and enhancing the health and well-being of military personnel and their families. The practice of military psychology generally emphasizes prevention of adverse responses to an assortment of environmental and psychological stresses that uniquely accompany military lifestyles and work situations. These include stresses/stressors encountered in: (1) military skills development training and during readiness training and preparation for combat; (2) deployment to unfamiliar and mostly harsh settings, usually overseas; and (3) ultimately, engaging in sustained combat operations, or alternatively in peacekeeping, humanitarian, and nation-building missions.

This chapter is somewhat different from most other chapters in the book. It attempts to provide a sampling of what military *research psychologists* do in several settings. Regardless of specialty, the

abiding goal of all military psychologists is to help preserve the health and performance of soldiers, sailors, marines, air force, and coast guard personnel during multiple aspects of their military experience.

Historical Background

U.S. Military Research Labs and Psychological and Behavioral Science

After World War II, the U.S. Army, Navy, and Air Force each retained a sizeable number of research laboratories whose formation was spurred by that war. There was a tremendous growth spurt in military labs during the late 1940s and continuing through the mid-1970s. Before more recent cut-backs attributable to a series of Base Realignment and Closures (BRAC) prompted consolidations, there had been a considerable variety of military research organizations – in all over 50 labs and research centers. The mission of most labs was to ensure our fighting forces continually had the latest technological advances in weapon systems with which to fight; and that our forces in deployed environments overseas had effective logistics and supply systems to sustain them. After doing basic and exploratory research, and much product development work, many labs also performed testing and evaluation of military systems to

G.P. Krueger (✉)
Krueger Ergonomics Consultants,
Alexandria, VA 22306, USA
e-mail: JerryKrueg@aol.com

J.B. Lyons
Human-Centered ISR Division/Human Trust and
Interaction Branch, Air Force Research Laboratory,
Wright-Patterson AFB, OH 45433, USA
e-mail: joseph.lyons.6@us.af.mil

inform decision makers before committing to expensive procurement actions. Also common were studies to retrofit systems that needed fixing or upgrading after fielding.

About 20–25 of the labs were charged to do medical research of one variety or another (e.g., infectious disease, surgical research, dental and maximal facial injury research, dealing with chemical-biological-radiological threats). Each service also had a lab dedicated to aviation or aerospace medicine. In each of the three major military services, a handful of the medical research labs and other organizations identified as military personnel research centers employed significant numbers of research psychologists and other behavioral research scientists. In the aggregate, over the seven decades since WWII, the U.S. Army, Navy, Air Force, and the Department of Defense employed hundreds of behavioral and social science researchers, most of them as federal civil servants, and to a lesser extent, as active duty scientists or contractor personnel. Additional behavioral scientists worked at the US military academies, at the Uniformed Services University for the Health Sciences, and for numerous public and private university academic labs or for government or privately established research foundations. Much of the work of these many researchers is easily recognizable as being in the realm of military psychology. Collectively, they all worked on an identifiable number of thematic behavioral research programs, designed to:

1. Achieve effective, workable military *personnel selection and job placement* processes.
2. Enhance military *training and the combat preparedness* status of deployable forces.
3. Attain *user-friendly combat systems* (i.e., human engineering of weapons, military materiel systems, etc.) for ensuring mission accomplishment.
4. *Preserve the health, performance, and fighting strength* of combatants and support personnel throughout the military family – in particular, research on how to prevent or attenuate environmental and operational stressors that potentially degrade military performance.
5. Positively influence Department of Defense and individual service-wide *personnel, organizational, and operational policies* regarding numerous issues that impact the lives of millions of military service men and women, and their families.
6. Ensure our *fighting forces returning from combat are supported* in reacclimating to post, camp and station assignments; or in the case of separating veterans, offering them a supportive transition back to civilian life. This included care of wounded vets in treatment at service hospitals and in Veterans Administration programs.

There is no recent singularly focused collection presenting a summary of which US military research organizations employed large numbers of military psychologists. But, one can read about many of them in all three major U.S. military services, in books by Zeidner and Drucker (1988), Gal and Mangelsdorff (1991), Mangelsdorff (2006), Bartone, Pastel, and Vaitkus (2010), Laurence and Matthews (2012), and the U.S. Army Research Institute for the Social and Behavioral Sciences (2015). Military psychology research in various labs is also described in individual book chapters by Krueger (in Cronin, 1998; in Hancock & Szalma, 2008; and in Bartone et al., 2010a).

In summary, a large body of military psychological research has been oriented to personnel selection, including before, during, and after periods of time when the United States employed a conscript draft system (which officially terminated in 1973); then recruitment research; job placement categorization work; and studies of training processes and design of high tech training systems (e.g., for Army training systems, see Goldberg, 2012). A natural follow-on includes many lab-based studies concentrated on individual “soldier performance” (e.g., doing basic military tasks, individual rifle marksmanship, plotting targets on a map, flying airplanes, firing vehicle-mounted weapons, etc.). There was also examination of performance of teams or crews, such as studying the performance of military personnel operating in crew-served weapon systems (e.g.,

tanks, aircraft, helicopters, naval vessels, ships, submarines, missile launchers, etc.). Some recent research psychology trends in the Air Force, as described later in the chapter, tend to be very technology-centric, though with the same emphasis on improving human performance.

Carrying through with this behavioral research included examining both individual and team performance when environmental and organizational stresses were heightened, as for example during sustained and continuous military operations; in environments that included high heat or extreme cold; at high terrestrial altitudes; or studying individuals performing while wearing chemical–biological agent protective uniforms and equipment. Air Force and Navy studies examined fighter pilot performance at high aerospace altitudes, in air-to-air combat scenarios; and sailors performing on naval vessels underway, often on rough seas. Many studies were done in lab experiments, or during field training scenarios; and others while using sophisticated high technology simulators. Opportunities to conduct data collection assessing performance during actual combat operations were less common. There were also numerous psychological examinations of traits of leadership, elements of team cohesion, collective (unit) mission performance, and assessments of the quality of individual and unit mission accomplishment. Reports of such military psychology research studies fill volumes, and many are critically important. However, the incredible array of the above-mentioned research efforts might only be of tangential relevance to the interests or work of clinical military practitioners and operational psychology consultants.

Accordingly, in this chapter we have been deliberate in presenting just a few research psychology selections. These cover four principal areas: (1) research strategies to promote mental health during and after military deployments; (2) studies of psychological adjustment to military life; (3) a few select Navy psychological research studies on adjustment to Navy life, on behavioral health, and on cognitive performance; and (4) a brief description of three contemporary aspects of Air Force human factors/applied psychology

research trends: training, human-machine interaction, and Sense–Assess–Augment framework research.

Combatant Stressors and Soldier Performance Effectiveness

The Fuss About Stress

After reading a number of chapters in this book it may appear that military behavioral scientists and clinical practitioners are apt to cite different definitions and connotations for the terms: *soldier stress*, *combat stress*, *battle fatigue*, *combat stress reaction*, *stress casualty*, or even *posttraumatic stress (PTS) ~ disorders (PTSD) or injuries (PTSI)*. For a research psychologist interested in the effects of stress on “fighting performance,” *combat stress* or *operational stress* is often looked at more as being the “stressors” or the *stimuli* in the environment. For example, weather extremes, especially high ambient temperatures and high humidity, or excessive acoustical noise, or even receiving pressure to perform from a demanding boss, can make work “more stressful” and more difficult. Stimuli-stressors of many different sorts can adversely affect performance, even on simple and basic military tasks. *Stressor stimuli*, both physical and psychological, whether manmade or environmentally induced, impinge upon the person (soldier, sailor, airman, or marine) as the stressors affect his/her readiness and ability to perform, to engage in and succeed in a fight.

On the other hand, for the clinical practitioner interested in mental health, *combat stress* often refers to the *response* of a combatant (i.e., more internal, subjective responses) to multiple stressors on the battlefield or in the work environment – responses that begin to manifest individually as clinical symptoms. Such stressors include participating in lengthy arduous work stints, or they could be due to something like having to work in a rough, toxic organizational climate where good unit leadership may be lacking. Since not all stress is “bad stress,” some physical and psychological or operational stressors (stim-

uli) may prompt a soldier to perform very well (e.g., serving to heighten one's motivation). Contrarily, the accumulation of stressors may contribute to making the soldier an ineffective combatant on the battlefield. An overly-stressed combat soldier is likely to be one who is physically able, but is otherwise psychologically unable or unwilling to continue the fight as he/she experiences phenomena often referred to as combat fatigue, combat stress reaction or even in contemporary trends, may be categorized as Posttraumatic Stress Reactions (sometimes labeled as PTS-Injury or PTS-Disorder).

Soldiers process or filter many stressors (stimuli) through organizational, social context, and personal variables. Social context variables that might influence how stressors get processed in the military environment include unit cohesion, leadership climate, operational tempo, and others. Personal variables that influence or moderate the stress-outcome relation include past experience, pre-existing psychopathology, and personality characteristics (Bartone, 1998). Bartone suggested that it is important to understand and maintain a conceptual distinction between "stressor" and "response to stress" and to strive to measure and talk about the two separately. Countless journal articles and book chapters describe many aspects of soldier stress and combat operational stress reactions. For notions on how battlefield stress terminology and assessments have changed over the past century, see for instance Campise, Geller, and Campise (2006).

During World Wars I and II, extreme battle stress casualties received considerable attention from military psychiatrists (Jones, 1986). As medical practitioners, psychiatrists focused on effective treatment and return to duty of psychiatric casualties. The many terms employed to describe extreme stress often took on different meanings in discussions of large- and small-scale wars. Causes of extreme stress reactions were attributed to situational factors such as *combat intensity* and *duration*. Very lengthy exposures to actual combat, including intense, lethal, direct, and indirect fire (e.g., in some WW II cases, almost continuous artillery bombardments over months duration) increased the potential for indi-

vidual psychiatric breakdown and unit disruptions. According to D. Marlowe (1986), a social anthropologist at the Walter Reed Army Institute of Research (WRAIR), the power of the battlefield to break men can never be overstated. Marlowe pointed out that involvement of U.S. armed forces personnel in WW II was substantially different from U.S. combatants participating in the wars in Korea (1950–53), Vietnam (1961–73), the Persian Gulf I & II conflicts (Iraq in 1991 and 2003), and Afghanistan (2001–continuing). The experiences of many combatants, that is, in terms of combat intensity and duration, varied considerably. These later wars of course were not less stressful or deadly to specific infantry platoons engaged in a desperate firefight with the enemy – which may have lasted for hours or even days, but except in rare cases (e.g., the siege at Dien Bien Phu, Vietnam in 1954) such battles did not usually carry on for months at a stretch. Even during the past decade of fighting in Afghanistan, Iraq, and Syria, combat actions have not matched the scale, the intensity, and especially not the weeks and months-long duration of high-intensity main force battles between essentially equipotent forces using massive resources for indirect artillery fire as occurred in WW II.

The incidence of *soldier breakdown* in later wars was as much controlled by the calendar as by the outcome of combat with the enemy. By design, in these more contemporary wars, shorter assignment rotation policies for U.S. military personnel dictated how long an individual's combat tour lasted. In Korea, Vietnam, Bosnia, Afghanistan, and Iraq, individual tours in combat generally were for 1 year or less; but in some instances slightly longer than a year; for example, some personnel served 15-month deployments in Iraq in 2007. Combatants in these later conflicts usually did not envision themselves as being committed for years at a stretch, to the *end of battle*, as was the predominant case in WW II.

It is not practical here to make statements of comparative rates of psychiatric cases between WW II combat and present day conflicts in the Middle East. This is especially the case while the U.S. Defense Department is still implementing

new and frequently changing policies and practices on early prevention, identification, treatment, and tracking of combat stress casualties in numerous contemporary overseas troop deployments. Some of the deployments, for example, the U.S. military “surge” of thousands of additional combatants deployed in Iraq (2007), and also in Afghanistan (2009–2010), involved additional large numbers of military and contractor personnel, many of whom were not directly involved in combat. That is, in some cases smaller numbers (by percentage) of actual combatants were exposed to lengthy durations of combat. The constant change in duration of overseas deployments continues even today. As is described later in this chapter (under MHATs), *intensity* and *duration* of combat exposure remain as important assessment measures of troop mental health status.

Examining Deployment Stress

As Bartone (1998) indicated, if we are to study soldier stress, or stressors, we should concentrate not only on the battlefield, but we should also give due consideration to the entirety of the military setting. The military setting should include: (a) the soldiers’ garrison or home-station environment, (b) the forward-deployed environment for troops stationed at overseas locations or on ships or submarines, and (c) the deployed environment for troops on an actual military mission. Missions can range from including exposure to intense stressors associated with an actual attack or rescue operation, to the unique stressors prevalent in the several stages of performing less militarily glamorous peacekeeping and nation-building activities.

Curiously, due to recent extensive employment of advanced technologies such as remotely piloted aerial vehicles (RPVs or drones), we are now witnessing that it is possible to experience the same consequences of combat/deployment stressors without deploying (in the traditional sense) but rather by working in high-operational tempo jobs where one might be exposed to combat-related stressors during one’s regular job situated remotely to the theater of operations. Notably,

recent research found evidence that RPV and drone operators are susceptible to PTSD while operating on domestic bases far removed (physically but not psychologically) from the actual battlefield. This phenomenon was studied in intelligence, surveillance, and reconnaissance (ISR) operations and reported by Chappelle, Goodman, Reardon, and Thompson (2014), and also by Reardon, Chappelle, Goodman, Cover, Prince, and Thompson (2016). RPV operational missions also involved remotely directed combat search and rescue and close air support. For commentary about the effects of shift work and sustained operations with unmanned aircraft systems, see the section in this chapter about sleep deprivation and fatigue. An extensive discussion of RPV operator performance, some operational psychology issues, and occasional mental health concerns is also presented in the Aeromedical Psychology chapter by Saitzyk, Mayfield, Sharkey, and Coleman (2017), which appears elsewhere in this book.

Bartone (1998) posits that three types of outcome variables are influenced by stress: soldier performance, social adjustment, and health. Stress can lead directly to impaired performance, can contribute to a variety of physical and mental health difficulties, and can result in a variety of social adjustment problems such as family violence, divorce, and substance abuse. Psychological stress in military operations can also have a range of serious consequences, including increased risk of death and serious injury from accidents, inattentiveness and errors of judgment, even friendly-fire incidents and suicide. Additionally, psychological stress can increase the risk of soldier misconduct, alcohol abuse on the job, and violations of the rules of engagement as well as diminish soldier mental health, morale, and psychological readiness to perform the mission.

To offer a better understanding of soldier responses, Bartone, Adler, and Vaitkus (1998) suggested five general categories of psychological stressors salient to military operations, particularly on deployments overseas. The five dimensions capture in a general way the more detailed specific stressors: Isolation, Ambiguity, Powerlessness, Boredom, and Danger/Threat. Table 25.1 summa-

Table 25.1 Dimensions of psychological stress on military operations

<i>Isolation</i>	
Deployed to physically remote locations	
Encountering obstacles to communication	
Units are newly configured, low cohesion	
Individuals are cross-attached from other units	
<i>Ambiguity</i>	
Mission not clear or well defined	
Command structure is ambiguous	
Role and identity confusion, ambiguity	
<i>Powerlessness</i>	
Rules-of-engagement are restrictive	
Constraints on movement and action	
Exposure to suffering of local people	
Surrounded by foreign culture and language	
Lack of privacy – little control over living arrangements	
Relative deprivation – “double standards”	
<i>Boredom</i>	
Repetitive, monotonous routines and schedules	
Lack of meaningful work	
Over-reliance on “busy work”	
<i>Threat/danger</i>	
Danger of death, injury, threat to life or limb	
Mines, snipers, disease	
Exposure to death of others, including dead bodies	

Adapted from Bartone et al. (1998)

rizes a range of stressors in military operations that incorporates the special relevance of modern, non-combat, or peacekeeping activities.

Isolation and boredom are common to numerous military settings wherein troops work in monitoring roles at distant outposts, doing routine patrols, and warily keeping an eye on their adversaries. The powerlessness or helplessness factor, especially in some peacekeeping activities, can be a function of highly restrictive rules of engagement that constrain soldiers from responding in many situations, as well as such experiences as witnessing the suffering of indigenous people in the area of operations without being able to offer much help to them (Bartone, 1998). A sense of powerlessness can also result from travel restrictions, difficulty communicating in a foreign culture and language, and loss of privacy and control over living conditions. Combatant soldiers who

are trained to fight may experience ambiguity in adjusting to uncertain missions and to the role of being asked to serve as peacekeepers, which often requires control and restraint (Bartone, 1998). Risks of injury and death vary depending upon the type of operations and one’s location relative to the combat action (i.e., front or rear guard). But as the US involvement for over a decade in Iraq and Afghanistan demonstrates, even rear echelon support personnel are not assured protection from physical harm, including being exposed to debilitating losses of limbs or experiencing traumatic brain injury (TBI) due to concussive blasts from enemy improvised explosive devices (IEDs) and other contemporary asymmetric warfare tactics.

We next provide a summary of the findings from important psychological research efforts aimed at identifying stressors in the military setting, and their effects on military operations and on military personnel.

Research on Resilience and Mental Health During Military Deployment

Particularly during the early days of the wars in Iraq and Afghanistan, military psychology researchers at the Walter Reed Army Institute of Research (WRAIR) developed a core source for epidemiological studies, assessment research, and mental health resilience training research conducted mostly with Army soldiers (Bartone, 1999; Adler, Bliese, & Castro, 2011). Much of the research infrastructure established earlier at WRAIR focused on examinations of the mental health of peacekeeping personnel (e.g., Bartone, Adler, & Vaitkus, 1998); on the impact of high operations tempo (e.g., Castro & Adler, 2005; Dolan, Adler, Thomas, & Castro, 2005); on leadership and training as they affect soldier well-being (e.g., Chen & Bliese, 2002); and on the mental health effects on service member retention (Hoge et al., 2002).

One of the major accomplishments at WRAIR was development of a soldier resilience training system called *Battlemind Training*. As a risk communication and training strategy, Battlemind frames mental health issues within the context of

the skills and strengths that soldiers exhibit in combat that help them to survive (Adler et al., 2009). Training content was based on WRAIR research that found an association between pre-deployment resilience training and maintaining adequate soldier mental health during deployment. Post-deployment training was also found to be effective, resulting in fewer returning soldier psychological problems.

In 2007, Battlemind Training was integrated into the institutional army through the Deployment Cycle Support Program and the Army's formal officer and noncommissioned officer career training courses. Adler et al. (2011) noted that prior to Battlemind Training none of the U.S. military services had an empirically-based mental health training program for use in preparing service members for the psychological demands of combat. Battlemind was the first systematic attempt to create a research-based mental health training initiative. The WRAIR developed Battlemind Training program is an example of an Army program configured specifically for soldiers and validated as an early intervention for coping with combat deployment stress (Adler et al., 2011).

A few years later, circa 2010–2011, the Army unveiled a broader approach as it absorbed Battlemind into a more comprehensive resilience training program called the *Comprehensive Soldier Fitness* initiative based on the principles of positive psychology (Cornum, Matthews, & Seligman, 2011; Cornum & Lester, 2012). In this larger scale program, the label Battlemind was replaced by the term *resilience training*. As initially configured, the Comprehensive Soldier Fitness program offered online self-assessment of resilience, online training modules on self-development, and in-depth resilience training. Since then the program encountered some difficulties during its widespread implementation; it has been challenged by several attempts at validation; and it witnessed several notable modifications. But, the concept of providing resilience training to soldiers throughout the deployment experience was established as a desirable contribution to limiting psychological stress, enhancing soldier performance, and lessening the likelihood of deployment-related casualties.

Prior to the US involvement in the conflagrations in the middle-East, most mental health assessments of the impact of soldier exposure to combat were usually done long after combatants had returned home from the battlefield – often years afterward. Charles Hoge (2011) indicated that unique features of the wars in Iraq (Operation Iraqi Freedom: OIF) and Afghanistan (Operation Enduring Freedom: OEF) involved behavioral scientists extensively using epidemiological methods (surveys, program evaluation of population-based screening, and health care utilization studies) to assess the mental health impact of deployment while the wars were still ongoing.

Hoge et al. (2004) reported that the Departments of Defense and Veterans Affairs prompted research early in these two conflicts to inform health policy. For example, in 2003 the DoD established the Deployment Cycle Support Program to evaluate service members for evidence of mental health problems as they returned home from combat. The program led to a refined Post-Deployment Health Assessment (PDHA), a standardized population-wide screening for deployment-related health concerns including such mental health issues as marital problems, depression, PTSD, and substance abuse.

Surveys of representative samples of military personnel were conducted in the various stages of pre-deployment, actual deployment to a mission (usually overseas), mid-deployment phases, during and upon return from employment, and again post deployment, at some reasonable length of time (months) after returning home. Surveys at each of these time frames helped to assess the prevalence, risk factors, and predictors of mental health concerns and a myriad of behavioral problems. In providing important insights about mental health impacts of combat, such research led to the development of new education, prevention, and clinical care strategies. The work also highlighted the challenges in delivering evidence-based treatment for war-related mental health problems of military personnel. The willingness of senior DoD leaders to implement new health policies on the basis of findings from those studies was equally impressive (Hoge, 2011). Hoge (2011) summarized the importance of such behavioral science work this way:

These surveys have combined classic epidemiological analyses of patterns of disease expression in the population with traditional psychological assessment techniques from social, organizational, educational and behavioral psychology perspectives. This integration has allowed analysis of moderating variables, such as cohesion and leadership, on the expression of traditional mental disorders, such as PTSD, and behavioral outcomes, such as aggression or misconduct, in military units. Population-based deployment mental health screening has been used as a key strategy to mitigate mental health problems, and epidemiological methods have been applied to understand the lessons learned, assess effectiveness, and contribute to improvements. Studies of rates of use of mental health services have provided key data on access to care and burden of treatment in the population and have led to changes in allocation of mental health resources to improve care. (Hoge, 2011)

For a fairly comprehensive description of many such deployment-related research studies, beginning with those during the Persian Gulf War (1990–1991), and mostly conducted by personnel at the WRAIR, see the book by Adler et al. (2011), and also the Army medical services corps book chapter on Mental Health Advisory Teams (MHAT) by McBride, Thomas, McGurk, Wood, and Bliese (2010).

Mental Health Advisory Teams

To provide recommendations to commanders and medical personnel deployed to Iraq, as an outgrowth of the epidemiological studies, the Army surgeon general in July 2003 began sponsoring annual assessments of mental health and well-being of deployed troops. WRAIR researchers conducted anonymous assessments throughout operational theaters, focusing primarily on infantry units (i.e., brigade combat teams). These assemblies of behavioral and psychological assessment personnel took on the name: Mental Health Advisory Teams; as did the numerous reports documenting the 6–8 large studies they conducted. The MHATs also assessed the distribution and availability of in-theater behavioral health resources.

MHAT surveys focused on four main areas of soldier mental health and well-being. These are:

(1) *risk factors*, such as combat and deployment experiences; (2) *protective factors*, such as training and willingness to seek care; (3) *behavioral health status and performance* indices, such as individual and unit morale, depression, anxiety and acute stress symptoms, suicidal ideation, alcohol and substance abuse; and (4) assessments of self-reported *unethical behaviors*, such as mistreating noncombatants or unnecessarily damaging the property of indigenous people (McBride et al., 2010).

The MHATs conducted surveys of thousands of soldiers and marines in Iraq (OIF) and in Afghanistan (OEF). Some of the first MHATs (2003–2007) reported that 15–20% of deployed soldiers in Army brigade combat teams met criteria for PTSD (termed acute stress in the operational environment) or depression; and about 20% of married soldiers reported marital problems during deployment. Marines studied in regimental combat teams experienced mental health concerns at equivalent rates. The MHATs generally showed that high OPTEMPO: multiple deployments, longer deployments, greater time performing missions away from base camps (i.e., “outside the wire”), and combat intensity and frequency all contributed to higher rates of depression, PTSD, and marital problems. Soldiers with mental health problems were much more likely to report committing ethical violations than were soldiers without mental health problems – a demonstration of the relationship between mental health problems and mission-related behaviors. MHAT studies also demonstrated the strong protective effect of leadership that is generally associated with unit cohesion, good morale, lower incidence of mental health problems, and a lower likelihood of ethical misconduct during deployment (for details see Hoge, 2011; McBride et al., 2010).

For motivated readers, McBride et al. (2010) provide descriptions of MHAT methodological approaches, survey and assessment instruments used in these studies, and they outline some of the interpretative nuances associated with them. Of particular interest to clinical practitioners may be their descriptions of assessments of acute stress, depression and anxiety, suicidal ideation,

divorce intent, and alcohol and substance abuse. Included in the chapter are sample survey questions on each of those topics. Also presented are survey assessments of the effects of individual and unit morale, stress on work performance, and individual reports of unethical behaviors while deployed.

Deciding whether or not pre- and post-deployment screenings are efficacious in determining actual reductions in mental health concerns or behavioral problems is not so simple. Nor for that matter is it simple to determine if other intervening or confounding factors (e.g., undergoing or not, pre-deployment resilience training, or unit leadership, cohesion, other social factors, and intensity and duration of combat exposure, etc.) contribute to or detract from successful soldier-mission performance. Hoge (2011) says additional considerations here should include the low predictive value of the screening instruments in population samples, the high rate of comorbid medical and mental health problems associated with PTSD, and the low-to-moderate effectiveness of treatment modalities for PTSD. For a more extended discussion of the public health, treatment considerations, and clinical challenges that accompany such work, see Adler et al. (2011).

Partial Sleep Deprivation and Soldier Performance

Because the first author of this chapter (Krueger) spent over two decades examining sleep loss and soldier performance, of particular interest to us is McBride et al.'s (2010) documentation of the prevalence of daily partial sleep deprivation of deployed soldiers. In OIF (MHAT V, 2007), soldiers indicated that in order to feel well rested, they usually needed on the average about 6.4 h of sleep per day. However, they self-reported receiving on average only about 5.6 h of sleep per 24-hr. day. Both of these values are considerably less than the 7–8 h per day shown to be necessary to maintain optimal cognitive functioning (Belenky et al., 2003; Krueger, 2010b, 2012). These later two citations will lead one to an extensive

research literature on the study of soldier performance, and sleep deprivation concerns during sustained and continuous operations. Additionally, the U.S. Army Field Manual (FM 6-22-5; 2009) provides highly specific guidance for basic sleep scheduling factors, as well as environmental and related factors for ensuring good sleep discipline in training and in combat zones. These are also listed in Krueger (2012). Also, an excellent summary of behavioral science work on managing pilot fatigue in aviation setting was provided by Caldwell (2012).

In addition to our earlier commentary about the possibility of developing PTSD in drone operations, the introduction of unmanned aircraft systems (UAS) has at times required drone pilots to engage in extended duty days and varying shift schedules likely to reduce operator effectiveness because of operator fatigue. In a 10-year old study of USAF MQ-1 Predator (drone) crews working on rotational shifts in sustained operations, reported decreased mood and quality of life as well as increased fatigue, emotional exhaustion, and burnout. In all shifts and shift rotation schedules, declines in mood and cognitive and vigilance performance were observed. These decrements were more pronounced on both day and night shifts when compared to evening shifts and on rapid shifts when compared to slow shift rotation schedules. Crews also reported moderate to high levels of task-related boredom. Overall, the environment created by UAS operations using shift work significantly increased the likelihood of personnel reporting symptoms consistent with Shift Work Disorder (Thompson et al., 2006).

On a related matter, clinical practitioners may want to consult discussions (Krueger, 2012; Krueger, Leaman, & Bergoffen, 2011; also Caldwell et al., 2009) on deployment use of psychoactive compounds that affect cognition (*cognicenticals*, i.e., hypnotics, stimulants, and nutritional supplements): (1) to provide assistance to soldiers for staying alert and awake while performing satisfactorily during lengthy missions, and (2) to help combatants obtain needed sleep even when the noisy battlefield or their own circadian physiology suggests it

is not a particularly good time to fall asleep. Practitioners may also want to consider medical concerns that arise regarding the long-term consequences associated with the sustained use of either hypnotic sleeping pills, or of any class of stimulants, including ingesting large amounts of caffeine and/or so-called functional energy drinks (FEDs) in deployed settings. For some allied nations' air forces involved in OEF, the initial plan to "prescribe" such drugs during combat missions was meant to last just a few weeks of air operations. However, in his work, Krueger came upon unconfirmed reports of some allied aviators (i.e., fighter pilots) experiencing addiction problems after repeated use of hypnotics to induce sleep between flight sorties. Reportedly this was deemed to be due to the exigencies of war, as these pilots eventually took such drugs for several months duration during sustained operations.

While more could be said, this provides an overview of U.S. Army psychological research programs and activities that support the work of clinical and organizational practitioners. In what follows, we offer a sampling of important psychological research activities being conducted by research psychologists in the United States Navy and Air Force.

U.S. Navy Psychological Research Programs

The U.S. Navy's psychological research programs seek to improve performance, protect service members from psychological and physical harm, and better integrate human capabilities with the systems our sailors and marines must operate. For decades, such research efforts were geographically dispersed at several naval medical research labs. In 1999, the Naval Health Research Center in San Diego, California assumed command and control of the subordinate commands: Naval Submarine Medical Research Lab in Groton, Connecticut, the Naval Aerospace Medical Research Lab (formerly at Pensacola, Florida), the Environmental Health Effects Lab, and the Directed Energy Bioeffects Lab – the

later three of these now are co-located along with Air Force labs at Wright-Paterson Air Force Base, Ohio (Van Orden & Nice, 2006).

The contributions of Navy military and civilian psychologists have always been quite varied. With organizational continuity dating back to the 1940s, they tout a distinguished history (see Crawford, 1970). Here we focus attention on only a few specific Navy research areas that may be of interest to clinical practitioners and operational psychologists. These include research with sailors and marines focused on: (a) psychological adjustment to military life, (b) understanding and enabling healthy behavior, and (c) understanding and improving cognitive performance.

Psychological Adjustment to Military Life

Van Orden and Nice (2006) suggested that because of the military's unique customs and traditions, for new recruits, the transition from civilian life to the military culture can be challenging for some individuals. Physical and mental requirements vary among specific military occupations. Subcultures exist between, and even within, the armed service branches. Appropriately *selecting* service members and then *monitoring their adjustment* to military culture is highly necessary because of both operational readiness and financial considerations.

Personnel Selection Since WW II psychological testing for selection and classification focused mainly on psychological and mental achievement factors, attitudes, motivation, and mental health. Attrition from military service was most often the result of a combination of factors including pre-service demography, social background, and in-service experiences such as service history, satisfaction, and job and training performance (LaRocco, Pugh, Jones, & Gunderson, 1977; Hoiberg & Pugh, 1978). Each military service uses tests to screen candidates for particular military occupations. Most military enlisted personnel are initially categorized for technical abilities by the Armed Services Vocational Assessment

Battery (ASVAB); and then either before and certainly during training they are further tested for individual skill qualifications and competencies. For a comprehensive history of military testing, but one which is primarily focused on Army testing, see Ramsberger, Wooten, and Rumsey (2012) and also Rumsey (2012).

In each service candidates for specialized training, for example, to qualify for assignments in aviation and submarine specialties, must complete additional psychological evaluation. For example, the Navy tests volunteers for the submarine service by focusing on personality variables that correlate with a sailor's ability to adjust and adapt to the unique stresses of living and working aboard a submarine for months at a time. Psychologists at the Naval Submarine Medical Research Lab at Groton, Connecticut developed a 240-item self-report questionnaire (called Subscreen) to identify candidate submariners (officers and enlisted personnel) who exhibit psychological traits that may hinder successful adaptation to the submarine environment. Subscreen produces a probability estimate of likely attrition due to misconduct, alcohol/drug abuse, and mental health disorders before new submariners accomplish satisfactory submarine tour assignments. Enlisted students identified as having a > 80% probability of negative fleet attrition are referred to the mental health clinic for a mental health status interview and additional evaluation (Bing, America, Lamb, & Severinghaus, 2005). The goal of course is to reduce psychological disqualifications and psychologically based medical evacuations during operational submarine deployments.

Physical and Emotional Health In medical and psychological studies of over 60,000 recruits, NHRC researchers found that their Sailors Health Inventory Program 40-item questionnaire was a more useful attrition predictor than either educational credentials or mental ability scores (Booth-Kewley, Larson, & Ryan, 2002; Larson, Booth-Kewley, & Ryan, 2002). These NHRC researchers examined whether or not reports of physical symptoms can play a part in psychological assessment. Strong associations were identi-

fied between anxiety, depression, and total number of physical symptoms (e.g., headaches, back pain, etc.). Factor analyses indicated emotional distress combined with certain physical complaints form a common factor that predicts basic training attrition (Larson et al., 2002). Physical symptom reports may constitute a valuable role in military selection screening, because acknowledging physical discomforts carries less of a stigma than does acknowledging emotional disturbances. Respondents may be more honest on items measuring physical discomfort (Van Orden & Nice, 2006).

Navy researchers also sought to understand the role that *positive psychological traits* play in lowering attrition risk. Previous attrition rate studies focused mainly on negative traits or events (e.g., anxiety, depression, history of trauma). Those early studies paid little attention to the beneficial role of such positive constructs as optimism, hope, or self-esteem. Subsequently, personnel selection studies at NHRC considered balanced assessments of attrition, taking account of both positive and negative characteristics in assessing individuals holistically. Exploratory work determined that various measures of positive-focused psychological traits reflect a common broad factor, *positivity*, which may have incremental validity over personality scores for predicting a positive outcome (adaptive coping) but not a negative or undesirable outcome (physical symptoms), (Van Orden & Nice, 2006).

Enabling Health Behavior and Health NHRC researchers found that two broad dimensions form health behaviors: preventive behavior and risk-taking behavior. A considerable amount of NHRC research addresses encouragement of wellness behaviors, a component of preventive behavior, and the reduction of substance use/abuse, a component of risk-taking behavior (Van Orden & Nice, 2006). Emphasizing the practice of good nutrition and weight control, two important preventive behaviors, are continual topics of research at NHRC. Although recruits must meet body composition standards upon entry into the Naval service, too often a high percentage of Navy personnel fail to meet body fat standards

(in some years ranging from ~10% to 20%). The original equations used throughout the Department of Defense to estimate body fat from anthropometric measurements were developed at NHRC, work led by Beckett and Hodgdon (1984), and described for its historical significance by Friedl (2012); see also Peterson (2015). After carrying out extensive surveys of nutritional knowledge of Navy personnel, NHRC researchers helped develop nutritional education programs conducted throughout the Navy. They also help refine Navy weight-loss and weight-management programs. Additionally, NHRC researchers conduct studies on smoking and tobacco use, alcohol abuse issues and testing, and educating about HIV/AIDs.

Cognitive Performance

The process of appropriately integrating human physical and cognitive abilities with the machines that military personnel use is usually referred to as human factors engineering (HFE) or human systems integration (HSI). Over time, these disciplines evolved from a focus primarily on safety toward a greater emphasis on improving overall system performance. The evolution of command and control systems on-board many Navy ships, submarines, and in Navy and Marine aircraft and helicopters, led to requirements for systems to provide decision support to enable effective human decision making in dynamic and information-intensive settings (Van Orden & Nice, 2006). Among the many studies undertaken by NHRC researchers, just two HFE areas are described here: (a) operator situational awareness to ensure effective and timely decisions within a complex command and control system; and (b) performance sustainment and/or enhancement during extended operations and the presence of operator fatigue.

Situational Awareness Naval and Marine Corps operations are replete with examples of how operating crews of high-performance systems (ships and submarines at sea, fighter jets on carrier cruises, helicopters and aircraft in perfor-

mance of close air support missions, etc.) must sustain “shared” excellent situation awareness (SA), whether in readiness training or in actual combat. SA refers to individual operators or crews having a continual understanding of a complex, dynamic environment and system (i.e., sophisticated weapon systems) in which they are operating. SA is multifaceted, relying on the ability of the operator to perceive the relevant elements in the environment, to integrate and comprehend the meaning of these elements, and to predict future system states based on this understanding (Endsley, 1995).

A number of unfortunate incidents point to the need for continued research on SA in numerous Navy settings. An often cited example is the one involving the USS Greenville fast-attack nuclear submarine operating off the coast of Hawaii in 2002. There, after having lost good SA, the crew surfaced their sub beneath a Japanese tourist vessel and sank it. NHRC researchers continue to examine the underlying cognitive abilities that support SA for submariners and other vehicle crews. One program of such NHRC research places emphasis on working memory and long-term working memory, especially in crews, as they strive to develop team SA as an important component of individual and crew-oriented expertise. Soldiers, sailors, and marines also are often at significant risk when they lose SA in training or combat. Current operations involve placing them in urban patrol situations that can become hostile fire events in a matter of seconds. Maintaining individual and team SA is critical to team effectiveness and survival. NHRC focuses on understanding the factors that contribute to and degrade SA in marines during urban war-fighting (Van Orden & Nice, 2006).

Why should these research efforts be of interest to clinical practitioners and operational psychologists? In addition to being situationally aware of such work for general psychological interest sake, we should be aware that uniformed psychologists occasionally are assigned to specially configured safety panels or teams charged to conduct “post-accident/incident forensic analyses.” In such roles, it will likely be the psychologist who is expected to represent the stance of the

operator personnel in such inquiries. [As a matter of interest, a military psychologist served on the panel/team that investigated the NASA space shuttle Challenger disaster of January 1986.]

Operator Fatigue As the U.S. Navy is arguably the largest employer of shift workers in the world, NHRC research on operator fatigue has been underway for decades (Van Orden & Nice, 2006). Early research at NHRC focused on understanding the basic neurophysiology of sleep. More recent fatigue and sleep deprivation research at NHRC included a variety of efforts from basic science laboratory investigations, for example, studies of health effects of sleep deprivation, and taking naps in the workplace as an operational strategy – (Naitoh, Kelly, & Englund, 1990), ranging to operationally applied methods and techniques including assessments of the influence of sleep deprivation on performance in Marine Corps field training exercises. Additional studies at the Naval Postgraduate School included assessments of sleep gained or missed by large numbers of sailors aboard numerous Navy vessels in operations underway at sea (Lewis-Miller, Matsangas, & Kenney, 2012). Operational psychologists should familiarize themselves with this seminal research on military operator fatigue and sleep deprivation before undertaking to advise fleet commanders (e.g., in aircraft carrier task forces) about the nuances of sleep loss, circadian rhythm physiology, individual and crew performance in sustained and continuous operations, and the like. Senior flag officers (e.g., admiral task force leaders) will expect the nearest psychologist and/or a senior medical officer such as a flight surgeon, to represent the sailors in decision making and policy formulation about work schedules, crew rest, and the like. Clinical practitioners should also be attuned to such research as they grapple with treating military personnel who have undergone what otherwise may look like exposure to straightforward traumatic events – but which in fact may have been preceded by individuals experiencing significant amounts of sleep loss and sustained workloads (see also Campbell et al., Chap. 15, this volume). The U.S. Air Force also supports extensive

research on psychological issues. The next and final section provides a few key examples.

US Air Force Human Factors Applied Psychology Research Trends

As was mentioned at the beginning of this chapter, during the past two decades many of the military labs were consolidated. The U.S. Air Force Research Laboratory (AFRL), the premier research institution of the Air Force, is headquartered at Wright-Patterson Air Force Base, Ohio. AFRL is now identified as the Air Force's lead lab. It directs the activities of numerous subsidiary organizations and research activities. While AFRL is heavily involved in the full gamut of research spanning from materials science to information science, research psychology plays an important role in supporting the airmen of today and those of tomorrow. The majority of research psychology conducted in AFRL is done within the 711th Human Performance Wing. There are three contemporary Air Force directions in human factors/applied psychology research with significant relevance for research psychology: (1) advancements in the science of training, (2) the Sense-Assess-Augment (S-A-A) paradigm, and (3) research on human-machine interaction. It should be noted that this is not intended to cover all of the research psychology work conducted within AFRL, but rather provides a few examples. For readers interested in a detailed description of the cognitive research programs conducted from 1960 to 2009, at the former USAF School of Aerospace Medicine at Brooks AFB, San Antonio, Texas, it is recommended to consult the comprehensive summary prepared by James C. Miller (Miller, 2013).

Training

Training is essential across the military services as airmen, marines, seamen, and soldiers prepare for high operations tempo, high-risk and dynamic situations they will encounter during military operations. This training comes at a high cost

both financially and personally as military members are often required to spend considerable time in training. Training combat pilots exemplifies these challenges as the Air Force spends significant funding and time training them.

The Air Force has been seeking new cost-effective methods for training to include such innovative approaches as Distributed Mission Operations (DMO). The DMO concept facilitates concurrent training of airmen with live, as well as computer-assisted virtual, and constructive assets/actors (synthetic digital representations of teammates) in a common mission rehearsal and planning environment (Chapman & Colegrove, 2013).

The benefits of the DMO are evident when one considers activities such as coalition training with multiple teams from different countries coming together for joint training exercises/events. The costs of such training are considerable; yet sizeable costs can be mitigated through DMO as it enables real-time distributed training and offers potential constructive (i.e., synthetic) participants that can reduce the logistics and costs associated with training even further. For instance, training with coalition partners can be cost prohibitive as it typically requires face-to-face interaction, travel to various locations, movement and maintenance of expensive equipment (i.e., aircraft), and the development and execution of costly operational exercises/scenarios (e.g., Red Flag). In contrast, imagine a world where pilots from one country can virtually connect with pilots from another country in cyberspace without losing any psychological fidelity, yet absent the costs of travel, aircraft, and physical scenarios. Imagine further, a world where one might train with synthetic partners (i.e., digital teammates) rather than solely other humans. While developed in the context of fast-moving jets (i.e., fighters) DMO concepts such as live, virtual, and constructive (LVC) methods can be applied across the gamut of domains relevant to military practitioners. Medical training, training for cyber or Intelligence, Surveillance and Reconnaissance (ISR) analysts, and combat arms training for soldiers, as well could be enhanced using advances in LVC technologies to reduce

the time burden on operators, and to reduce the financial burden on the military services.

Other training innovations at AFRL involve pioneering research on training needs analysis and training evaluation. Training needs analysis (i.e., determining what should be trained) is inherent in the strategy of any training program. Traditional methods for needs analysis might involve using methods such as conducting a job analysis to identify the knowledge, skills, abilities, and other characteristics of a job. AFRL researchers generated a new method of training needs analysis in the development of the Mission Essential Competencies (MECs) project. In training, MECs represent high-level functions required by individuals, teams, or teams of teams, to enable successful completion of a combat mission during adverse conditions. The MEC process facilitates the identification of the supporting competencies, knowledge and skills, and experiences necessary for mission success (Alliger, Beard, Bennett, Symons, & Colegrove, 2013). The use of MECs allows operators to focus attention toward the critical components of one's job, thus leveraging only the essential portions of a training scenario. This not only saves time and money, but it also enhances the training experience by ensuring that the right competencies are acquired and matured. Once the appropriate competencies are identified, trainers assess performance against these standards/goals. Performance assessment is complex, and can be cognitively taxing for many individuals.

AFRL has led innovations to reduce the assessment burden of assessing team training and performance by developing methods such as the Scenario-based Performance Observation Tool for Learning in Team Performance (SPOTLITE). Simply put, SPOTLITE is a structured way to assess performance for really complex performance criteria. It provides a basis for structuring performance assessment during training with special emphasis on team-based learning and performance metrics/tools (MacMillan, Entin, Morley, & Bennett, 2013). Tools such as this can be useful for evaluating trainees (or teams of trainees) by providing a seamless evaluation structure from which to base performance metrics.

Performance measurement tools like SPOTLITE can help trainers have a structured way to assess team performance and other complex constructs by organizing the performance dimensions into seamless categories for real-time rating. For instance, imagine, being given the task of assessing team decision making in a medical context. SPOTLITE could provide practitioners with a set of structured performance dimensions for assessors to rate in real-time. This could not only ease the assessment burden for practitioners but it could also help to facilitate more accurate assessments by providing a standardized method to capture the information.

Sense–Assess–Augment Framework

The Sense–Assess–Augment framework offers a paradigm for research in AFRL related to: sensing individual and team cognitive states, assessing the impact of that state on performance, and augmenting performance through individual manipulations or technology adaptation (see Galster & Johnson, 2013). The sensing component involves the development of sensors to detect human cognitive states off-body (e.g., eye tracking, voice patterns, facial expressions, etc.), on-body (e.g., cardiac activity, electroencephalogram (EEG), skin temperature, etc.), and/or in-body (e.g., measures of cortisol, oxytocin, catecholamines, etc.) (Galster & Johnson, 2013).

Anyone with a Fitbit® or other fitness/health tracking device knows that the commercial sector is inundated with devices for gauging everything from physical activity to one's calorie intake. One role of DoD research psychology is to examine the feasibility of such devices for supporting a military mission. At times, existing Commercial-Off-the-Shelf (COTS) tools or devices may be sufficient, whereas other military needs may require development of novel sensors given the mission space and constraints of the ruggedized military environment. These technologies could be useful to those who are interested in human state sensing in austere environments.

The assessment component attempts to evaluate the sensed data on some element of perfor-

mance. An example of this could be workload measures that signal how well a team is performing during a team-based task (Funke, Knott, Salas, Pavlas, & Strang, 2012). Other methods could use physiological sensing to measure operator fatigue, workload, stress, etc. Once the signals are sensed either through on-, off-, or in-body mechanisms and those signals are analyzed in reference to some performance objective, the individuals or teams may be augmented where necessary. This augmentation could come in a variety of potential forms to include things like technology that sheds task load when a high level of user workload or stress is detected. Other augmentation strategies could include use of noninvasive transcranial stimulation to modulate user learning, engagement, or performance (McKinley, Bridges, Walters, & Nelson, 2012; McKinley, McIntire, Bridges, Goodyear, & Weisend, 2013). Ultimately, the Sense–Assess–Augment framework provides a useful model for planning and executing research and development for the explicit goal of improving human performance – particularly that of military pilots and aviation crews.

Human–Machine Interaction

Research psychologists at the AFRL also do considerable amounts of work in the area of human-machine interaction. Advanced technology in the form of complex automation and autonomous systems (i.e., robotics, drones, etc.) pervades not only the military landscape but also commercial and private domains. The military recognizes this expansion of technology and has responded with research psychology investments in several domains, including human–machine interface design and research on *human–machine trust*. AFRL's research on interface design examines methods for task delegation to autonomous systems, facilitation of supervisory control of multiple semi-autonomous platforms (e.g., consider an individual attempting to control multiple drones at once), and the development of intuitive prescribed action commands to foster predictability and shared awareness for human operators

of unmanned, semi-autonomous platforms (Miller et al., 2013). The challenges of managing or teaming with multiple platforms (i.e. vehicles, whether they be ground or air vehicles) are extreme, whether they are automated, semi-autonomous, or fully autonomous. Thus, AFRL research psychology activities aim to understand how much control to give to technology (versus to a human operator); how that control is transferred from the human to and from the technology back to the human; how to design interfaces to facilitate interactions that enhance overall performance; and to understand the costs and benefits of different human-machine interaction strategies. This is important because these human-machine interface methods and control strategies can be instrumental in enabling one operator to control multiple semi-automated vehicles – thus helping to break the one-operator-one-vehicle paradigm.

Advances in the capabilities of semi-autonomous and other automated systems raise questions about *human reliance* (i.e., trust) on the technology. Thus, another area of research for AFRL is research focusing on the *human-machine trust* process. Establishing optimal (i.e., calibrated) trust of technology is important for human-machine performance (Lee & See, 2004). The AFRL is focused on research to: identify the antecedents of human-machine trust, examine the role of transparency in the trust process, evaluate trust in the context of fielded Air Force systems, and study the situational/contextual factors that impact the trust process. In terms of trust antecedents, researchers at AFRL examine constructs such as personality (Lyons, Stokes, & Schneider, 2011), suspicion in an automation context (Lyons, Stokes, Eschleman, Alarcon, & Barelka, 2011), and emotion (Stokes, Lyons, Littlejohn, Natarian, Case, & Speranza, 2010). This research on antecedents of trust facilitates awareness of the set of factors that influence the trust process. One key take away from this line of research is that the set of trust antecedents postulated in the literature (including human factors such as traits, situational factors such as the novelty of the automation, and learned trust factors such as performance (for a review see Hoff &

Bashir, 2015) do influence trust perceptions of fielded automation systems among actual operators (Lyons, Ho, Ferguson, et al., 2016; Lyons, Koltai, et al., 2016). This helps practitioners to better understand and plan for the gamut of influences that shape operator trust and reliance on technology.

Transparency is one factor in human-machine interactions that influences the trust process. Transparency can be defined as a method for establishing shared awareness and shared intent between humans and machines (Lyons, 2013). As technology increases in capability and as equipment system designers continue to provide technology in the forms of automated, semi-autonomous, and autonomous systems, it will be imperative for humans (designers and users) to understand the capabilities/limitations of the technology, the intent of the technology, and the analytical underpinnings of the technology. One recent study demonstrated that enhanced transparency of a complex emergency landing planner technology did increase trust among commercial pilots (Lyons et al., 2016c). Further, as intelligent technology and humans begin to share tasks, goals, and responsibilities, it will be critical from a trust perspective for the human-machine systems to effectively navigate complex team-based activities such as transfer of control/authority, cooperation, coordination, and back-up behavior.

Trust-based research on applied systems focuses on systems such as the Air Force's Automatic Ground Collision Avoidance System (AGCAS). Researchers analyzed the antecedents of trust of the AGCAS platform from the perspective of test pilots (Lyons, Ho, Koltai, et al., 2016), and subsequent studies of operational pilots are currently underway. This work is critical for expanding trust in automation research to more operational settings with actual operators using real systems that have significant personal relevance. Field studies are necessary for understanding the dynamic nature of the trust process and for evaluation of the contextual influences on trust. Contextual influences on trust might include factors such as automation bias (Lyons & Stokes, 2012) and the role of multitasking on trust.

Automation bias represents an individual's preference for or against automated systems. Some people work very seamlessly with technology, whereas others might approach a novel technology with some skepticism. Other factors such as one's attentional resources also influence reliance on technology. In one such study, research participants were found to engage in overreliance on a low reliability automated aid when they were tasked with dual versus single task scenarios (Guznov, Nelson, Lyons, & Dycus, 2015). Research in this area is critical if we are to enjoy the benefits of semi-automated and autonomous systems in the future, lest we fall victim to suboptimal reliance strategies. After all, a useful tool is no good if it sits on a shelf. Further, reliance on a bad tool can be catastrophic in a high-consequence domain where lives are on the line – such as many military domains. Appropriate reliance on automated technology is highly relevant also in the private sector where consumers are already being faced with decisions regarding how much they should or should not rely on technology (e.g., autonomous cars). This line of research can help practitioners in the military by identifying known pitfalls of suboptimal reliance strategies; identifying trust issues in novel technologies from a person, technology, or contextual perspective; and providing guidance to technology developers to support the trust-based needs of operators (e.g., transparency) to facilitate appropriate reliance.

While certainly not exhaustive of all of the research psychology work being done at the AFRL (such a paper would be beyond the scope of this small section), the examples above highlight a few of the activities and research areas with high relevance to research psychology within the Air Force Research Laboratory.

Concluding Remarks

What we have presented in this chapter is merely a small sample (a taste) of the type of research done by military psychologists in the laboratories – research that may interest clinical practitioners and organizational psychologists. Research

psychology remains a robust discipline and fulfills many needs within the DoD. Its many programs impact a wide gamut of DOD applications: personnel selection and classification, training, human-machine interaction design, human performance sustainment and enhancement, preparation of personnel for combat operations, and stress control and management.

The ultimate goal of all such research programs is to transfer general findings and principles from research to the “line military” in terms that impact and improve military doctrine, policies, and practices. That is, we strive to institutionalize the “research findings” into action. Unfortunately that has not always been the case, and some important research and the “lessons learned” do not always get promulgated, nor transferred into practice. Several Army Field manuals have “doctrinalized” a few of the items written about above. For example, clinical practitioners may want to consult the U.S. Army Field Manual 4–02.51 on Combat and Operational Stress Control (2006), which in addition to stress control, covers such topics as – behavioral health, how to assess unit needs, consultation and education, and traumatic event management. As described earlier, the Army Field Manual No. 6–22-5 (2009) addresses these and other issues on Combat and Operational Stress Control for Leaders and Soldiers as well.

Whether doing work on the process of selecting the best job applicants for military careers, elucidating and ameliorating the stressors of deployments, or best methods for treating soldiers for PTSD, there will always be a need for military research psychology. The contributions of research psychology to clinical and organizational practice are strong; but they could be improved through continued collaboration among researchers and practitioners. Researchers need a good understanding of the constraints and needs of operational users. Fortunately, most of the DoD labs have always incorporated military operators into the lab structure to provide such insights. However, in more recent budgetary times, with increasing emphasis on “doing more with less” – the success of research psychology programs hinges on continuing close coordina-

tion and collaboration with practitioners and operational psychologists to ensure our research findings transition to operational use.

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Rick L. Campise, Julie T. Kinn, and David Cooper

Pursuing the advancement of technology in Behavioral Health is essential for the Department of Defense (DoD) as an organization, as well as for individual providers within the Military Health System (MHS), which serves approximately 9.4 million beneficiaries (TRICARE, 2016). Technology is already an integral part of patients' lives, and adapting to technology becomes more complicated as the speed of technological innovation increases exponentially. This accelerated pace is illustrated by the fact it took 89 years to achieve 150 million telephone users, eight years for Facebook to reach a billion users, and a mere five years for Android to activate its billionth device (Schmidt & Rosenberg, 2014).

Consider the technologies that became available for general use during the first 10 years of your life. For those born before 1984, push button phones, color TV, the microwave oven, electric typewriters, cassette tape recorders, VHS players, boom boxes, the Walkman, cordless phones, electronic calculators, and video games such as Pong were dazzling consumer technology advances.

Prensky (2001) refers to those born after 1984 as "Digital Natives." These are individuals born immersed in technology who are, "native speakers of the digital language of computers, video games, and the Internet." Their youth is marked by the IBM PC-1981, Apple's release of the Macintosh – 1984, the World Wide Web – 1991, AOL providing direct access to the net – 1993, Netscape Navigator – 1994, Google – 1998, LinkedIn – 2003, Facebook – 2004, Gmail – 2004, YouTube – 2005, Google Maps – 2005, Twitter – 2006, Fitbit and Jawbone – 2007, iPhones – 2007, Android smartphones – 2008, iPad – 2010, Google Glass – 2013, Apple Watch – 2015, self-driving cars – 2016, etc.

Similarly, every year the importance of using technology grows as older military members are replaced by digital natives for whom technology resonates at a core level and is an essential part of their daily lives. Today's younger Service Members rely on technology via smartphones, tablet computers, Fitbits, Apple Watches, the Internet, and virtual experiences to interact with and be influenced by the world. These digital natives make up 65% of the Active Duty population and 53% of the Selected Reserve (DoD, 2014) and each year their proportion of the military population grows.

Thanks to technology, individuals possess continuous connectivity to unlimited information and infinite storage of information (Schmidt & Rosenberg, 2014). Technology allows our Service

R.L. Campise (✉) • J.T. Kinn • D. Cooper
The National Center for Telehealth & Technology,
Joint Base Lewis-McCord, Tacoma, WA, USA
e-mail: rick.campise@gmail.com

Members and their families to access information 24 h a day for self-education, self-assessment, and in some cases self-treatment in an anonymous environment. It is essential that the health information that Service Members and their families rely upon be derived from sources other than dubious chat rooms or questionable websites. Instead, Behavioral Health providers need to possess the expertise to confidently point patients to reliable technology sources.

Mobile technology has amazing capabilities to enhance patient care. Patient's phones remind them of appointments, imbedded mapping programs lay out the route to reach the provider's office, their phone warns them which roads to avoid due to congestion and upon arrival the patient can use their phone apps to share their daily tracking of symptoms and the effectiveness of self-interventions (Cooper, 2015).

Providers who do not keep up with changing technologies may become increasingly frustrated with the pace of technological change their patients demand. As Behavioral Health providers, our credibility may be damaged if patients have to teach us how to use technology to efficiently track their depressive symptoms, sleep cycles, energy levels, etc., or even worse if we are reluctant to utilize innovations they bring to our sessions to assist them with their search for health. As such, in this chapter we recommend changes to the way trainees and health care providers learn about innovative health technologies.

Historical Background

Historically psychology has experienced a fitful relationship with technology. From the promising beginnings of Wundt's first lab in 1876 to the famous "Skinner box," attempts to use technology as an adjunct to the scientific method have been juxtaposed with the likes of Freud and Rogers whose focus lies more toward the metaphysical (Hergenhahn & Henley, 2014).

Within the realm of assessment, technology found its greatest acceptance. Thankfully the arduous and laborious days of scoring a test or

subscale by laying a template over a completed test to count darkened circles are over. Pioneers in computerized assessment, Pearson, Rome, Swenson, Mataya and Brannick (2006) were the first to develop algorithms to produce Minnesota Multiphasic Personality Inventory (MMPI) computer results. Today it would be difficult to find someone conducting a psychological assessment that does not use technology to score and interpret computerized tests.

A second area in which technology found early clinical acceptance was in the use of biofeedback and neurofeedback. The biofeedback field was initially characterized by huge wooden boxes, wheeled in on metal carts, with which the patient could be trained to move a single dial or change a bulb color from red to green through physiological changes measured by sensors taped over various parts of the patient's body. Now a significant body of research on bio- and neurofeedback stretching back 50 years to the 1960s and 1970s (Arns, Heinrich, & Stahl 2014; Schwartz & Andrasik, 2003) supports their effectiveness with disorders ranging from anxiety (Blanchard, 1974) to ADHD (Butnik, 2005).

Historically, like most civilian providers, military Behavioral Health providers have had narrow slices of time to serve their patients. The former Army Surgeon General, Lieutenant General Horoho (2012), pointed out that each year contains 525,600 min, and out of that time, Service Members only spend 100 min a year in a Military Treatment Facility (MTF) receiving care. Technology changes the window of opportunity for impacting patients. Technology operates not only in that 100 min physically shared by a provider and patient, but even more importantly, technology provides services in the 525,500 min a year in which a Service Member, Veteran, or their family members are not in a MTF.

Though the acceptance of technology may have been slow in parts of psychology, the DoD has often been an early contributor to and early adopter of technology. In the 1960s, the DoD promoted the implementation of ARPANET, the precursor of today's Internet. In the 1980s, the

World Wide Web came to life as computer scientists in Great Britain, the United States, and other partners began joining documents and pages in a linked format. By the 1990s, public use of the Internet and the World Wide Web exponentially grew. Hilbert and Lopez (2011) indicate that by 2007, communication via the Internet accounted for 97% of telecommunicated information.

Few possessed the vision to anticipate how dramatically the landscape was about to change in regards to mobile resources. In 2007, Apple began creating a variety of software applications to work on the iPhone operating system (iOS), launching the App Store in July 2008. This allowed users to select from approximately 800 apps for use on personally owned mobile devices. In October 2008, Google launched the competing Android Market. In October 2013, Apple offered one million apps and by June 2015, users had downloaded 100 billion apps from the Apple App Store (Statista, 2016).

Current Landscape

Within DoD and civilian communities, providers and patients are using mobile technologies in a variety of ways to help promote physical and psychological health. Although individuals and some groups in health care are leveraging mobile health tools, the current landscape is not uniform; there are not yet widespread best practices for integrating external sensors and mobile or Web apps into treatment. We posit that as published peer-reviewed evidence for integrating technology increase and organizations generate policies for mobile health technologies, the willingness of providers and systems to use these technologies will grow as a consequence. In this section, we describe the ways mobile technology is supporting health care, with a particular emphasis on behavioral health and military behavioral health settings. We also describe the current state of empirical evidence supporting the use of technology and identify gaps and next steps.

Marketplace

The technology landscape offers boundless options for consumers. As of June 2016, the iTunes App Store (iOS) offers two million apps and Google Play (Android) offers 2.2 million apps (Statista, 2016). Of these 4.2 million apps, 165,000 are health related (Terry, 2015). Likewise, there are hundreds of thousands of websites available on every topic imaginable.

At this time there are roughly 170 mobile apps funded by DoD available for download from the iTunes App Store and Google Play. Likewise, search online for any DoD organization or initiative and you will be directed to a multitude of websites offering expansive information.

Patients

The majority of Service Members and other beneficiaries are regularly using mobile apps and mobile devices (Edwards-Stewart, Smolenski, Reger, Bush, & Workman, 2016). According to the Pew Research Center, 68% of adults in the United States own mobile devices and reliance on mobile devices for Internet use (compared to traditional computing) is growing (Pew Internet Project, 2015). Indeed, as of 2012, there were more mobile devices in the world than toothbrushes (Hopkins & Turner, 2012).

Many patients already use mobile health tools. For example, when discovering a new health symptom many individuals research potential conditions online prior to consulting a healthcare professional (Pew Internet Project, 2015). Further, many digital natives use mobile apps and websites to track a variety of health factors including exercise, dietary intake, mood, prescription compliance, and menstrual cycle (Boruff & Storie, 2014; Pew Internet Project, 2015). That said, health technology is not a one-size-fits-all solution; the benefit of using mobile health apps depends on patient buy in and engagement with the technology (Elias, Fogger, McGuinness, & D'Alessandro, 2013).

In addition to mobile apps and websites, patients are able to actively engage in health

promotion using innovative technologies such as virtual worlds and augmented reality. For example, in the popular Second Life Internet-based virtual world, users can learn about specific health issues, receive peer support, and even connect with real-life providers in virtual private rooms (Beard, Wilson, Morra, & Keelan, 2009). These health issues include treatment areas important to the DoD: suicide prevention (Luxton, June, & Kinn, 2011) and posttraumatic stress (See also Ghahramanlou-Holloway et al., Chap. 6 and Riggs & Malonnee, Chap. 3, this volume).

Augmented reality refers to using an electronic interface (e.g., the screen on a smartphone) to alter the user's view of an environment. The concept of augmented reality was introduced to much of the world in the summer of 2016 by Pokémon Go, the location-based game in which players used their smartphones to locate and capture virtual Pokémon characters. A mental health example of augmented reality includes Botella, Bretón-López, Quero, Baños and García-Palacios (2010) who used this technology to add an in-vivo element to help treat individuals with cockroach phobia. The participants viewed their body through a screen that portrayed realistic images of the insects on their skin. Both virtual reality and augmented reality are being tested as methods of increasing the exposure component of treatments for anxiety disorders (Baus & Bouchard, 2014). Strangely enough, Pokémon Go may be the vehicle for the mental health community to make augmented reality popular and acceptable (Campise, 2016).

Providers

Many civilian providers regularly use mobile devices in their personal lives and increasingly in practice (Epocrates, 2014). Among military providers there is a mixed usage of health technologies (Edwards-Stewart et al., 2016), with younger providers appearing more comfortable with the technology. Boruff and Storie's (2014) study of medical students and residents' mobile health usage indicated that trainees are familiar with mobile technologies and regularly use them for a variety of health care-related activities including

information seeking and note taking. A systematic review of 19 randomized controlled trials indicated that psychotherapist support when patients use mobile computer-based interventions for the treatment of depression results in greater reduction of depressed symptomology than when using the technology alone (Richards & Richardson, 2013).

Providing a patient an excellent app to use in isolation may be insufficient. Providers must buy into the technology, introduce it, and follow up with the patients to provide assistance if needed. To complicate matters, it may be necessary to be technologically "multilingual." For example, military providers are more likely to use the more expensive iOS (Apple) devices, whereas military patients are more likely to use the less expensive Android devices (Edwards-Stewart et al., 2016). This may lead to some difficulty when a provider introduces mobile apps to patients, as apps can have different appearances, may be launched differently, and have different functions depending on the operating system of the mobile device (i.e., iOS or Android). Regardless of their personal preference, providers need to be familiar with both iOS and Android phones in order to effectively support the patient's use of the app.

Health Care Systems

Some health care systems have integrated a broad use of mobile technologies. In the U.S. civilian healthcare sector, it is common for patients to access medical records, set appointments, and view educational materials using mobile apps and websites provided by their health plans (Pew Internet Project, 2015). These types of apps can provide a return on investment by reducing administrative labor (Luxton, Hansen, & Stanfill, 2014). It appears less common for health care systems to implement a widespread health care management tool (e.g., a mood tracking mobile app) for all beneficiaries. However, some civilian health plans and medical systems subscribe to services that allow beneficiaries to access a set of vetted mobile apps to aid in managing their personal health care. For example, companies exist that offer civilian health care clinics or hos-

pital systems, a website, and tailored app selection branded with the health care system's logos. To patients, the sites appear to be provided by the hospital or clinic. Providers can then prescribe these apps to patients between visits or following care. By implementing a system-wide site, individual providers do not have to personally review and test the apps, and can be assured that the apps they prescribe are safe and appropriate for patient care. Further, a comprehensive approach to integrating mobile health tools can help both providers and patients to accept these technologies as part of treatment as usual and as such may increase both provider and patient confidence in their contribution and value.

As mentioned previously, the DoD has funded over 170 apps and the Defense Information Systems Agency (DISA) has developed a secured common access card (CAC) accessible app store that allows DoD users with enterprise (i.e., DoD-issued) mobile devices to download a set of vetted and safe apps for use while on duty. To date, the store is not available to those without a CAC, and the apps do not include health care tools, but the inclusion of such apps is an eventual goal.

Telehealth

Organizational or enterprise wide support of telehealth, also commonly referred to as telemedicine, is important. Providers have a duty to meet patients where they are rather than expecting them to conform to the provider's needs (Fall, Holden, & Marquis, 2010). Sometimes the challenge of "meeting patients where they are" is quite literal. For example, it would be economically unfeasible to staff clinics with every type of specialist in every location. Such clinics would be expensive to maintain and in certain geographic regions almost impossible to staff. It is equally unrealistic to ask patients to travel significant distances just to receive basic elements of care. These economic realities have led to the current state of care in the United States, where more than 80% of rural areas are underserved when it comes to behavioral health care (Brown et al., 2015). Patients report that they are significantly less likely to seek care if they are asked to

travel more than 30 min – hindering their access to care. Fortunately, technology can help bridge this distance gap. Using telebehavioral health, patients can receive specialty behavioral care in a local primary care setting, or even in their home, literally "meeting them where they are."

Telehealth is in a state of evolution, with a stream of legislative and regulatory changes currently being considered or implemented by Federal, State, and non-governmental organizations. At this time Federal providers in the MHS are allowed to provide telehealth services between fixed facilities, for example medical centers and clinics; to pre-authorized locations such as National Guard Armories; and under some circumstances, to the patient's home (Adler, 2016). Clinical providers in the Department of Veterans Affairs (VA) provide facility-to-facility telehealth services and are seeking legislative authority to provide in-home telehealth. As Federal healthcare systems, both the MHS and VA have legislative authority to provide telehealth services, even when the provider and patient are in different state jurisdictions (Adler, 2016). Non-Federal telehealth providers are subject to a patchwork of state-based laws and regulations that can be difficult to understand and adapt to. As such, non-Federal telehealth providers should consider becoming involved in national and state-level telehealth/telemedicine organizations in order to remain current regarding federal, state, and local telehealth laws, regulations, guidelines, and practices.

Telehealth not only increases access to care, but also helps address concern over the stigma of seeking behavioral health care in military populations. It is well documented that military members are wary about seeking behavioral health care (Hoge, Auchterlonie, & Milliken, 2006). One of their most prominent concerns is privacy – even if what is said in treatment is confidential, there is the concern about potentially being seen going into or coming out of a behavioral health clinic. In fact, Wilson, Onorati, Mishkind, Reger and Gahm (2008) found that one in three Service Members would prefer a telebehavioral health session with a provider over a face-to-face meeting, even when distance is not an issue. By offering patients the option to connect with a therapist

where they feel most comfortable and protected, we may decrease the challenges associated with treatment seeking and expand our scope of care.

The current landscape is one in which both providers and patients are primed to integrate health technologies such as mobile apps, websites, virtual health, and telehealth into standard behavioral health treatment. The military community has potential to make great strides in this arena.

Behavioral Health Resources

The DoD and other federal agencies have funded many award-winning mobile apps and websites that are evidence-based, safe, and free of bias. In this section we review a few of these resources. We recognize as you are reading this chapter, additional new resources will have already been deployed. Further, due to our military and government civilian status we cannot recommend private sector websites and mobile apps, but suggest that readers search for resources developed by known and trustworthy organizations. As such, we present the resources below as a sample to interest the reader, rather than as a complete list. We strongly encourage providers and stakeholders to learn how to download mobile apps and test them prior to recommending them to others. Note that all of the websites mentioned here are publicly available for anonymous use by the military and civilian communities, and all of the mobile apps are available for free download on both the iTunes App Store (iOS) and Google Play (Android). The links to reach the National Center for Telehealth & Technology as well as to download various apps discussed are found in Table 26.1.

Crisis Management and Mood Elevation

Consider for a moment how many mobile devices you have near you while reading this book. Mobile devices are ideal for crisis management, as digital natives are rarely more than an arm's reach away from a smartphone or tab-

let. Our organization, the DoD National Center for Telehealth and Technology (T2) created such a mobile app, the Virtual Hope Box, which transforms a physical Hope Box into an app they can take with them wherever they go. Users can save mood elevating pictures, videos and music, read inspirational quotes, develop a set of coping cards and engage in distraction with games such as Sudoku and Mahjong. The app also includes quick access to the National Suicide Prevention Hotline and walks the user through developing a set of emergency contacts for help in a crisis. A thorough clinician's guide helps providers learn methods to integrate the app into treatment.

PTSD

Telehealth and Technology (T2) also partnered with the Department of Veterans Affairs National Center for PTSD (NCPTSD) to develop two mobile apps to assist the military community with recovery from PTSD: PTSD Coach and Prolonged Exposure (PE) Coach. PTSD Coach helps users learn about PTSD, self-assess symptoms, and engage in activities that can help with symptom management. PE Coach is a resource to help with the empirically-validated PE treatment for PTSD. The PE Coach app assists providers and patients through each session of the standardized treatment, including tracking homework and recording session audio.

Sexual Assault

The DoD's office of Sexual Assault Prevention and Response (SAPR) has many resources available on the www.sapr.mil website, including briefings, outreach materials, guidance, and videos. For Service Members and other beneficiaries, SAPR funded the DoD Safe Helpline website and mobile app. The DoD Safe Helpline includes community support, psychoeducation and easy access to resources and symptom management tools (see also Thomsen et al., Chap. 21, this volume).

Table 26.1 Links and referrals for behavioral health applications and services

AfterDeployment (p.13): http://Afterdeployment.DcoE.Mil/
Safe helpline (DOD; p.13): https://safehelpline.Org
SuperTracker (p.13): https://www.Supertracker.Usga.Gov/
National Center for Telehealth & Technology: http://T2Health.DCoE.Mil
PTSD coach (p.12): http://t2health.DcoE.Mil/apps/ptsd-coach
T2 virtual PTSD experience: http://t2health.DcoE.Mil/vwproj/
Mood tracker (p.13): http://t2health.DcoE.Mil/apps/mood-tracker
Dream EZ (p.14): http://t2health.DcoE.Mil/dream-ez
Breathe2Relax (p.14): http://t2health.DcoE.Mil/apps/breathe2relax
PE coach (p.12): http://t2health.DcoE.Mil/apps/pe-coach
Virtual hope box (p.12): http://t2health.DcoE.Mil/apps/virtual-hope-box
CBTi coach (p.14): http://t2health.DcoE.Mil/apps/cbt-i
Tactical breather (p.14): http://t2health.DcoE.Mil/apps/tactical-breather

Tracking

Mobile health tools are ideal for tracking symptoms and behaviors. Whereas patients may forget or lose a paper record, it is rare to be without a smartphone or other mobile device (Pew Internet, 2015). Mood Tracker is one of the first mobile apps T2 deployed, and can be used by patients to track common behavioral health issues (e.g., anxiety, depression, stress), or can be modified by the user to add any customized scale. The app includes comprehensive instructions and guidance for usage. For example, patients can work with providers to track medication compliance, sleep, substance use, etc., and view a chart of the combined data together in session (see also Schmid et al., Chap. 9, this volume). For individuals interested in tracking meals and exercise, the United States Department of Agriculture (USDA) SuperTracker website provides comprehensive and validated tools. In addition to offering information about common and uncommon food items, the website allows users to make anonymous profiles and track dietary intake, exercise, goals, and individual recipes (see also Bowles et al., Chap. 14, this volume).

Sleep

There are several excellent DoD-funded mobile health resources to assist the military community

with sleep management (see also Campbell et al., Chap. 15, this volume). The website, AfterDeployment, has comprehensive information on over 20 health issues common to the military community, including sleep. Patients can: self-assess; learn about sleep disorders, prevention and evidence-based treatments; and also watch videos of other Service Members discussing their own approaches. To help patients and providers engage in cognitive behavioral therapy for insomnia (CBTi), the NCPTSD collaborated with T2 to develop the CBTi Coach mobile app. This tool helps patients engage in each step of the evidence-based CBTi treatment. In 2016, T2 released Dream EZ, an app based on the proven nightmare treatment called Imagery Rehearsal Therapy (IRT). The Dream EZ app assists users in rewriting the script of their nightmares to reduce the frequency and intensity of dreams to improve sleep.

Diaphragmatic Breathing

Deep belly breathing is a simple skill that can help ameliorate common physiological responses to stress and thus help patients in a variety of difficult situations. As such, T2 and NCPTSD have included training on diaphragmatic breathing in several apps, including PTSD Coach and Virtual Hope Box (see above). In addition, T2 deployed two mobile apps that can quickly teach the skill.

Tactical Breather uses a standard four-count method that is familiar to many Service Members as part of combat training. Breathe2Relax is an adjustable diaphragmatic breathing trainer that additionally includes choice of images and music, pre- and post-breathing self-assessments, and comprehensive education about deep belly breathing (see also Bowles et al., Chap. 13, this volume).

Research

In the past decade, DoD has appropriately emphasized the need for empirically validated behavioral health treatment approaches. But this has created difficulty for innovative technology approaches that rapidly evolve.

There is evidence indicating that synchronous telebehavioral health (TBH) care is safe and effective, but there is no consensus on the best ways to implement and evaluate TBH (Kramer, Mishkind, Luxton, & Shore, 2012). There are a modest but growing number of outcome studies on mobile apps, websites, and other information technologies for patient use outside of clinic settings but much more research is needed. As interest and funding for this area grows so will the quantity of research. In this section, we review the existing empirical research related to mobile health technologies that support behavioral health, identify gaps in the literature, and posit an explanation for these gaps.

Overall, systematic reviews indicate that mobile health tools can be a feasible adjunct to care and can be effective for promoting behavioral health in a variety of ways (Donker et al., 2013; Fiordelli, Diviani, & Schulz, 2013; Mohr, Burns, Schueller, Clarke, & Klinkman, 2013; Richards & Richardson, 2013; Seko, Kidd, & Wiljer, 2013). In particular, Web and mobile apps can be helpful for decreasing depressive symptoms (Bolier et al., 2013; Burns et al., 2011; Lappalainen et al., 2013; Van der Feltz-Cornelis, 2013; Watts et al., 2013), decreasing anxiety (Hoifodt et al., 2013; Repetto et al., 2013), controlling substance use (Elison, Humphreys, Ward, & Davies, 2014; Norberg et al., 2013; Rizvi,

Dimeff, Skutch, Carroll, & Linehan, 2011; Rooke, Gates, Norberg, & Copeland, 2013; Schulz et al., 2013), reducing stress (Ahtinen et al., 2013; Morris et al., 2010), and tracking behavioral symptoms and goals (Dennison, Morrison, Conway, & Yardley, 2013; Forchuk et al., 2013).

Mobile health tools when used in research studies are just as valid for measurement as traditional pen-and-paper measures (Bush, Skopp, Smolenski, Crumpton, & Fairall, 2013) and may improve participant compliance (Ainsworth et al., 2013; Bardram et al., 2013). Although encouraging, several comprehensive reviews of mobile health research indicate that there is a need for better methodology, including intervention studies with control groups (Chou, Prestin, Lyons, & Wen, 2013; Elias et al., 2013; Gaggioli & Riva, 2013; Mohr et al., 2013; Plaza, Demarzo, Herrera-Merdadal, & Garcia-Campayo, 2013; Reger & Gahm, 2009). An additional gap in the literature is that few studies specifically investigate mobile health within the military community.

Identifying the reasons for gaps in the literature can help researchers and funding agencies promote the increase of future studies in the areas most in need. Based on our surveillance and review of mobile health research, we posit three primary explanations for lag in research on mobile health technologies that support behavioral health: timing, training, and market growth.

Timing

Due to the length of time that peer-reviewed outcome research requires, information technologies are easily outdated by the time of publication. According to Morris, Wooding, and Grant's thorough review (2011), most health research requires several years to complete and several more to translate into behavioral change treatment. Unfortunately, information technology has a short half-life. A mobile app, for example, may need to be updated once or twice a year when the Android or Apple (iOS) operating systems update. As the operating systems update, new functional possibilities in the app arise resulting

in a slightly or significantly revised/improved version of the app being researched. It is certainly undesirable to publish research and then promote the use of a product that is no longer useful or seems antiquated in comparison with the newest market release. Although not a perfect solution, we recommend conducting parallel research: both controlled outcome trials and smaller feasibility studies that can shorten the research to dissemination cycle.

Training

Information technology is still a special interest area for behavioral health care researchers and thus is not included in standard graduate training (see also Barry & Barry, Chap. 23, this volume). Although the digital natives generation of health care providers are more likely to be comfortable using mobile health tools (Edwards-Stewart et al., in press), we recommend technology training in accredited provider and research training programs. Just as graduate students are trained to critically read research publications and thoroughly critique new treatment approaches, we would like all graduates to be educated technology consumers who are familiar with: (a) common types of mobile health tools, (b) methods for assessing the veracity and value of content, (c) ethical considerations related to the use of mobile health tools, and (d) the use and protection of protected health information and personally identifiable information, as well as how to use mobile health tools consistent with HIPAA regulations.

Market Growth

As mentioned earlier, as of June 2015, there are 165,000 mobile health apps. The mobile app markets do scan submissions for coding errors and security violations, but do not vet the apps for accuracy of content or potential benefit to health outcomes (Aguirre, McCoy, & Roan, 2013). At this time there is no evaluating body that grades or rates the growing number of apps (Gagnon, 2014). There are considerably more health-related web-

sites available to consumers, and these have even less oversight. Any individual or group can develop and deploy a website and pose as an expert (Rheingold, 2014). To meet the need for consumer guidance, we recommend that the Defense Health Agency (DHA) develop a rating system and appoint an organization to review health information technology resources targeted at our Service Members and beneficiaries.

Resistance to Technology

It is unsurprising that psychology – a field devoted to the study of human interaction – has at times been ambivalent about technology and on occasion even shown outright hostility to it (Caspar, 2004). The emotional connection between patient and clinician, the therapeutic relationship, is often cited as one of the most significant predictors of successful treatment (Knox & Cooper, 2015; Lambert & Barley, 2001). So for some, it is reasonable to ask, “Doesn’t technology interfere with this relationship? How could an emotional connection between a human and a computer ever be as significant as between two humans?” To date, no computer *has* been able to match the skill of a trained clinician. No computer can fully replicate the ability to connect with another person on an emotional level, tease apart their problems, and find a course of action unique to that individual.

Humans have an innate tendency to anthropomorphize: seeing reflected humanity in objects where none exists (Epley, Waytz, & Cacioppo, 2007). Our nature is such we can form emotional connections with technology and such a notion has been romanticized in several recent movies in which the main character falls in love with his computer or smartphone’s voice. When interacting with non-human agents, for example a robot dog, people will ascribe to it discreet mental states and the ability to create social rapport – none of which actually exist (Kahn, Friedman, & Hagman, 2002). So the ability to form emotional connections – even in the absence of reciprocity – does not appear to be a significant barrier given the right circumstances.

In fact, similar concerns about the effects of technology on the practice of psychotherapy were raised with the introduction of both the telephone and email. When discussing the use of the telephone in psychotherapy, as late as 1989, Langs suggested that therapists should not discuss fees on the telephone “since many patients will use such information to foster their already intense resistances and anxieties” as well as the belief that a telephone call “to an absent patient at any time is seductive and detrimental to the therapeutic alliance.”

The use of email by psychotherapists brought similar concerns. “Therapists may therefore lack the writing skills needed to express subtleties of meaning through the written word,” writes Childress (2000) and “the nature of the therapeutic relationship...is most impacted by text-based communication.”

Yet these dire warnings of the impact of these technologies on the practice of psychotherapy were ultimately unfounded. As any new advance is adopted, it gradually moves from being perceived as a “crisis” in a field into eventual acceptance within the field and society as a whole (Kuhn & Hacking, 2012). Think of how the alliance with our patients today would be affected if we told them we refused to use email or the telephone. Given history, we can expect that the current “crisis” over the adoption of telehealth and web/mobile-based interventions to also pass.

Future Directions

Given the past and current state of technology adoption into behavioral health practice, what can we expect the future to have in store? Technology can easily be adjunctive to, rather than replace current forms of treatment.

Consider the use of bio- and neurofeedback in treatment. One of the potential challenges of these devices is clinician comfort with the use of the technology involved (Hammer & Hile, 1986). In the past, biofeedback often came with specialized software or bulky equipment that connected through a tangle of wires and needed to be carted around a clinic from office to office. In contrast,

these new wearable devices are small combinations of sensors and computers. These wearables have sensors that can measure relevant physiological markers like heart rate and simple EEG without the need for complex wiring or extra equipment beyond a smartphone.

Even beyond the direct applicability of biofeedback, these wearable devices can offer benefits to clinicians. Sleep disturbance, for example, has a well-known correlation with mental health (Ford, 1989). In bipolar disorder, sleep disturbances can predict and even provoke manic episodes (Plante & Winkleman, 2008). Wearable devices that can unobtrusively collect data on the quality and duration of a user’s sleep are increasingly available and accurate (Chen et al., 2013). Imagine then, the benefits to both clinician and patient in being able to identify behavioral patterns that result in poor sleep quality or being able to predict and plan for countering a manic episode before it happens.

It is our expectation that by 2020 it will be common for medical and behavioral health care providers to systematically assess which mobile health tools are best to prescribe to each patient, and that these tools will be listed on literature provided to patients. During face-to-face and telehealth sessions, these mobile health tools will be electronically delivered to patients’ mobile devices and computers. Further, providers will follow up with patients to assess the use and benefit of the information technologies, similar to a follow up regarding a new prescription.

One trend is that computers are becoming increasingly sophisticated when it comes to the kinds of and amounts of data they can process. This leads to a widening complexity of tasks they can accomplish. One of the most commonly used terms when talking about new technologies and their potential to transform health care is “big data.” Thanks to advances in computer technology, we can work with data sets so large, traditional methods of statistical analysis are no longer adequate.

Enter Watson, IBM’s Jeopardy winning computer. When given access to more than 600,000 pieces of medical evidence, more than two million pages from medical journals and the ability

to access 1.5 million patient records, Watson was more accurate than human doctors at diagnosing lung cancer. Watson provided the correct diagnosis in 90% of patients, compared to 50% for the human doctors (Upbin, 2013).

Finally, take the question of whether a computer could ever replace a clinician. This question was first raised with the introduction of ELIZA, one of the first computer programs involving natural language processing. ELIZA was adapted to mimic the responses of a Rogerian therapist using non-directive, reflective questioning. In fact, from this simple response, users began to view their interactions with the program in a similar manner as they would have with an actual therapist (Weizenbaum, 1976). Again, this is part of the human tendency to ascribe agency and emotionality to interactions, even when there is none (Epley et al., 2007). If this could result from a simple chat program, what would happen if the program was more complex or provided more data?

Compare ELIZA's capabilities to a more modern example, Google Now which is a software agent that compiles a user's data to offer helpful suggestions, reminders, and easy access to contextually based information (Google, n.d.; Needleman, 2012). Whereas ELIZA relied on a human user to feed it data via a keyboard, Google Now can respond via voice command and gather relevant data from a user's email, calendar, and past behaviors. For example, by designating specific locations as either "work" or "home," Google Now uses location data, time, and relevant traffic data to be able to give you an estimate of your commute time as you leave for work in the morning, without any prompting from the user. By aggregating this data into a behavioral model – the fact that you leave one place at a certain time of day, Monday through Friday, travel to another place, spend approximately 8 h and then travel back – it can develop a probable estimate of when you will want to see traffic data. In fact, Google Now can even change your typical behavior, offering you shorter routes to work when there is an accident or traffic jam.

Using this kind of behavioral modeling, computers have shown to be able to make strong and

accurate predictions on a user's future behavior in a system (Harrison & Roberts, 2011). The making and modification of these kinds of behavioral models to influence patient behavior are at the core of many psychotherapeutic techniques (Kohlenberg & Tsai, 2007). These techniques use a detailed analysis of how a patient's maladaptive behaviors arise to find avenues for intervention.

From the examples above, we recognize people can develop emotional connections with computers, and computers, in turn, can build accurate models of behavior based on data and influence users into new behaviors. A future artificially intelligent therapist may be less science-fiction and more of an inevitability.

To help us reach this future state, we recommend devoting resources to researching innovative health technologies for the military community. Although the literature demonstrates encouraging results related to the use of behavioral health information technologies, there remains a limited number of outcome studies studying the military population. Further, we recommend studies that focus on wearable technologies, virtual worlds, and other methods of integrating health technologies into daily life.

Conclusion

Technological advances in mobile health, virtual health, telehealth, and social media provide behavioral health therapists with powerful means to assist their patients. With these advances, we can make information available to our patients 24 h a day, provide the convenience of tracking their symptoms throughout the day and night on their smartphones, and offer therapy at a virtual location of their choice including home.

With the benefit of technology comes responsibility. Behavioral health providers must take a seat at the technology table and decide how it can best be applied to their clinical practice as technology becomes increasingly the standard of care. Clinicians not only need to learn more about the obvious forms of technology that can enhance therapy such as mobile health, telehealth, and virtual

reality, but they also need to know more about the architectural backbone of technology. It is absolutely essential we learn more about encryption and the security of data at rest vs. data in transit. Providers must ensure that their patients are educated users of their own private technology and not endangering their own privacy by inappropriately storing or sending information about their treatment.

Clinicians must serve as institutional advocates to ensure that technology policy keeps up with technology to maximize, not minimize technology's enhancement of health care. This is wonderfully illustrated in Schmidt and Rosenberg's (2014) book "How Google Works" that cites a law in the UK when cars were first introduced that required a pedestrian waving a red flag to precede cars in order to warn horses and riders that a car was coming. The security and integrity of our technology systems must be protected but not in such a way that technology is prevented from effective use by patients and providers.

Do not assume it is only "Digital Immigrants," a term coined by Prensky (2001) for those not born in the digital age, that need to devote more time and energy to pursue technology to enhance health. The field of technology is constantly advancing. There is a strong possibility that you as an early adopter or advanced user of technology today will become outdated as the age difference between you and your patients increase. Remember each year a new cohort of 18–22 year olds enters the military. Countless articles have been written on the need for cultural sensitivity (Wendt, Gone, & Nagata, 2015), yet we still fail to recognize the special needs of our ever growing population of digital natives and the most effective means of administering to their needs through the medium of their choice, technology.

We recommend devoting more funding toward multidisciplinary research that incorporates the use of technology. Equally important, grant reviewers need to be educated consumers of technology and more familiar with the background of technology related grant proposals. In light of the rapid turnover in technology products due to ever-accelerating advances in technology hard-

ware and software, research needs to be designed for more rapid completion and dissemination.

Teaching the use of technology to enhance behavioral health should be incorporated into graduate training and a plan should be implemented to train current providers. We should give new graduates and current practitioner's guidelines on the ethical and treatment implications of technology use. We recommend providers actively seek training on the policies regarding privacy and information security. In light of the constantly changing telehealth legislative and regulatory landscape, practitioners need to join national and state telehealth organizations to keep current on allowed practices. We must do all this together as a field, or be faced with the prospect of obsolescence.

Due to the fast tempo of technology growth, we expect that additional resources will be available by the time this chapter is published. As such, we strongly recommend professionals either find a mentor with technical expertise, or if you possess such expertise, to make yourself available to mentor your peers. Mentors are vital for planting seeds for the use of technology and this search for mentors or coaches should be done on both an individual and organization levels (see also Bowles et al., Chap. 19, this volume).

Technology is not a mere adjunct to our attempts to help military members, veterans, and their families. Technology is the heart that pumps life into our military medical system for assisting the sons and daughters of America who dedicate themselves to protecting us all. Technology is not the answer for everyone or everything, but for those whom technology is the gateway for help, we have a moral obligation to be at the gate to meet them.

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Virtual Reality Applications for the Assessment and Treatment of PTSD

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Albert Rizzo, Michael J. Roy, Arno Hartholt,
Michelle Costanzo, Krista Beth Highland,
Tanja Jovanovic, Seth D. Norrholm, Chris Reist,
Barbara Rothbaum, and JoAnn Difede

War is one of the most challenging situations that a human being can encounter. The physical, emotional, cognitive, and psychological demands of a combat environment place tremendous stress on even the most well-prepared military people. It is no surprise that the stressful experiences, characteristics of operations in Iraq and Afghanistan, have produced significant numbers of service members (SMs) and veterans at risk for posttraumatic stress disorder (PTSD), as well as other psychosocial/behavioral health conditions. For example, as of June 2015, the Defense Medical Surveillance System reported 138,197 active duty SMs had been diagnosed with PTSD (Fischer, 2015). In a meta-analysis of studies published since 2001, 13.2% of infantry service

members met the criteria for PTSD, with incidence rising dramatically to 25–30% in units with high levels of direct combat exposure (Kok, Herrell, Thomas, & Hoge, 2012). Moreover, as of early 2013, the prevalence of PTSD among discharged veterans receiving treatment at Veteran Affairs (VA) clinics was reported to be 29% (Fischer, 2013). These findings make a compelling case for a continued focus on developing and enhancing the availability of diverse evidence-based treatment options to address this military behavioral healthcare challenge.

One emerging area of research and clinical focus is of the use of Virtual Reality (VR) simulation technology as a tool for delivering evidence-based approaches for the assessment

A. Rizzo (✉)
University of Southern California,
Los Angeles, CA, USA
e-mail: Rizzo@ict.usc.edu

M.J. Roy
Uniformed Services University, Bethesda, MD, USA

A. Hartholt
Institute for Creative Technologies, University of
Southern California, Playa Vista, CA, USA

M. Costanzo
Uniformed Services University of the Health
Sciences, Bethesda, MD, USA

K.B. Highland
Defense and Veterans Center for Integrative Pain
Management, Uniformed Services University of the
Health Sciences, Rockville, MD, USA

T. Jovanovic
Psychiatry and Behavioral Sciences, Emory
University, Decatur, GA, USA

S.D. Norrholm
Psychiatry and Behavioral Sciences, Emory
University School of Medicine, Atlanta, GA, USA

C. Reist
Psychiatry, Long Beach VA Medical Center,
Long Beach, CA, USA

B. Rothbaum
Emory Healthcare Veterans Program and Trauma and
Anxiety Recovery, Emory University School of
Medicine, Atlanta, GA, USA

J. Difede
Psychiatry, Weill Cornell Medical College,
New York, NY 10021, USA

and treatment of PTSD. Although in recent times, the popular media has lavishly reported on VR's potential impact on all elements of our evolving digital culture, and has created the impression that VR is a novel technology, the reality is that VR is not a new concept, and many of its developmental roots are traceable to the 1980s and 1990s (Schnipper et al., 2015). Moreover, a large scientific literature has emerged over the last 20 years demonstrating the unique and added value that is accrued with the use of VR to address a wide range of clinical health conditions (Rizzo 1994; Rizzo et al., 1997; 2002; 2010; 2014; Rizzo, Cukor et al., 2015). Within that context, the present chapter will summarize the ways that researchers and clinicians have employed VR to create relevant simulations that can be applied to the assessment and treatment of PTSD.

Virtual Reality: A Revolutionary Tool for Addressing Clinical Health Conditions

During the computer revolution of the 1990s, emerging technologically-driven innovations in behavioral healthcare began to be considered and prototyped (modeled). Early works from this period attempted to use computer technology to enhance productivity in patient documentation and record-keeping, provide cognitive training and rehabilitation, improve access to clinical care via Internet-based teletherapy, and apply VR simulations to deliver exposure therapy for treating specific phobias (Rothbaum, Hodges, & Kooper, 1995). When discussion on the possibility of using VR for human research and clinical intervention first emerged in the early 1990s, the necessary technology needed to deliver on this vision was not available. As a consequence, during these early years VR suffered from an imbalance between what was expected and what could be delivered, as most who explored VR at that time would attest. Computers were slow, 3D graphics were primitive, and head mounted

displays (HMDs) were costly, bulky, and had low resolution and limited fields of view.

Over the past 20 years however, VR systems technology has caught up with the original vision. Dramatic advances in the underlying VR-enabling technologies, such as computational speed, 3D graphics rendering, audio/visual/haptic displays, user interfaces and tracking, voice recognition, intelligent agents, and authoring software have supported the creation of low-cost, yet sophisticated, immersive VR systems capable of running on standard level personal computers. Driven in part by the gaming and entertainment sectors, as well as the seeming insatiable global demand for mobile and interactive networked consumer products, advances in technological prowess and accessibility have yielded the software and hardware platforms needed to produce more high fidelity and adaptable VR scenarios for human research and clinical intervention. As VR becomes faster, better, and cheaper moving forward into the twenty-first century, behavioral health applications can now usefully leverage the interactive and immersive assets that VR provides (Rizzo & Koenig, 2017).

Currently, VR can be understood as an advanced form of human-computer interaction (Rizzo et al., 1997) that enables the user to interact with the computers and digital content in a more natural and sophisticated manner compared to what is provided by standard keyboard or pointing devices. Immersive VR can be produced by combining computers, head-mounted displays (HMDs), body-tracking sensors, specialized interface devices, and real-time graphics to immerse a participant in a computer-generated simulated world that changes in a natural or intuitive way with head and body motion. The use of an HMD and head-tracking system affords the delivery of real-time 3D graphic imagery and sounds of a simulated virtual scene, all rendered in relation to user movements and corresponding to what the individual would see and hear if the scene were real. Thus, an engaged virtual experience creates the illusion of being immersed in a virtual space within which users can move and interact.

Some of the clinical areas where VR has been usefully applied would include fear reduction in those with specific phobias (Parsons & Rizzo, 2008; Powers & Emmelkamp, 2008), PTSD treatment (Botella et al., 2015; Difede & Hoffman, 2002; Difede et al., 2007, 2013; Rizzo et al., 2010; Rizzo, Cukor, et al., 2015; Rothbaum et al., 2001, 2014), reducing discomfort in cancer patients undergoing chemotherapy (Schneider, Kisby, & Flint et al., 2010), acute pain reduction for burn patients during wound care and physical therapy (Hoffman et al., 2011) and other painful procedures (Gold, Kim, Kant, Joseph, & Rizzo, 2006), body image disturbances in patients with eating disorders (Riva, 2011), navigation and spatial training for patients with motor impairments (Stanton, Foreman, & Wilson, 1998; Rizzo et al., 2004), and motor rehabilitation and functional skill training in patients with central nervous system dysfunction (e.g., stroke, TBI, SCI, cerebral palsy, multiple sclerosis, etc.) (Holden, 2005; Merians et al., 2002, Lange et al., 2012; Klamroth-Marganska et al., 2014). VR approaches have also proven useful in the assessment and rehabilitation of attention, memory, spatial skills, and other cognitive functions in both clinical and unimpaired populations (Brooks et al., 1999; Brown, Kerr, & Bayon, 1998; Matheis et al., 2007; Parsons, Rizzo, Rogers, and York, 2009; Pugnetti et al., 1995; Rizzo et al., 1994, 2006; Rose, Brooks, & Rizzo, 2005).

In order to meet the needs of these diverse populations, VR scientists have constructed virtual battlefields, social settings, airplanes, skyscrapers, spiders, fantasy worlds, and the more mundane (but still highly relevant) functional environments of the office, home, street, and supermarket. Using VR, clinicians can now create virtual environments that mimic real or imagined worlds, and then apply them clinically to immerse patients in simulations that support the aims and procedures of particular therapeutic or assessment approaches (Rizzo, Parsons, et al., 2011). This has led to a growing consensus that VR has developed into a valuable tool in clinical care (Norcross et al., 2013) and research (Corey, Alicea, & Biocca, 2011).

It was the onset of conflicts in Afghanistan and Iraq and the subsequent need to provide psychological treatment the significant numbers of US service members (SMs) returning from the battlefield with traumatic injuries that really drove an intensive focus on how computer technology could be marshaled to enhance, expand, and extend the reach of clinical care. The urgency of war essentially led to substantial US government funding that served to foster innovations in behavioral healthcare technology to: (1) advance the development and delivery of evidence-based treatments for behavioral health conditions; and (2) reduce “barriers to care” by investigating ways to improve the awareness, anticipated benefit, availability, access, appeal, acceptance, and adherence of/to evidence-based treatments and services (IOM, 2012, 2014). This heightened U.S. Department of Defense (DoD) and the Department of Veteran Affairs (VA) focus and support was most dramatically seen in research efforts to enhance the understanding and treatment of traumatic brain injury, PTSD, and comorbid health conditions. It is within this historical context that the DoD/VA supported R&D using Clinical VR technology to advance the assessment and treatment of PTSD.

Combat-Related PTSD and VR Exposure Therapy

Among the many approaches that have been used to treat persons with PTSD, Prolonged Exposure (PE) therapy (Foa, Hembree, & Rothbaum, 2007) has particular scientific evidence in support of its therapeutic efficacy (IOM, 2012, 2014). PE is a form of individual psychotherapy based on the emotional processing theory of Foa and Kozak (1986). This theory posits phobic disorders and PTSD involve pathological fear structures that are activated when information represented in those structures is encountered, and that this process is at the center of phobic disorders and PTSD (Foa & Kozak, 1986).

According to Foa and Kozak's seminal 1986 paper on emotional processing theory, fear is activated through associative networks that combine information about the activating or feared stimulus, appraisal of its capacity for threat or danger, and previous history of escape/avoidance responses to it. Maladaptive beliefs about the anticipated impact of the feared stimulus, such as, "I can't handle this" or "This will kill me," lead to the creation of fear structures in which essentially harmless stimuli are associated with danger and produce a more generalized appraisal of the world as a dangerous place. This belief then manifests itself in cognitive and behavioral avoidance strategies that prevent confrontation with the feared stimulus and consequently limit the opportunity for exposure to potentially corrective information that could alter the fear structure and result in reduced fear or anxiety. In persons with phobias and PTSD, the chronic avoidance of feared situations leads to an intrinsically rewarding, albeit temporary, sense of relief. Without treatment, these disorders are perpetuated by the anxiety reducing reinforcement derived from the overuse of avoidance as a primary coping strategy. Successful treatment requires emotional processing of the fear structures to modify their pathological associative elements so that objectively harmless stimuli are no longer a cue for the experience of fear/anxiety. Thus, any method capable of activating the fear structure and modifying it in a safe environment would be predicted to improve symptoms of anxiety (Rizzo, Difede, et al., 2013). Possible mechanisms for reducing fear symptoms involve activation and emotional processing, extinction/habituation of the anxiety, cognitive reprocessing of pathogenic meanings, learning new responses to previously feared stimuli, and ultimately integrating corrective and non-pathological information into the fear structure (Foa & Hearst-Ikeda, 1996).

The use of VR to address psychological disorders began in the mid-1990s with its use as a tool to deliver exposure therapy targeting anxiety disorders, primarily for specific phobias (e.g., heights, flying, spiders, enclosed spaces, etc.) (Scozzari & Gamberini, 2011). At the time, VR was seen to be capable of immersing an individual in a digital 3D graphic rendering of a feared

environment, within which activation and modification of the fear structure was possible. PE was the first psychological treatment to use VR, in part due to the intuitive match between what the technology could deliver and the theoretical requirement of PE to systematically expose users to progressively more challenging stimuli to activate the fear structure (Rothbaum et al., 1995).

To treat PTSD, PE typically involves the graded and repeated imaginal reliving and narrative recounting of the traumatic event by the patient within the safety of the therapeutic setting. While PE relies mainly on imagination and sensory memory, the exposure process is not simply passive. Patients are asked to verbally recount and describe their trauma experience in the first person with eyes closed, just as if it were happening again and with as much attention as possible to sensory detail. Using clinical judgment, the therapist might prompt the patient with questions about their experience or provide encouraging remarks as deemed necessary to facilitate the recounting of the trauma narrative. This approach [is thought to generate a] low-threat environment where the patient can confront and process trauma-relevant memories and emotions, as well as decondition the learning cycle of the disorder via extinction learning.

A number of studies on a variety of trauma populations have established the efficacy of imaginal PE (Bryant, 2005; Rothbaum & Schwartz, 2002; Van Etten & Taylor, 1998); however, not all patients are able and willing to effectively visualize the traumatic event, and this may result in treatment failure (Yeh et al., 2009). In fact, avoidance of reminders of the trauma is inherent in PTSD and is one of the cardinal symptoms of the disorder. To address this problem, researchers have explored the use of VR as a tool to deliver exposure therapy (VRET). The rationale for this is straightforward. The VR delivery of an evidence-based PE protocol is seen as a way to immerse users in simulated environments that are relevant to the patient's trauma, where the emotional intensity of the scene is under the precise control of the clinician, and the pace and relevance is customized for each individual.

Through this method, VRET directly delivers multi-sensory and context-relevant cues, which aid in the retrieval, confrontation, and processing of traumatic experiences, in order to circumvent the natural avoidance tendency (Rizzo, Cukor et al., 2015, p. 3). Within a VR environment, the hidden world of the patient's imagination is not exclusively relied upon, in effect taking some of the weight off their shoulders. Previous success in similarly using VRET for persons with other anxiety disorders, such as specific phobias, has been documented in multiple independent meta-analyses and reviews of the literature (Parsons & Rizzo, 2008; Powers & Emmelkamp, 2008; Scozzari & Gamberini, 2011; Opris et al., 2012), most recently in Botella et al. (2015). As well, multiple studies report positive outcomes using VRET with non-OEF/OIF PTSD patients who were unresponsive to a previous course of *imaginal-only* PE treatment (Difede et al., 2007; Rothbaum et al., 2001).

The use of VR as a PE delivery system may also have potential advantages for breaking down barriers to care by increasing treatment appeal, acceptability and adherence by those needing care. Early research on client satisfaction with VRET in a sample of clients with PTSD due to motor vehicle accidents indicated that all participants scored 30 or more on a scale ranging from 8 to 32, indicating high levels of satisfaction with VRET (Beck et al., 2007). In another civilian PTSD sample, Baños et al. (2009) reported increased satisfaction in PTSD clients following a course of VRET, while another group reported equivalent satisfaction between VRET and imaginal exposure (De la Rosa & López, 2012). However, in the later study, while all participants rated both treatments as useful and stated that they would recommend them to a friend or family member who had PTSD, significant differences in the degree of aversion were reported in the VRET group. This finding is similar to findings from a previous study using VRET to treat specific phobias where participants reported that they found it easier to take the first step to confront their fears in a VR environment (García-Palacios, Botella, Hoffman, & Fabregat, 2007). Moreover, the current generation of military SMs

and veterans, having grown up with digital gaming technology, may actually be more comfortable with participation in a technology-based VRET approach and this could lead to increased accessing of care. In a survey study to assess this in 325 OIF/OEF active duty Army SMs (Wilson, Onorati, Mishkind, Reger, & Gahm, 2008), results indicated that 83% of the participants reported that they were neutral-to-very-willing to use some technology as part of a treatment; 71% were equally willing or more willing to use a treatment based on technology than to merely talk to a therapist in a traditional treatment. Most interesting is that 20% of SMs who were not willing to seek traditional psychotherapy rated their willingness to use a VR-based treatment as neutral-to-very-willing. One possible interpretation of this finding is that a subgroup of this sample of SMs had a substantial disinterest in traditional mental health treatment, but would be willing to pursue treatment using a VR-based approach. Thus, VRET may offer an appealing treatment option for "digital generation" SMs and veterans who may be reluctant to seek out what they perceive as traditional talk therapies. However, further research on treatment attraction and adherence with military samples is still needed to confirm this conjecture. Finally, VR also provides an objective and consistent format for documenting the sensory stimuli that the patient is exposed to that is not possible when operating exclusively within the unseen world of the patient's imagination.

Development of the Virtual Iraq/Afghanistan VRET System

In anticipation of impending military behavioral health needs, and supported by a clear theoretical rationale and the extant literature, the USC Institute for Creative Technologies developed an initial prototype Virtual Iraq VRET system in 2004 for conducting user tests to determine feasibility. This was followed by the creation of a full Virtual Iraq/Afghanistan VRET system developed during 2005–2007, funded by the US Office of Naval Research. The system was the product

of both theory-driven design and iterative user-centered feedback cycles with OEF/OIF service members to maximize its ultimate credibility/relevance for clinical users. Preclinical user-testing was conducted at Ft. Lewis, Washington and within an Army Combat Stress Control Team in Iraq (Reger et al., 2009). The testing, which was done on non-diagnosed SMS and clinical users, provided critical input that continues today to improve and evolve the content and usability of the current clinical VRET system.

The 2007 system consisted of four customizable scenarios designed to represent relevant contexts for VRET: three HUMVEE driving scenarios within Iraq, Afghanistan, and USA-themed settings and a 24-block middle-eastern city that was navigable in a dismounted patrol format. General navigation for driving used a standard *Logitech F310* game pad and when interacting in the dismounted foot patrol, an *Ion GoPad* thumb mouse affixed to a user-held mock M4 gun supported foot travel in the virtual simulations. The simulation's real-time 3D scenes were presented using Emergent's *Gamebryo* as the rendering engine, with the visual stimuli presented within an orientation-tracked *Emagin Z-800* head mounted display (HMD). As described by Rizzo et al. (2009):

Directional 3D audio, vibrotactile and olfactory stimuli of relevance could also be delivered to users. Such stimuli could be controlled and modified in real time by the clinician via a separate "Wizard of Oz"-type clinician interface. This interface is a key feature that allows clinicians to customize the therapy experience to the individual needs of the patient. Using the interface, clinicians can place users in various VR scenario locations that resemble the settings in which the patient's trauma-relevant events had occurred. Ambient lighting and sound conditions can be modified to match the patient's description of their experience and the clinician can then gradually introduce and control real time trigger stimuli (e.g., gunfire, explosions, insurgent attacks, etc.). This level of clinician control is required to foster the anxiety modulation needed for therapeutic extinction and emotional processing in a fashion customized to the patient's past experience and treatment progress (Virtual Reality Exposure). This system was disseminated to over 70 "early-adopter" clinical sites (e.g., VA Medical Centers, military, university and private clinics) for use as a tool to deliver

PE and to collect outcome data as to its effectiveness. (Rizzo et al., 2009)

The use of a VR HMD to immerse the user within these controlled stimulus environments is believed to help support user engagement with typically avoided trauma-relevant experiences as required to activate the emotions needed for therapeutic exposure to occur. In fact, research on this aspect of PTSD treatment suggests that the inability to emotionally engage (*in imagination*) is a predictor for negative treatment outcomes (Jaycox, Foa, & Morral, 1998). Thus, VRET offers a way to circumvent the natural avoidance tendency by directly delivering multisensory and context-relevant cues that aid in the confrontation and processing of traumatic memories without demanding that the patient actively try to access his/her experience through effortful memory retrieval. However, future research is needed to compare the relative effectiveness of delivering VR simulation content on a less immersive large-screen display compared to a HMD with PTSD patients to examine the value of immersion on engagement with trauma memories.

VRET Treatment Procedures

The VRET treatment procedure follows the standard evidence-based protocol for "imagination-only" PE therapy (Foa et al., 2007) and consists of weekly, 90–120 min individualized and patient-driven sessions over 10 weeks. During the first session, the clinician generally aims to develop a working therapeutic alliance with the patient as is standard for most clinical approaches. The clinician may attempt to identify and discuss some of the patient's trauma experiences, provide psychoeducation on trauma and PTSD, and present instruction on a deep breathing technique for general stress management purposes. The second session follows up on topics from session 1 as needed and then focuses on providing the patient with a clear explanation and rationale for PE. In some cases, the patient is engaged in light practice with imaginal exposure that focuses on less provocative elements of their trauma experience.

In session 3, the rationale for VRET is introduced and the patient is encouraged to explore a personally relevant area of the *Virtual Iraq/Afghanistan* environment without recounting any trauma narrative for approximately 25 min, with no provocative trigger stimuli introduced. The purpose of this is to allow the participant to learn how to navigate the system, and to function as a “bridge session” from imaginal alone to imaginal exposure combined with VRET. Sessions four through ten are conducted when the VRET proper is conducted with the participant engaging in the VR while verbally recounting the trauma narrative. The goal of this active exposure approach is for the patient to experience a moderate, yet manageable level of anxiety as they are encouraged to activate, confront and process difficult trauma memories and emotions that they have typically avoided (and in some cases never discussed with anyone). When conducted in the safe and supportive clinical setting, at a pace that the patient can handle, anxiety typically reduces over time by way of a learning process referred to as “extinction.” As this occurs, the patient is encouraged to further confront more provocative elements in the VR scenarios that the clinician can introduce in real time via the clinician control panel. The treatment also includes homework, such as requesting the participant to listen to an audiotope of their exposure narrative from the most recent session as a form of continual exposure for processing the trauma outside of the treatment setting. Assessment of PTSD status is typically done with a combination of self-report symptom questionnaires, structured interview methods, and sometimes active psychophysiological reactivity tests. A more detailed description of this system, PTSD assessment procedures, and the methodology for a standard VRET clinical protocol can be found elsewhere (Rothbaum et al., 2008).

Research Outcomes

Initial Case Studies and Open Clinical Trials Early clinical tests of the *Virtual Iraq/Afghanistan* system produced some promising

results. Initially, three published case studies reported positive results using this system (Gerardi Rothbaum, Ressler, Heekin, & Rizzo, 2008; Reger & Gahm, 2008; Rizzo et al., 2007). In the first-open clinical trial, analyses of 20 active duty treatment completers also showed positive clinical outcomes (Rizzo et al., 2010). For this sample, mean pre/post PCL-M (Blanchard et al., 1996) scores decreased in a statistical and clinically meaningful fashion (Rizzo, Cukor et al., 2015). Correcting for the PCL-M no-symptom baseline of 17 indicated a greater than 50% decrease in symptoms and 16 of the 20 completers no longer met PCL-M criteria for PTSD at posttreatment. Mean Beck Anxiety Inventory (Beck et al., 1988) scores significantly decreased 33%, and mean PHQ-9 (Kroenke & Spitzer, 2002) depression scores decreased 49%. The average number of sessions for “this sample was just under 11. Positive results from uncontrolled open trials are difficult to generalize from and one must be cautious not to make excessive claims based on these early results” (Rizzo, Buckwalter, et al., 2013). However, using an accepted military-relevant diagnostic screening measure (PCL-M), 80% of the treatment completers in the initial VRET sample showed both statistically and clinically meaningful reductions in PTSD, anxiety and depression symptoms, and anecdotal evidence from patient reports suggested that they saw improvements in their everyday life. These improvements were also maintained at three-month posttreatment follow-up (Rizzo, John, et al., 2013). In another open clinical trial (Reger, Holloway, et al., 2011) with active duty Army SMs ($n = 24$), the results indicated significant pre/postreductions in PCL-M scores and a large treatment effect size (Cohen’s $d = 1.17$). After an average of 7 sessions, 45% of those treated no longer screened positive for PTSD and 62% had reliably improved.

Initial Randomized Controlled Trials (RCT) In a small RCT (Roy, Costanzo, Blair, & Rizzo, 2014), active duty SM participants with PTSD ($N = 19$) were randomized to VRET ($n = 9$) or imaginal exposure ($n = 10$) and compared to a control group without PTSD ($n = 18$). At the posttreatment

VRET reduced CAPS (Blake et al., 1995) scores ($P < 0.05$) were recorded, whereas the imaginal PE showed no significant changes. Interestingly, both groups showed significant change ($P < 0.05$) on the PCL-M compared to no significant changes in the control group. In another small preliminary quasi-randomized controlled trial (Mclay et al., 2011), using a comparable VRET simulation of Iraq as the ICT version described above, 7 of 10 participants with PTSD showed a 30% or greater improvement with VR, while only 1 of 9 participants in a “treatment as usual” group showed similar improvement. While the results of these two RCTs are variously limited by small sample sizes, lack of blinding, use of a single therapist, and in the case of Mclay et al. (2011), the VRET comparison was with a set of relatively uncontrolled usual care conditions, these findings add to the incremental evidence in support of the use of VRET for combat-related PTSD. The overall trend of these positive findings (in the absence of any reports of negative findings) is encouraging for the view that VRET can be safely applied clinically and may be an effective approach for delivering an evidence-based treatment (PE) for PTSD. At the least, the main conclusion of these studies is that VRET is as efficacious as traditional PE and sometimes may outperform it. However, more research is needed in the form of high quality RCTs before this can be determined with certainty.

Ongoing Randomized Controlled Trials There are currently several clinical trials ongoing to assess the efficacy of the Virtual Iraq/Afghanistan system with SMs and veteran populations. As described by Rizzo, Cuckor et al. (2015):

One RCT is focusing on comparisons of treatment efficacy between VRE and imaginal PE (Reger & Gahm, 2011) and another is testing VRE compared with VRE + a supplemental care approach, Trauma Management Therapy (Beidel, Frueh, & Uhde, 2010). Another RCT is investigating the additive value of supplementing VRET and PE with a cognitive enhancer called D-cycloserine (DCS) (Difede, Rothbaum, & Rizzo, 2010). DCS, an N-methyl-D-aspartate partial agonist, has been shown to facilitate extinction learning in laboratory animals when infused bilaterally within the amygdala (“fight or flight” conditioning center in the brain) prior to extinction training. Recent evidence of both VRET

and DCS effectiveness has been reported by Difede et al. (2013) in a clinical trial with WTC [World Trade Center] PTSD clients. In a double-blinded controlled comparison between VRE+DCS and VRE+Placebo, both groups had clinically meaningful and statistically significant positive outcomes with the DCS group achieving equivalent gains with fewer sessions. (Rizzo, Cuckor et al., 2015)

This finding is in contrast with two reports that found no additive value when adding DCS to imaginal PE for PTSD treatment in civilian (de Kleine, Hendriks, Kusters, Broekman, & van Minnen, 2012) and military (Litz et al., 2012) groups.

Finally, a recent study with 156 OIF/OIF veterans with PTSD compared the effects of DCS, alprazolam, and placebo when added to 5 VRET sessions (Rothbaum et al., 2014). PTSD symptoms significantly improved across all conditions at posttreatment and at the 3-, 6-, and 12-month follow-ups but there were no differences in treatment outcome across medication conditions with the exception of posttreatment and 3-month follow-up CAPS scores indicating that the alprazolam group showed a higher rate of PTSD than the placebo group. The current ongoing RCT (Difede et al., 2010) will be important for determining whether DCS will differentially improve PTSD treatment outcomes across PE and VRET conditions in view of previously reported mixed findings in this literature.

Project BRAVEMIND: Next-Generation Virtual Iraq/Afghanistan VRET System

Based on these encouraging clinical outcomes using VRET to treat combat-related PTSD and the urgency of the need to provide the best care for the expanding numbers of SMs and veterans reporting PTSD symptoms, the US Army funded the development of an updated and expanded version of Virtual Iraq/Afghanistan system in 2011. Now described as *BRAVEMIND*, a primary goal of this effort was to increase the diversity of the VR scenarios and improve the customizability of stimulus delivery to better address the needs of clinical users who have had a diverse range of trauma experiences. This effort was supported by drawing on the vast amount of user feedback generated from both patients’ and clinicians’ feed-

back from use of the previous 2007 Virtual Iraq/Afghanistan system (Rizzo, Cukor et al., 2015).

The system was rebuilt from the ground up using the state-of-the-art *Unity Game Engine*. The system went from four environments to fourteen. The original four were revamped, and ten new scenarios were added. The new scenarios include a Bagram Air Force Base setting, an industrial zone, a mountainous forward operating base, a roadway checkpoint, a rural Afghan village, separate Iraq and Afghanistan cities, and slum and high-end residential areas. Additional features include customizable sound trigger profiles, expanded weather and time of day controls, selectable Humvee/MRAP/Helicopter vehicles, vehicle-to-foot patrol transitioning, and an updated clinical interface designed with clinician feedback to enhance usability (Rizzo, Cukor et al., 2015).

The *Unity Game Engine* and higher fidelity graphic art/animation have been used to enhance the realism and credibility of the stimulus content while presenting an experience that is uniquely designed to differentiate it from a commercial videogame. The system was also designed to use off-the-shelf components (e.g., standard laptop/PC, head-mounted display, tracking/interface technology, etc.) with the aim to reduce equipment costs to well under \$5000. The BRAVEMIND system is now being distributed to clinical sites and has been designed to provide a flexible software architecture that will support the efficient addition of new content for the expansion and diversification of the system as new clinical needs are specified. The research outcomes cited above did not use the new BRAVEMIND system, but the ongoing Difede et al. (2010) and Biedel et al. (2010), RCTs have adopted it and outcomes from these trials are forthcoming. More information on the BRAVEMIND system components is available in a detailed equipment/software manual available from the first author.

BRAVEMIND Expansion for Combat Medics and Victims of Military Sexual Trauma

The 2011 rebuild of the BRAVEMIND system provided an updated software architecture to sup-

port the flexible and efficient expansion of the system's content and functionality to support new customizable and relevant options for conducting VRET with a wider range of relevant trauma experiences. The BRAVEMIND VRET system is now being further evolved to address the unique therapeutic needs of combat medics/corpsmen and of persons who have experienced military sexual trauma (MST) with PTSD.

Combat Medics/Corpsman VRET Project Observations from our existing clinical work and from recent reports indicate that there is a growing need to address PTSD in combat medics and corpsman. The primary role of the combat medic (Army and Air Force) and corpsmen (Navy and Marines) is to provide medical treatment to the wounded in a combat environment. Combat medics/corpsmen are a unique population within the ranks of deployed SMs. They serve double duty, both professionally and psychologically. In addition to bearing all the responsibilities of soldiering, medics must calmly treat the devastating wounds of modern warfare and are more exposed than other soldiers to seriously wounded or dead service members. Unlike civilian hospital doctors or nurses, who rarely know their patients, medics have the added pressure of being close to the soldiers they are trying to keep alive. And when one dies, medics often face self-doubt – an emotion they must hide or risk losing the platoon's confidence. Treatment for this population requires specialized VR content that is more relevant to their experiences with emotionally challenging situations that are different from what has been effective with other SMs. Thus, with funding from the Infinite Hero Foundation, the existing BRAVEMIND scenarios were extended to include more wounded virtual humans that can display a range of wounds/burns and manifest realistic injury behaviors. Helicopter insertion and extraction scenarios and a Bagram Air Force Base hospital setting for medic/corpsmen "first receivers" were developed. This effort required the creation of significant new graphic art, motion capture animation, airborne vehicle integration, and a library of digital character content that emulates the injuries common to the combat environment in order to offer relevant VRET for

combat medics/corpsmen with PTSD. These elements are included as part of the currently available system, but no outcome data has been reported thus far on its specific use.

Military Sexual Trauma VRET System PTSD can result from exposure to actual or threatened death, serious injury, or sexual violation. This is of particular relevance for SMs who may face trauma from both the threat that is naturally inherent in the combat theatre, as well as from the possible additive occurrence of sexual violations from within the ranks. Thus, MST that is experienced as a threat or result of an occurrence of a sexual violation/assault within a military context can produce additional risk for the development of PTSD in a population that is already at high risk due to the existing occupational hazards present in the combat environment (see also Thomsen et al., Chap. 21, this volume).

A report issued by the Joint Chiefs, together with the DoD Sexual Assault Prevention and Response Program (SAPR) (DoD, 2012), specifies the need for improvements in advocacy coordination, medical services, legal support, and (behavioral health) counseling for the victim (p. 13). This has become an issue of grave concern within the military, as reports of sexual violations and assaults have not only been on the rise over the last 10 years, but have also garnered significant popular media attention. Overall, 6.1% of women and 1.2% of men (active duty SMs) indicated they experienced unwanted sexual contact in 2012. For women, this rate is statistically significantly higher in 2012 than in 2010 (6.1% vs. 4.4%) (DoD, 2012). A bleaker picture of the problem emerges when reports from postdischarge Veteran surveys are considered. In a nationwide randomly selected sample of women seeking care through VA medical centers, approximately one out of four reported experiencing a sexual trauma while on active duty (Skinner et al., 2000). The reported prevalence rates of MST in women were 20–25% for sexual assault and 24–60% for sexual harassment. Thus, while the DoD is mobilizing to reduce the incidence of MST with novel education and prevention programs, significant effort is also required to develop and disseminate effective

treatments to address the existing problem of PTSD due to MST.

The current MST VRET project has developed content for inclusion in the BRAVEMIND architecture that provides new customizable options for conducting VRET with persons who have experienced MST. The novel component in this project involved the creation of new content that was embedded within the existing BRAVEMIND scenarios such as barracks, tents, other living and work quarters, latrines, and other contexts that have been reported by MST victims as in-theatre locations where their sexual assault occurred. Additionally, US military base and civilian contexts were created including barracks, offices, a small town bar area, abandoned lots, motel rooms, and civilian automobile settings. The system does *not* attempt to recreate a sexual assault, but rather, sets up the contexts surrounding the assault in which users can be supported in the therapeutic confrontation and processing of MST memories in accordance with the protocol that has been used previously which implements PE within the simulations (Rothbaum et al., 2008). The new MST content was completed in the summer of 2015 and a pilot RCT is ongoing with a target sample size of 34 male and female participants at Emory University. This has not been attempted previously with immersive VRET, although a nonimmersive VR system in Europe produced initial positive findings with civilian patients having PTSD due to physical assaults and domestic violence (Baños et al., 2011). While both men and women can experience MST, the urgent need for this work is underscored by the growing role of women transitioning into full combat roles in the combat theatre, an area that up to now has been primarily the domain of men.

BRAVEMIND Expansion for the Assessment of PTSD

While VR has been primarily used as a therapeutic tool that aims to enhance the delivery of PE for PTSD, other researchers have begun to explore the reuse of the BRAVEMIND simulation content as stimuli for creating more objective PTS

assessment measures. One of the primary challenges for arriving at an accurate diagnosis of PTSD is that the assessment information is typically limited by reliance upon the patient's subjective reports of his/her traumatic experiences derived from self-report symptom checklists or from structured clinical interview reporting. Many factors can influence the accuracy of this assessment data. Some individuals may under report symptoms because of the stigma of having a mental health disorder, and others may over report symptoms to obtain medical benefits (Gates et al. 2012). Previous research suggests that individuals with PTSD may show differential physiological reactivity in response to specific, emotionally evocative cues and Webb, Vincent, Jin, and Pollack (2015) provide a concise detailing of this literature. Thus, some researchers have attempted to enhance the objective assessment of PTS by combining the capacity of VR to produce highly controlled, ecologically relevant, and realistic stimulus environments that has integrated psychophysiological/biological response measurement. The use of VR stimuli for this purpose is at an early stage of maturity, but encouraging results have been reported in three studies that directly address the VR/PTSD assessment question (Costanzo et al., 2014; Highland et al., 2015; Webb et al., 2015). In a somewhat related effort, another paper has examined the use of fMRI to assess changes in brain activation following a course of VRET and PE (Roy et al., 2014). This falls in line with a view held by some neuroscientists (Corey et al. 2011; Tarr & Warren, 2002) that highly controllable VR-generated content may add value as stimuli in brain imaging studies.

The detection of subthreshold PTSD using BRAVEMIND-derived content was first investigated by Costanzo et al. (2014). While a minority of trauma-exposed individuals is diagnosed with PTSD, a significant number may experience persistent subthreshold symptoms that cause significant impairment and distress (Cukor, Wyka, Jayasinghe, & Difede, 2010). For example, subthreshold PTSD has been associated with increased aggression (Jakupcak et al., 2007), alcohol use (Adams, Boscarino, & Galea, 2006), healthcare utilization, and work absences (Breslau, Lucia, &

Davis, 2004). Costanzo et al. (2014) tested a cohort of 78 SMs who had recently returned from deployment to Iraq or Afghanistan, using three two-minute fixed video sequences, which were taken from the original Virtual Iraq/Afghanistan system, as standard stimuli. The video content was viewed by participants on a flatscreen computer monitor. One sequence provided the first-person perspective of someone walking through a middle-eastern marketplace, while the other two provided perspectives from a HUMVEE in a convoy, one as the driver, and the other as the passenger. In each environment, participants were presented with a variety of explosions and other threatening stimuli that became more provocative over the course of the two-minute sequences. During the exposures, heart rate, blood pressure, respiratory rate, skin conductance and electromyographic eye blink response was monitored. Among the range of psychophysiological measures that were studied, regression analysis revealed that heart rate (HR) was most strongly linked with PCL-M-measured PTSD symptom severity, and that HR response across the three VR sequences explained 14% of the variance in the PCL-M scores. As well, HR was most strongly associated with Clinician-Administered PTSD Scale-based measures of hyperarousal ($R^2 = 0.11$, $p = 0.035$), re-experiencing ($R^2 = 0.24$, $p = 0.001$), and global PTSD symptoms ($R^2 = 0.17$, $p = 0.003$). These findings provide initial support for the use of VR-developed stimulus content for eliciting psychophysiological responses associated with subthreshold PTSD symptoms. Such an approach to create more objective measures of symptom severity could help to risk stratify SMs after deployment, and perhaps lead to earlier recommendations to seek treatment, or targeted intervention efforts.

In a similar study, Webb et al. (2015) recorded physiological activity from 58 male veterans with and without PTSD and combat trauma exposure (PTSD Diagnosis $n = 16$; Trauma Exposed/No PTSD Diagnosis: $n = 23$; No Trauma/No PTSD Diagnosis: $n = 19$) in response to emotionally evocative VR stimuli derived from the Virtual Iraq/Afghanistan simulation. Two combat-related videos (i.e., HUMVEE driving scene

and a foot patrol in a Middle Eastern city setting) were presented to users in a VR HMD where stimuli of increasing severity were presented. Within the simulation videos, five stimuli were presented including: an aircraft flying overhead, a mortar explosion, an improvised explosive device (IED), an attack resulting in an explosion, and an attack by an insurgent. The five events occurred at approximately 30, 75, 120, 165, and 210 seconds after the start of the video. Significant differences between the Control, Trauma, and PTSD groups were found for measures of skin conductance and HR interbeat interval features collected during presentation of each of the ten video events (five events of increasing severity per video). These features were entered into three stepwise discriminant function analyses to assess accuracy of classification for Control versus Trauma, Control versus PTSD, and Trauma versus PTSD pairings of participant groups. Leave-one-out cross-validation classification accuracy ranged from 71% to 94% (Webb, et al., 2015). These results further suggest the utility of VR stimuli integrated with objective physiological measures in PTSD assessment. Catecholamine responses as a potential objective biomarker for PTSD have also been studied in SMs who had recently redeployed home (Highland et al., 2015) using the same computer monitor-delivered Virtual Iraq/Afghanistan videos as reported in Costanzo et al. (2014).

While adaptive for acute stress, chronic stress and associated repetitive catecholamine-system activation can lead to damaging biopsychosocial outcomes (Mead, Beauchaine, & Shannon, 2010; Highland et al., 2015). One study using a community sample found that individuals with PTSD had higher 24-hour levels of catecholamines as compared to those without trauma exposure, as well as those exposed to trauma but who did not develop PTSD (Young & Breslau, 2004). Interestingly, those with trauma exposure who did not develop PTSD showed lower catecholamine levels than those without trauma exposure (Young & Breslau, 2004), suggesting a potential mechanism for resilience. Although catecholamine levels are related to PTSD symptomatology, research with postdeployment SMs on catecholamine responses to acute combat-

related cues is currently quite limited (Highland et al., 2015).

In Highland et al. (2015), 87 clinically healthy SMs, within 2 months of return from deployment to either Iraq or Afghanistan first completed relevant self-report questionnaires, then viewed the VR combat sequences and completed baseline and post-VR blood draws for catecholamines. A series of simple and multiple linear regressions were used to assess the relations between PCL-M symptom clusters and catecholamine responses with functional status subscales. Overall, the results indicated that norepinephrine (NE) was a far more salient measure than either dopamine or epinephrine. “[NE] responses to the VR combat sequences significantly moderated the relationship between avoidance and functional status subscales, to include physical role functioning ($\beta = .36, p = .002, q = .02$), vitality ($\beta = .36, p = .002, q = .02$), and physical functioning ($\beta = .53, p < .001, q = .001$). For individuals lower in avoidance symptoms, increased NE responses were associated with higher functional status subscale scores. On the other hand, for participants with higher avoidance symptoms, increased NE responses were linked with decreased functional status subscale scores” (Highland et al., 2015). These findings corroborate the evidence found with the psycho-physiologic measures, namely that VR may be used to elicit objective measures of symptom severity and functional status after traumatic experiences. Moreover, these and possibly other genetic and epigenetic biomarkers might hold promise to be incorporated into a model that can effectively risk stratify those who have been exposed to trauma, to facilitate targeted early interventions for those at high risk.

Finally, a small RCT was conducted comparing VRET and PE (see Roy et al., 2014, described above) that also included functional magnetic resonance imaging (fMRI) before and after treatment in a subsample of ten of the study participants (6 PE and 4 VRET). This pilot work aimed to investigate brain activation levels in areas that have been implicated as relevant to the occurrence of PTSD (e.g., hyperactivity in the amygdala, subcallosal gyrus, and the lateral prefrontal cortex, with inhibition in the anterior cingulate

gyrus) (Shin et al., 2005). The subsample consisted of those in the RCT who were not excluded from fMRI scanning procedures due to embedded shrapnel or other contraindications. Stimuli presented in the fMRI system consisted of an Affective Stroop paradigm (Blair et al., 2007) that incorporated neutral, negative, and positive affect photographs from the International Affective Picture System (IAPS) (Lang, Bradley, & Cuthbert, 2008).

For the small subset of participants receiving either form of treatment who also completed fMRI pre and posttreatment, the decrease in mean CAPS scores did not achieve significance, 84.1 (12.62) baseline to 80.67 (14.97), $p = 0.12$, but for mean PCL scores it did, 64.2 (12.74) to 51.7 (15.49), $p < 0.05$ (c.f. Roy et al., 2014). For this subset of participants at pretreatment baseline, the viewing of emotionally charged IAPS pictures was associated with hyperactivity in the amygdala, subcallosal gyrus, and the lateral prefrontal cortex, along with inhibition in the anterior cingulate gyrus, as had been previously reported (Shin et al., 2005). At the completion of treatment, statistically significant and marked improvement, or normalization, in three brain regions was detected in response to the picture stimuli. Significant reductions in amygdala and increases in ventromedial prefrontal cortex activation levels were detected with negatively charged, but not neutral imagery following treatment. The anterior cingulate cortex also displayed significantly reduced inhibition (improvement) in association with negative, but not neutral, imagery. This was in sharp contrast to a non-PTSD postdeployment control group ($n = 18$) that showed no significant changes in any of the brain regions during the same repeat scan timeframe. The comparison with the control group supports the view that the changes observed in the treated group were in fact due to the intervening therapy, as opposed to just practice, or comfort with the fMRI procedures and the display of the emotionally charged pictures with repeated viewing. Although the small pre/post scanned subsample precludes a comparison between VRET and PE, the results indicate that fMRI-captured brain activation levels may provide objective evidence both

for the presence of PTSD, and the impact of treatment. Future efforts with fMRI assessment of PTSD-related brain activation should examine responses to VR-derived content that resemble core audiovisual elements of the patients' traumatic contexts as has been done with the psychophysiological and catecholamine VR assessment studies. While still in its infancy, more research in this area may produce assessment methods that more objectively assess the presence and ongoing status of PTSD in a fashion that augments what is attainable with self-report.

Future Directions

Clinical interest in the use of VR technology to deliver PE therapy for PTSD and related efforts to use VR content to develop more objective assessment systems has grown as positive outcomes have been reported with their initial implementation. This interest will also likely be fueled by a societal zeitgeist in which this form of immersive and interactive technology has caught the public's attention and imagination. While previously hamstrung by costs, complexity and clinician unfamiliarity with the equipment needed to use VR clinically, VR technology is charging forward in the consumer marketplace with new low-cost, hi-fidelity, and usable product offerings that will likely drive wide scale adoption. This will result in a scenario where "...it is probable that in the next few years, a VR device will be like a toaster – although you may not use it every day, every household will have one. This emerging level of market penetration will likely support accelerated uptake in the healthcare domain as the general public has more virtual experiences and comes to see the potential value of the experiences that VR can create, beyond the world of digital games" (Good, 2016).

In fact, a recent Goldman Sachs market forecast predicted an 80 billion dollar VR market by 2025, with healthcare coming on 2nd place, only behind gaming entertainment (Verhage, 2016). And there is evidence that many clinicians have come to recognize its potential for creating tools that can amplify and extend their capacity to

deliver evidence-based care. This can be seen clearly in the results from a survey in which expert clinicians were queried as to what interventions they predicted would increase in the next decade (Norcross, 2013). VR ranked 4th out of 45 options with other computer-supported methods occupying 4 out of the top 5 rankings.

But the potential interest and growth in the clinical use of VR will not be solely based on popular media excitement and consumer uptake. The use of VR clinically fits well with the conceptualization of psychology as a scientific discipline. The affordances that VR technology provides are ideal for creating controlled stimulus environments. Stimuli can be systematically delivered to users within realistic and relevant simulations of real-world contexts that support exquisite timing and control of stimulus load/complexity, all of which can be manipulated in a dynamic fashion contingent on the needs and responses of the client or research participant. Moreover, within such VR simulations, human performance can be digitally captured in real time in support of a precise and detailed analysis of relevant responses in relation to systematic stimulus presentations. In this regard, VR can be seen as capable of producing the “ultimate Skinner Box” for conducting human research, assessment, and intervention. This is especially relevant for exposure-based treatments that could benefit from the delivery of consistent, controllable, and immersive trauma-relevant stimulus environments that do not rely narrowly on the variable and ultimately hidden world of a patient’s imagination. VR also provides an objective and consistent format for documenting the sensory stimuli that the client is exposed to, and one that can be linked precisely to physiological, biological, behavioral, and self-reported reactions for assessment and treatment documentation/research (Rizzo, Cukor et al., 2015).

In addition to these functional stimulus/response quantification assets, the use of VR as a PE delivery system may also be found to break down barriers to care by improving treatment appeal, acceptability, and adherence by those in need of care. The current generation of young military SMs and veterans, many having grown up with digital gaming technology, may be more

attracted to and comfortable with participation in a VR therapy approach (Wilson et al., 2008) and this could lead to increased access of care by those in need. While there is evidence in support of this with VR exposure applications with civilians (Baños et al., 2009; Beck et al., 2007; De la Rosa & López, 2012; García-Palacios et al., 2007), more research is needed to determine if VRET is perceived with less stigma by “digital generation” SMs and veterans relative to what they perceive as traditional talk therapies, and will that ultimately serve to increase the accessing of care (Rizzo, Cukor et al., 2015).

While it is intuitively appealing to assume that VRET will likely be an effective treatment for PTSD since it provides a novel and engaging mechanism for delivering an already endorsed, evidence-based approach (Cognitive Behavioral Therapy with exposure), more research is needed to provide stronger scientific support for that claim. The current state of the literature is promising, particularly in view of the strong evidence for VRET effectiveness for delivering exposure treatment for specific phobias. However, the existing research examining VRET for combat-related PTSD provides only preliminary evidence for its efficacy. Positive results from three published case reports, two open trials, two waitlist controlled studies, and two small RCTs have formed the initial basis for support. Results from currently ongoing high-quality RCTs with larger sample-sizes are anticipated to help inform this issue in the near future. As well, while recent VR PTSD assessment studies have reported encouraging findings that could advance the creation of more objective assessment methodologies, more validation studies with larger samples are needed.

Another important direction to pursue in the future will involve the conduct of dismantling studies to better specify what elements of VRET are crucial for differentiating VRET from standard CBT exposure approaches. Such research could lead to improved treatment outcomes by providing a better understanding of the mechanisms that may predict who this treatment may appeal to and who may achieve better clinical outcomes from it. Subject variables including gender, age, video game experience, number of

deployments, and pasttrauma history may provide useful covariates to inform predictions as to who is most suited to benefit from these forms of trauma-focused exposure (VR vs. Imaginal). More research is also needed to study how variations from the standard protocol delivery of VRET in terms of the frequency and duration of sessions, the additive value of multisensory stimuli – i.e., olfaction, and the addition of pharmacological agents (D-cycloserine) or central nervous system-focused procedures (vagal nerve stimulation) – could also impact treatment outcomes within the controlled stimulus environment that is available with a VR simulation. Such Clinical VR research efforts are now more feasible in view of the rapid technological advances that have driven the recent availability of off-the-shelf VR equipment that is cheaper, less complex, and of higher quality than what was available just 2 years ago. Thus, it is likely that the use of VR will continue to drive novel PTSD research and address the significant clinical and social welfare challenges that exist with those who suffer from the experience of trauma.

Finally, the broader general awareness and use of VR for combat-related PTSD assessment and treatment could potentially influence adoption within the civilian sector. If one reviews the history of the impact of war on advances in civilian clinical care, a case can be made that clinical VR will follow this trend and be more widely used as a result of its successful application in the military context. For example, the Army Alpha/Beta Classification Test emerged during World War I because of the demand for better cognitive ability assessment later set the stage for the civilian psychometric testing movement during the postwar era (Rizzo et al., 2011). Later on, the birth of clinical psychology as a treatment-oriented profession was borne from the need to provide care to the many veterans returning from World War II with “battle fatigue” providing the impetus for the VA to create a clinical psychology intern program in the late 1940s. At the same time, the creation of the National Institute of Mental Health (NIMH) came from an executive order from President Harry Truman as a vehicle for addressing the challenge of “combat neurosis.” More

recently, the Vietnam War led to the recognition and a deeper understanding of PTSD as a definable clinical disorder. Perhaps one of the clinical “game changing” outcomes of the OIF/OEF conflicts could follow from the military’s support for research and development into clinical treatment systems that leverage new interactive and immersive technologies such as VR. In turn, this may drive wider uptake of Clinical VR in the civilian sector as the technology becomes more common in the digital landscape of modern society.¹ If past history can predict the future, such advances in health care innovations, driven by the urgency of war, will have a lasting impact on military and civilian mental health care long after the last shot is fired.

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¹For an extensive collection of videos on this project (simulation videos, patient interviews, media reports), the reader is directed to: <https://www.youtube.com/channel/UCQrbzaW3x9wWoZPl4-l4GSA>

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Part VI

International Military Psychology

Oliver Krueckel

After the fall of the Berlin Wall in 1989 and the end of the Cold War in 1991, the German military, the “Bundeswehr,” faced major changes in culture and policy. In contrast to solely taking part in disaster relief missions and sending medical aid after natural catastrophes, the German Parliament agreed to start letting their services participate in peacekeeping missions with the United Nations and North Atlantic Treaty Organization (NATO). The occupation of Kosovo (1999), and later Afghanistan (2002), additionally served as the proving grounds for a military that would change dramatically because this was the first time since World War II that German ground troops were deployed facing actual combat. These deployments also required a change in the orientation of German military psychology.

Historically, psychology in the German military focused on personnel selection and therapy. Even before the beginning of World War I, German psychologists tried to select suitable recruits by applying aptitude tests and screening for personality disorders, as well as focusing on the development of assessments for special func-

tions, such as truck drivers, pilots, and radio operators. During the war, German psychiatrists tried to find cures for what we know today as post-traumatic stress disorder (PTSD), calling the symptoms “war trembling” or “war neurosis” (Crocq & Crocq, 2000).

The beginning of World War II fostered a boom in military psychology in Germany, again focusing on diagnostics and selection with an emphasis on officer candidates. Psychologists tried to find the right applicants with the strong character and leadership potential rather than solely focusing on cognitive abilities. This boom of military psychology ended abruptly in 1942 with the dissolution of military psychology in all German branches but the Navy. With the losses of the war and the lack of applicants for officer positions, the need for selection faded (Geuter, 1987).

After the war, the newly founded Bundeswehr integrated psychologists into their personnel assessment process again, focusing on the selection of enlisted, non-commissioned officers (NCOs) and officer candidates. But it was not until 1965 that the psychological selection was extended to all conscripts entering the German armed forces. At about the same time, an extensive psychological screening process was developed for pilots and flying personnel; this was the birth of aviation psychology in the German military (Hansen, 2006).

O. Krueckel (✉)
Psychological Service,
Landsberger Strasse 133, 04157 Leipzig, Germany
e-mail: oliverkrueckel@bundeswehr.org

A Change in Culture and Needs Addressed

German military psychologists have been sent to missions abroad for more than 20 years. With the war in Afghanistan and a concurrent shift in German security strategy and foreign policy allowing out-of-area missions, the need for proper psychological training, in-theater support, and after-deployment follow-up became more and more evident. At the same time, the need for a thorough selection of officers, NCOs, and enlisted personnel based on state-of-the-art diagnostics became even more crucial because today's complex combat tasks, such as asymmetric warfare, involve dealing with different cultures and handling high-tech equipment. This became even truer when Germany suspended conscription in 2011, facing the challenge of recruiting and selecting the right people for the right jobs in an all-voluntary force.

Therefore, today the major fields of employment in German military psychology are personnel selection and operational psychology, followed by organizational and research psychology, aviation psychology, ergonomics, and education. It is important to note that, unlike in some countries such as the United States, the Psychological Service in the German military does not belong to the medical branch but is rather an independent part of the civilian administration. Almost all psychologists are civil servants and serve as reserve officers when deployed. Psychotherapy, on the other hand, remains a core mission of the Joint Medical Service and is conducted in one of the five military hospitals or by public providers. If therapeutic support is needed during deployment, the soldier would be flown home and treated in a safe environment, although certain stabilization techniques could be applied in-theater if necessary.

The Psychological Service supports the Medical Service by providing clinical psychologists and cooperating closely in research and in the continuous improvement of psychological assistance for service members and their families, for example, in the Center for Psychotraumatology in the German Armed Forces Hospital Berlin

founded in 2010. The center combines both research and therapy and therefore has a unique approach in the German military for understanding post-traumatic stress disorder (PTSD). Cognitive behavioral therapy (CBT) and – if indicated – eye movement desensitization and reprocessing (EMDR) are possible treatments for PTSD in the Bundeswehr.

Current Research and Development

Operational Psychology

As early as 1993, with the first deployments of German troops abroad, operational military psychologists accompanied the soldiers, providing in-theater care and support. The first thoughts and ideas for operational military psychology were often based on experiences and research conducted in the United States and Israel (for early ideas, see Benbenishty & Solomon, 1986; Everly & Mitchell, 2001). Over time, psychological support evolved and adapted more recent developments in science, such as current research on resilience and post-traumatic growth. A close network of support was built across the specialties, including chaplaincies, social services, and the medical branch, with the notion of providing help and support for all aspects of a soldier's life. For example, if a soldier seeks help from the operational psychologist having problems with his family after deployment, he might also admit during the interview that he is drinking too much alcohol and is having problems with paying his bills. With the consent of the service member, the psychologist could give the social worker and the physician on base a call. The social worker then would support the soldier by planning how to cut his debt, the physician would take a deeper look into the alcohol problems and refer him to a psychiatrist for therapy if needed. This network hence supports referrals between the specialties without having to go through the chain of command or a lengthy appointment process.

In the current structure, a team of three operational psychologists is assigned to each brigade of the German Army. The German Air Force and

Navy and the Joint Logistical Support Service have similar constructs. These psychologists are backed by senior NCOs who are trained in stress management and are able to serve in the role as a psychological first responder if needed. They also assist the psychologists with administrative work and have a mediating function in the battalions and companies, often having served in the same units from which the psychologists' clients come.

The three main missions of the brigade's operational psychologists are coaching leadership on all levels, counseling soldiers (in contrast to therapy in clinics), and managing psychological crisis intervention. Serving as a consultant for leadership is the primary mission of the operational psychologist, first of all for the brigade commander but also for his battalion commanders, company leaders, and senior NCOs. He provides advice and guidance on all psychological matters such as the condition and motivation of the troops or acute situations that could have a negative influence on combat readiness.

If a service member struggles with personal problems (such as stress, sleep disorders, or family issues), the operational psychologists can provide preclinical support and work on behavior changes using concise short-term interventions. If needed, the operational psychologist on deployment could recommend that a soldier be sent home for further care and treatment. Note that the operational psychologist does not provide clinical therapy. The treatment of psychological disorders as defined in the ICD-10 (World Health Organization, 1992) remains the responsibility of the military hospitals and clinics, hence the close cooperation with the medical branch and primary care in the garrison and deployment setting.

Lastly, psychological crisis intervention is an important mission particularly during deployment but also at home where accidents or natural disasters could strike. The German military is slowly but surely distancing itself from Mitchell's approach (Everly & Mitchell, 2001) of critical incident stress debriefing (although some specific techniques might still be applicable) and using a more individual and comprehensive approach,

which stresses a soldier's unique strengths and coping abilities. A proper screening and individually designed post-deployment support program will address each soldier's distinct needs more appropriately in the future.

Providing an outside perspective in a strictly military setting, the operational psychologist is seen as a valuable asset by military leadership and can also be called upon for psychological training of units ready to deploy or any other professional question in his field of expertise. He will provide pre-deployment training and education, in-theater support when deployed with his unit, and post-deployment debriefing and care.

Personnel Psychology

Despite the suspension of compulsory military service, the traditional field of personnel selection and recruitment remains an important area of employment for psychologists in the German military. There are four predominant areas of occupation in the military's personnel selection process: the psychological diagnostic of enlisted and NCO applicants; the testing of officer candidates; the selection of special personnel, such as pilots, divers, and Special Forces; and the assessment of civilian employees.

Typically, the selection criteria are based on systematic work analyses for the specific occupation. The testing procedure is threefold: interviews, group situation methods, and psychological aptitude tests converge to a comprehensive and holistic picture of the candidate. Finally, a psychologist and a recruitment officer, who are trained in assessment center techniques and basic diagnostic principles, review the candidate.

The German military uses state-of-the-art computer-assisted tests (CAT), which are developed and maintained by a department of the Psychological Service and also used in part by the German Federal Agency for Employment and the German Aerospace Center. One component of the CAT is adaptive and examines cognitive abilities in logical thinking, mathematical reasoning, and language proficiency. According to on-the-test scores of the applicant, they will be

placed in a military occupation that meets the needs of the German military. Based on the requirements for the candidate's application, further tests might be administered. For example, all officers are tested on their skills for a variety of master's degree courses at one of the two universities of the German military, the Helmut Schmidt University of the Federal Armed Forces Hamburg and the University of the Federal Armed Forces Munich.

Additional testing might be applicable for candidates, such as pilots, air traffic controllers, and Special Forces operators. In addition to the basic screening, more job-specific testing is a prerequisite. Taking the German Special Forces as an example, the candidates are already selected and trained as NCOs in airborne or long-range reconnaissance units before undergoing a further multi-phased selection process under the oversight of the unit psychologists. This process includes in-depth aptitude and personality tests as well as a gruesome physical selection process in order to simulate a real-life deployment environment (for the future of Special Forces selection, see Beezemer et al., 2012). By passing this selection process, the soldiers have met the minimum requirements for starting their 2-year Special Forces training, after which they will further specialize in weapons, communications, medical aid, or demolitions.

Organizational Psychology

Organizational psychology contributes to assessing the internal and social situation of the German military. For this purpose, efficient and complex analytic tools are developed, made available, and utilized, thus providing significant contributions to the military's internal assessment. These findings from employee surveys, specifically developed for the German military across all services, also deliver continuous feedback to leadership and management controlling, for instance, on job climate or stress factors during deployment.

Further roles and responsibilities of organizational military psychology include the continuous quality assurance of psychological procedures

and programs as part of internal quality control as well as reviewing job requirements and conducting test analyses.

Psychological norms such as reliability, validity, objectivity, and acceptance of the implemented diagnostic methods are measured on a regular basis, as required by both national and international standards such as the International Organization for Standardization's standards for quality management (ISO, 2011).

Future Development

To maintain and increase the psychological fitness of servicemen and women, the Inspector General of the German military adopted a new conceptual framework in 2012 in order to maintain and improve personnel readiness and prevent stress-related disorders. This framework of "Psychological Balance and Consolidation Elements" introduces activities in the field of psychological screening, the trainability of mental fitness, the balance of psycho-reactive consequences of deployment, and the improvement of psychological resilience.

Major components of this framework are as follows (for more background information, see Kowalski et al., 2014):

- Development and implementation of a system for the screening of psychological fitness (care-based screening) at various times throughout a soldier's military life cycle to initiate supportive measures when personal resources are insufficient
- Development and implementation of a joint training capability to increase a soldier's personal resources for coping with stressful situations during deployment
- Improvement of the documentation of stressful and traumatic events during deployment
- Improvement of post-deployment follow-up and care to cope with deployment-related stress
- Development and implementation of a program for psychological balance and

consolidation as an additional method to improve personal resources and resilience

This program entails a variety of modules and seminars, teaching soldiers relaxation techniques and communication skills, and involving recreational sport. The program can also accommodate the soldier's spouses and family members, who can take part in special seminars and courses on a voluntary basis. Each program is specifically tailored to the individual, based on their experiences during deployment and their psychodiagnostic screening results. These results provide the baseline for further post-deployment support such as workshops, supplementary recovery, and preventive programs or physiotherapy. Special programs for soldiers, who were wounded in action, including their families, have been developed and are currently being evaluated by the Center for Psychotraumatology in the German Armed Forces Hospital Berlin.

The goal of the psychological screening is to focus on psychological fitness and its three underlying psychological constructs – resilience, post-traumatic growth, and quality of life – instead of just treating symptoms after deployment (Jacobs, 2012). This newly developed set of screening instruments includes interviews and standardized tests, which help to look at different dimensions of psychological fitness, such as coherence, personal strengths, beliefs, and social relationships. These “care-based” screenings will accompany a soldier recurrently throughout his military life and differ significantly from screenings used for selection.

The pre-deployment training will also become more focused on stress management techniques and self-awareness, thus enabling the individual soldier to draw from his own set of coping skills and strengthening his psychological fitness. An example of this new approach is the implementation of Chaos Driven Situations Management Retrieval System (CHARLY), an interactive multimedia training program that was rolled out to the services last year. CHARLY will become part of the mandatory pre-deployment training to improve self-awareness and teach self-calming techniques via psychoeducation and biofeed-

back. First studies show positive results in the change of attitude of soldiers toward psychiatric disorders (Wesemann et al., 2016).

In the program, a virtual coach guides the service member using interactive dialogue, role-play, and computer games to induce stress. This allows soldiers to learn about one's own behavior and regulate symptoms of tension or anxiety. This computer program will only be adjunctive to already existing training programs in the German military, including classical classroom education and in-the-field exercises to “train as you fight.” However, it might very well shape the future of resilience training and our understanding of psychological fitness.

Conclusion

The military often leads the way in innovative research and creative use of technology out of a need for effectiveness. The focus in military psychology is globally shifting from the classical approach of merely treating illness and psychological stress to a more holistic and comprehensive methodology, viewing a service member's health as a combination of physical and psychological well-being (see also Bowles et al., Chap. 14, this volume). Consistently, German military psychology is recognizing that psychological fitness and mental illness are different entities of a continuum; a soldier suffering from mental health issues might still be able to do his job but will need individually tailored support to strengthen his mental resources and skills.

With the suspension of conscription in Germany and a shift in German foreign policy to a broader global defense strategy with its allies, the need for personnel development and retention becomes more and more evident. The military has a responsibility not only to provide the best care available for its service members but also to avert and counter the development of mental health issues whenever possible with a preventive approach. This will not only take better care of the needs of the service members and their families, but it will also prove more cost-effective over time.

Understanding the concept of psychological fitness and integrating technology into training and psychological support therefore has the potential to consequently change the face of military psychology in Germany and in other NATO countries in the near future toward a more proactive and integrative approach, thereby meeting the challenges of today's battlefield.

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Danmin Miao, Hui Wang, Xufeng Liu, Xia Zhu,
Wei Xiao, and Shengjun Wu

Although it is a young discipline, military psychology in China is rooted in a distinguished history. The present chapter will briefly review this history, and provide a current description of how military psychologists are trained and employed in modern day China.

History of Military Psychology in China

The long history of military psychology applications in China is nicely discussed in the book *Psychological Warfare in Ancient China* (Miao, 2007), and also in the work by (Yan & Zhou, 2013) describing the psychological selection of paratroopers during the Second Sino-Japanese War from 1937 to 1945. The first to the fourth military medical universities were named in 1954 when medical colleges were merged and reorganized by the central government and the Military Commission of the Communist Party. More recent developments of military psychology in China can be divided into three major stages. The

first stage was the *recovering stage*, from 1978 to 1999. With the implementation of the Chinese Economic Reform and Open-up Policy (1978), Chinese military psychology jobs again blossomed on this ancient oriental land. In 1999, the former First Military Medical University was transformed from military university to civilian university, with the name changed to South Medical University. Therefore, now there are three medical universities, namely, from the Second to the Fourth. The first set of criteria for military psychological selection was established in 1998, with the establishment of psychological standards in the selection of flight cadets and astronauts. Based in part on the success of this program, the Military Psychology Specialized Committee, subordinate to the Chinese Psychological Society (academic not clinical practice), was organized in 2003.

Next, the *rapid developing* stage occurred from 2000 to 2010. This stage was highlighted by the establishment of Chinese Military Psychology Specialized Committee in 2003, reflecting the popularization and application of test standards for conscription and psychological assessment of cadets, as well as the reorganization of military psychological response units. In 2006, the first National Centre of Psychological Examination of Recruitment was set up in the Fourth Military Medical University to supervise recruitment for China's military. For the first time in 2008, a military psychological response unit was organized

All the information sources are from references of open publication.

D. Miao (✉) • H. Wang • X. Liu • X. Zhu • W. Xiao
S. Wu
Department of Medical Psychology, Fourth Military
Medical University, Xi'an, Shaanxi, China
e-mail: miaodanmin@126.com

and dispatched to provide psychological relief work to civilians and servicemen working in the affected earthquake area of Wenchuan.

The third stage was another period of fast and profound growth, starting from the 12th Five-Year Plan of China. China's Five-Year Plans are a series of social and economic strategies and priorities that guide development. During this time period, the research direction and applications focus of Chinese military psychology transitioned from psychosomatic health to overall psychological health, and from a focus on psychological stress disorders to military mental service for information-support operations and high-tech war. In 2010, the entry of *Research on Chinese Servicemen Psychological Test System and Standards* won the State Science and Technology Award, the highest national award for scientific research in China.

In 2012, the medical universities in China began to enroll undergraduates for a Medical Psychology major. These undergraduates study both medicine and psychology for 5 years in universities, with some of the top students continuing to pursue further education. Almost all the comprehensive universities in mainland China offer a psychology major for students. Many of these students end up serving as military psychologists.

Today, most military psychologists in China are uniformed servicemen, with very few civilian psychologists working for the Army, Air Force, or Navy. Most psychologists serving in operational units work as the only mental health provider in the unit. Psychologists working in institutes or universities usually have technicians to assist them with testing, psycho-educational training and some limited counseling. These technicians include postgraduates and PhD candidates, as well as some visiting junior scholars. They also serve in the military institutions such as hospitals, research centers, like psychological health centers, and also conduct clinical work in hospitals. There are Psychological Departments in military medical universities, along with psychological labs, and most military hospitals have psychological consultation department or psychiatry department.

This remainder of this chapter covers the achievements of Chinese military psychology in recent years, in the following eight areas: (1) psychological selection of military personnel; (2) influence of military environment on mental health; (3) military human factors psychology; (4) psychological warfare and psychological defense; (5) individual mental health; (6) military psychological training; (7) group mental health and military organizational culture; and (8) non-wartime mental health services.

Psychological Selection of Military Personnel

The practice of psychological selection of military personnel in modern China started at the end of the 1950s. The Air Force Research Institute, in cooperation with the Institute of Psychology of the Chinese Academy of Sciences, conducted the first psychological selection research with military flying cadets. This work was suspended during the time of the Cultural Revolution and was restored in 1978. Then in 1987, this research entered into the second stage. During that time, the Air Force Research Institute conducted research in the areas of intelligence, will power, temperament, and character of the best pilots. From 1994 to 1997, experts from the Institute of Psychology of the Chinese Academy of Sciences (CAS), Peking University, the Fourth Military Medical University, and Air Force professional institutes developed the Pilots Psychological Selection Evaluation System, and constructed the three platforms of Computerized Selection, Flight Simulator Evaluation, and Somatic Movement Ability Test, which include operational stability and movement coordination related to reaction and performance during flight. In the late 1990s, the first set of military criteria for psychological selection of flight cadets was released, and this process has made marked improvements over the years (Fu, 1991). Also in the mid-1990s, the first set of psychological selection methods and criteria for astronauts in China was developed under the combined efforts of CAS, Zhejiang University, the Fourth Military

Medical University, and the China Astronauts Research and Training Center.

Since this time, the astronauts' psychological selection process has been a successful program. Inspired by the selection methods for astronauts, research on psychological selection of vehicle drivers (Miao & Wang, 2004), pentathlon athletes (Li et al., 2005), aquanauts, and navigation cadets for the military has also been conducted. With financial support from the Ministry of National Defense and the formal three military headquarters in the early twenty-first century, the Chinese military psychological selection research has made considerable progress. Under the leadership of the Fourth Military Medical University and other institutes, the Competency Model of Chinese Military Personnel was developed (Miao & Liu, 2015). In 2006, the National Recruitment Psychological Test System and the Cadet Psychological Selection System for Military Academies was validated by researchers and the standardized application was implemented domestically within the entire Chinese Army. Since 2003, the systems have been used to test over ten million candidates, and disqualified more than 300,000 applicants, barring those possibly affected by mental disorders, energy disorders, and personality disorders from serving in the Army (Miao, Luo, Liu, Li, & Su, 2006). In the area of occupation classification, research on psychological selection of special assignments, such as females, submarine crew, radar operators, signal corps, and electronic countermeasures (ECM) has made continued progress.

Within a short 38-year period, psychological selection methods and related research evolved from paper-pencil testing, to Computer Assisted Testing (CAT), to Computerized Adaptive Testing (CAT), to testing based on wireless local area network (LAN), and to the newly developed fusion detection technology. The efficiency, convenience, and stability of psychological testing are constantly improved upon to meet users' needs. Technology on computerized psychology testing was being researched by military institutions in early 2006 and the results were published in 2009. Based on these contributions, CAT personality tests were applied officially in later ver-

sions of the conscription personality software (Yang et al., 2009). The research on high-risk army populations for mental disorders with enhanced psychological testing decreased the percentage of severe mental disorders within the army significantly. Research results concerning antisocial personality disorder (ASPD) violent crimes were markedly reduced in the Army. The newly developed fusion detection technology represents integrated technologies based on personality tests, eye-movement techniques, EEG, soft neurological signs detection, and MRI (Xiao, Miao, & Gong, 2007). This is a breakthrough technology from traditional psychological testing, with advantages of having greater objectivity, and less subjective human error.

Influence of Military Environment on Mental Health

China has a vast and geographically variable territory with complex terrains, boundaries, and coastlines. This terrain mixed with modern weaponry in microenvironments can create conditions like claustrophobia, noise, radiation, acceleration, vibration, and continuous operation, and can severely influence operation performance. Since the 1990s, various environmental influences such as plateaus, border defenses (Wang, Zuo, & Ren, 2006), submarines (Ma, Xiao, Zhang, Xie, & Yin, 2006), islands (Ma, Xiao, Zhang, & Zhang, 2004), and terrains such as the Gobi desert (Liu et al., 2002) have impacted the emotional stability of soldiers, sailors, and airmen. The man and environment interface has become a major direction for military psychological research and practice. Other types of activities, such as continuous operations, military maneuvers, and military athletic contests, also see a large number of lab or field studies being carried out. The military psychologists have contributed significantly in basic theories, human performance, psychological and physiological mechanisms, fatigue and sleep deficiency, preventive and protective measures, and crisis interventions (Miao & Wang, 2004). These areas of research have created a solid foundation for the composition of military psychological

health education series and psychological stress protection manual, as well as the formulation of standards about psychological health support service. The series includes *Solider Manual*, *Military Officer Manual*, and *Military Medical Officer Manual* (Miao & Wang, 2004).

Military Human Factors Psychology

In 1981, under the instruction of the renowned Chinese scientist Xuesen Qian, Xin Chen, and other scientists presented the theory of Man-Machine-Environment System Engineering (MMESE). MMESE played a highly important role in the development of Chinese aviation, aerospace technology, navigation systems, and military weapons. Aviation research has focused on the interactions between man and machine in the cockpit. This research has focused on cockpit design detail and crew coordination such as illumination, orientation, instruments arrangement and readout, instruments display design, and control system design impacting work efficiency. As a result of this, several military standards like The Chinese Characters and Wording of Aircraft Electrical/Optical Display have been developed. These two standards have been successfully completed in accordance with the specific requirements of manned space flight (Yue et al., 2013). Military psychologists have made further contributions on the features of man-machine ergonomics, space simulators (like human centrifuges), low-tension sealed cabins, neutral buoyancy water tanks, spacesuit test cells, extra-vehicular activity (EVA), procedure training hypobaric chambers, docking training simulators, and spaceship-target vehicle multifunction simulators. In recent years, a series of high-tech developments, such as pattern recognition, artificial intelligence (AI), virtual reality (VR), and nanotechnology (NT), has been employed in research and development of the systematic integration of the new type air fighter.

In addition, a series of studies about the influence of sleep deprivation on cognition and emotions was conducted employing cognitive approaches, event-related potentials (ERP) and

fMRI technique. Objective Evaluation Criteria of Mental Fatigue was set for the real-time monitoring and protection of mental fatigue of military personnel on special military posts. These may shed light on future decisions for working and resting routines for military operations.

Psychological Warfare and Psychological Defense

Modern psychological warfare is an important research field that gained a greater focus in the 1980s in China. At present, there are three main breakthroughs in psychological warfare theory (Jiang, 2006). First, the connotation and denotation of psychological warfare has been established. Psychological warfare refers to warfare that maliciously affects human minds and emotions through information media by triggering illusions and disorientation, causing collapse of morale and awareness, and finally, changing a person's attitude and behavior. A clear understanding of the effects and operational mechanisms of psychological warfare has also been achieved; in particular, the process of using multiple means of information communication to stimulate the subjects until the expected psychological effects occurs.

Second, the conceptualization of Information Trauma from the perspective of psychological defense has aroused the attention of researchers. To use information trauma is to strike the human recognition system with deleterious information to alter or distort attitudes and combat willpower, and to induce mental disorders or dyspareunia, thus interfering with commanding and decision-making. In this sense, psychological warfare is the course of attacking the enemy's mental soft spot via information so the enemy suffers from information trauma. Therefore, the effects of psychological warfare depend highly on the skillful utilization of information, and the thorough analysis of the enemy's weak points. As for the evaluation of effects, a level and range of influence are observed. Third, Chinese military experts have learned a lot from foreign forces by studying

their research results and analyzing their conditions, characteristics, and modes of psychological warfare under informationization (Miao, Xiao, Zhu, & Liu, 2013). Furthermore, Chinese military experts have also conducted experiments, and the research results could be used in military training operations.

Individual Mental Health in the Army

Since 2000, four reports of epidemiological investigation on the status of mental health in the military were conducted. Although an increased trend toward poor mental health is observed, the overall rate of psychological disorder within military environment is still significantly lower than that of the general population. Occurrence of psychological disorders is higher when special environments and task conditions are involved. The most prominent psychological problems in the army are schizophrenia, depression, anxiety disorder, and personality disorder, which account for roughly 3/4 of the military dropouts. The occurrence of psychological disorders has a direct relationship with family background, individual resilience and role in military, and living and training circumstances. Mental health proves to be a crucial index when evaluating the overall health of servicemen and military organizations (Yang, Xiao, Gong, & Luo, 1995).

The cultivation and recruitment of psychological professionals is important for the maintenance of mental health for servicemen. In the late 1990s, military psychological staff was trained to recruit other psychological professionals. The trainees had varying academic backgrounds, coming from fields such as psychology medicine, political science, management science, information technology, literature, history, and nursing. Facing these circumstances, six areas of medical psychological work and military medical officer functions were proposed: education, assessment, screening, counseling, training guidance, and service security. It is suggested in the *Workbook for Military Medical Officer — Practice and*

Techniques that all trainees should learn and master the six aforementioned orientations (Miao & Liu, 2015).

Military Psychological Training

Servicemen on special assignments reflect more successful examples of military psychological training that they have received to perform more effectively on their jobs. For instance, the research results on emotional stability, physiological, and mental features of astronauts during training have provided foundations for determining psychological selection methods and training of Chinese astronauts. For flying cadets, psychological training played an important role in improving flying performance and decreasing elimination rate.

For military pentathlon athletes, comprehensive psychological skill training helped the Chinese delegation win the team championship 14 times in the international military pentathlon, the sports competition exclusively held for service members (Wang, 2014). The military pentathlon is organized by the International Military Sports Council (CISM) and consists of five parts: shooting with the standard rifle, obstacle-run, obstacle-swim, throwing standard projectiles, and cross-country running.

Military submariners receive systemic psychological training before conducting diving experiments at great depth to guarantee the individual's psychological health. Other categories of troops that receive psychological training include radar troops, submarine officers and sailors, and signal corps.

In 2008, the Fourth Military Medical University proposed the 512 Psychological Intervention Model (512 PIM), a new psychological intervention. 512 PIM was developed for the Wenchuan Earthquake field according to practical principles and the knowledge of the Chinese military. "5" means the model includes five stages, "1" means that one interviewer performs the intervention, and "2" means the duration of intervention is approximately 2 hours. Studies have shown that 512 PIM is effective as a

psychological intervention for military rescuers in reducing symptoms of PTSD, anxiety, and depression after a crisis (Wu, Zhu, Liang, Liu, Yang, Yang, & Miao, 2012). This method was widely used in a number of non-war military operations, like medical service maneuvers, military drills, emergency tasks, and military parade support; it has been well-received among military units.

The effectiveness of cognitive and behavioral psychological training has attracted the attention of the Chinese military training officers. In their training they adopted some approaches, like mindfulness training, which is beneficial for cultivating self-confidence and teamwork spirit (see also Bowles et al., Chap. 13, this volume). In recent years, the military psychological training has begun to refer to a specific domain of individual training made up of emotion training, biological feedback training, visual reality (VR) training, and mindfulness training. Research findings regarding psychological training found an increase in emotional stability, attentiveness, self-efficacy, and positive psychological capital (i.e. characterized by high self-efficacy, optimism, hope, and resiliency) (Ma et al., 2012). There was also an increase in combat ability of individuals, including awareness of military discipline, shooting ability, and fist-fighting ability, from this training (Ma et al., 2012). Outward-bound development, together with supporting psychological training programs and equipment, has played a significant role in boosting military operational performance and contest results (Wang, Liao, Zhu, & Zhang, 2012).

and early prevention measures in combat units. Research findings demonstrated that the six dimensions constitute the group mental health of combat units, namely, are leader behavior, cohesion, interpersonal relations, morale, organizational support, and organizational effect (Wang et al., 2012). Group mental health refers to the condition of effective commanding by leaders, high spirit and morale of unit members, and the sufficient support provided by the organization. Studies have shown that sound group mental health could enhance operational effectiveness, and resist negative factors under stressful circumstances such as adverse natural environment or social environment factors, interpersonal factors, and stress from management (Miao & Liu, 2015).

On one hand, these findings provide scientific and practical tools for evaluating and dynamically monitoring the status of mental health of combat units. On the other hand, the findings reflect existing problems of unit mental health, thus providing evidence for the need for further research based practices for combat forces.

As for military culture, hotspots for research include job satisfaction of junior officers (Yang, Zhu, Sun, Li, & Miao, 2007), military organizational commitment (Hao, Miao, Sun, Yang, & Liu, 2007), unit morale (Li, 2006), military team spirit and cohesiveness (Zhang & Wang, 2006), studies on the personality structure of Chinese people (Cui & Wang, 2004), situational awareness (Liu, Shao, Wang, Liu, & Qi, 2006), social cognitive bias (Zhang, Yang, Huang, & He, 2004), and stress-crisis intervention in military environment.

Group Mental Health and Military Organizational Culture

The collective mental health of combat units has garnered increasing attention because it is one of the most important factors that contribute to combat effectiveness. Researchers in the Fourth Military Medical University have studied the theory, assessment criteria, and have tested tools for combat unit's group mental health. They also established the initial mental health evaluation

Non-wartime Mental Health Services

One important research focus is on the techniques and procedures of psychological crisis intervention for servicemen under non-war operations and conditions. For instance, during the relief work of Wenchuan earthquake in 2008, hundreds of People's Liberation Army psychologists were assigned to frontline troops to help and protect the officers and soldiers from suffering psycho-

logically. Ever since the Wenchuan earthquake, mental health service groups include military psychologists within the main body, along with civilian psychologists, clinical doctors, and social workers becoming an essential power in various significant non-war operations. Relevant technical guidelines have been updated for non-war operations.

The psychological medical support organizational systems have been improved for diverse military operations. These guidelines include psychological service plans, standard operating procedures for emergency, and in The Fourth Military Medical University (2015), the unpublished manual *Regulations of Psychological Disorders Treatment during Wartime*. Psychological intervention projects with small group interventions as the core have also been established. In addition, knowledge from military psychological service was brought into the education and cultivation of military psychological works, and is considered important and indispensable.

Currently, military psychological services have become a great strength in accomplishing various non-war military operations such as anti-terrorist operations, relief work, security work, international peace-keeping, international rescue work, and other operations, for instance, Wenchuan Earthquake relief work in 2008, security work for the Olympic Games in 2010, Ya'an Earthquake relief work in 2013, security work for the National Anti-fascist Parade in 2015, and the Shanghai Cooperation Organization (SCO) Peace Mission 2016 joint Anti-terrorism military exercises (Wu et al., 2012).

Conclusion and Outlook

Military psychology in China is a youthful discipline, full of energy. The twenty-first century is the golden period for the development of Chinese military psychology with continued focus on the eight areas described. The rise of the Chinese economy and the rapidly growing military power of China provided the favorable conditions for the development of military psychology. China will continue to play its role in the field of mili-

tary psychological selection practice and psychological warfare research. In the future, research platforms will be established to examine the influence of military environments on mental health, military human factor efficacy, military training, psychological health, and to develop military standards in these areas. In addition, studies on the military organizational culture and mental health service will be further promoted. We are well aware that there is a continued need for the development of international military psychology research and the application of new psychological approaches. It is our goal to become a strong military psychology power through our research and evidence-based treatment efforts.

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The Three Pillars of Australian Army Psychology: To Serve with a Strong Foundation

30

Kylie A. Tuppin, Laura Sinclair, and Nicole L. Sadler

The Australian Defence Force (ADF) is the military organization responsible for defending Australia and its national interests, and consists of the Royal Australian Navy (RAN), the Australian Army, and the Royal Australian Air Force (RAAF). Since the Second World War, the ADF has been supported by uniformed psychologists and this capability has predominantly resided in the Australian Army within the Australian Army Psychology Corps (AAPSych). Formed in 1952, AAPSych is comprised of uniformed registered psychologists and para-professionals, known as psychological examiners. Despite being a relatively young organization, AAPSych establishes itself as highly valued by providing services across a wide range of areas that include personnel selection and support, mental health support, human factors, research and development, and Army policy development. The support AAPSych provides to the Army is illustrated through the Three Pillars model that is

based upon a strong foundation in research and governance (Murphy, Hodson, & Gallas, 2010).

This chapter will briefly outline the history of AAPSych, starting from its contributions to World War II through its ongoing support to operational deployments and sustaining the mental health and wellbeing of the workforce. It will explore the Three Pillars model in detail, and provide various examples to illustrate how the pillars are used to support both the Australian Army and the ADF more generally, both on operations and within garrison. The chapter concludes with consideration to future challenges AAPSych may face.

The Past: World War II and the Beginning of Australian Military Psychology

The Australian Army, Air Force, and Navy concurrently began to incorporate psychological practices in the mid-twentieth century. The Permanent Air Force (later the RAAF) was the first of the three Services in Australia to introduce psychological testing into the ADF in 1940 in order to tackle training failures in its potential air crew (Rose, 1958; Want, 1970). Shortly thereafter, the Army approached several psychologists in different states of Australia for assistance with personnel selection and allocation due to its own training failures (Connell, 1980; O'Neil, 1987), resulting in a group of approximately 60 soldiers,

K.A. Tuppin (✉)
Career Management, Australian Army,
Canberra, ACT, Australia
e-mail: kylie.tuppin@defence.gov.au

L. Sinclair (✉) • N.L. Sadler
Mental Health, Psychology and Rehabilitation
Branch, Joint Health Command,
CP3-7-091 Campbell Park Offices, Northcott Drive,
CAMPBELL, ACT, Canberra, ACT, Australia
e-mail: laura.sinclair@defence.gov.au

many of whom had studied psychology at university prior to the War, assisting with personnel allocation as part of the new Army Psychology Service (McElwain, 1977). After World War II, a few of these Army psychologists did not demobilize but instead remained in the Army – by the time the Australian Regular Army was established in 1948, its Army Psychology Service had been reduced to just two officers and five soldiers (Campbell, 1977). They were briefly recognized as a profession within the Royal Australian Army Medical Corps (RAAMC) before establishing AAPSych in 1952 (Campbell, 1977) – an Army Corps in its own right and yet unique when compared to many other militaries around the world.

Over the next few decades, AAPSych's role expanded to include: providing advice to command and staff on the psychological aspects of personnel administration (for areas such as morale, leadership, and personnel reporting); the prevention and management of mental illness (including advice on rehabilitation and career counselling); selection of personnel for special tasks, postings, and training (including foreign language training); and providing advice on research and development projects throughout the military. This research was conducted not only by the Army's own Psychology Research Unit, but also by the psychology subject matter experts of the RAN and RAAF. Much of the recent research used by the Australian Army and AAPSych is conducted by joint research capabilities, is outsourced to niche Defence capabilities, or is delegated to external research industries that are professionally connected to universities.

AAPSych's involvement with operational deployments started with service in Vietnam from 1966 to 1972 where psychologists contributed to both mental health care and management of Australian forces, as well as to the "hearts and minds" operations of influencing other nations through appealing to their intellectual and emotional drives (Murphy et al., 2010). Australia's continued involvement in peacekeeping operations during the 1980s and 1990s included psychologists deploying with troops to places such as Cambodia (1992–1993) and Rwanda (1994–1995) to provide support and conduct early ver-

sions of post-deployment psychological screenings for troops, as well as fly-in fly-out support to these and other operations in places such as Namibia (1989), Western Sahara (1992–1993), Somalia (1993), and Bougainville (1997–2003) (Murphy, Collyer, Cotton, & Levey, 2003). The deployment of troops into East Timor in 1999 marked the start of modern day psychological involvement with operational deployments. As a result, psychological screening and individual interviews for troops returning to Australia became routine, as did providing psychological support to troops and commanders in location during deployments.

During the 1990s, the numerous RAN, Army, and RAAF psychology directorates, including AAPSych, were consolidated into one large organization: the Defence Force Psychology Organisation (DFPO). This included the provision of standardized professional psychology services and governance for civilian and uniformed psychology staff across the ADF. This shift coincided with a number of other organizational changes, including the gradual conversion of AAPSych from mainly recruiting and research roles into roles embedded within Army units at all levels, leading to a sharp increase in operational tempo for those in AAPSych.

A series of reviews into the state of mental health in the ADF commenced in 2002, coinciding with an overall increase in concern regarding mental health within Australia more generally. This culminated with a broad review of the provision of mental health services by the ADF (Dunt, 2009), colloquially referred to as the "Dunt Review," and a series of mental health prevalence and wellbeing studies conducted by Defence in collaboration with a number of Australian universities (e.g. Davy et al., 2012; Dobson et al., 2012; McFarlane, Hodson, Van Hooff, & Davies 2011). Overall, these reviews resulted in AAPSych along with the broader ADF mental health workforce becoming increasingly involved in a wide range of predominantly service delivery areas, with a particular focus on maintaining the mental health and wellbeing of ADF personnel. Accordingly, in 2012, AAPSych became the fourth Corps of the

Army Health Services, a formal grouping of Army Corps associated with the delivery of health care to Army and ADF personnel. The other Corps are RAAMC, the Royal Australian Army Dental Corps, and the Royal Australian Army Nursing Corps.

The Present: AAPSYPCH and the Three Pillars Model

The Army, with a combined approximate total of 43,000 full-time and Active Reserve personnel, continues to maintain the largest of the ADF's uniformed psychology capability within AAPSYPCH. In 2016, there were 138 psychology officers (82 full-time and 56 Active Reserve) and 86 soldiers, known as psychological examiners (58 full-time and 28 Active Reserve) serving within AAPSYPCH (Directorate of Workforce Modelling, Forecasting and Analysis, 2016). By comparison, the RAN and RAAF currently employ a small number of Reserve uniformed psychologists and full-time civilian psychologists to cover niche single-Service requirements. AAPSYPCH officer ranks range from Lieutenants (typically psychologists completing their internship for full professional registration) to Colonels (principal psychologists who are subject matter experts in at least one field of military psychology). Psychological examiners are only recruited from serving troops and they are not required to complete any post high school qualifications to join AAPSYPCH; these soldiers complete several weeks of technical training before they are employed as psychological examiners, who range in rank from Corporal (a junior leader within Army but working under supervision in AAPSYPCH) to Warrant Officer Class One (a senior soldier rank). Under the supervision of a psychologist, Army psychological examiners undertake a range of duties including test administration, records management, psychological screening, psychoeducation, support to research administration, and psychological first aid. By contrast, the RAN and RAAF do not currently employ uniformed psychological examiners.

Despite its engagement in a wide range of areas, AAPSYPCH is one of the smallest Corps in the Australian Army – it comprises less than 1% of the Australian Army. Today, the officers and soldiers of AAPSYPCH remain employed in a wide range of military environments, including both the Army and Joint Services (where RAN, RAAF, and Army work together under a formalized command structure). Work settings of AAPSYPCH members (both officers and soldiers) include garrison health support, combat and combat service support units, operational deployments to war and peacekeeping areas, policy development, and training. Across these settings, AAPSYPCH members work in collaboration with other uniformed and non-uniformed health and mental health professionals and providers including medical practitioners, psychiatrists, social workers, nursing officers, and chaplains. AAPSYPCH members are also employed to support specific capabilities such as aviation, intelligence, and special forces. They are deployed in operational, training, staff and critical incident environments, and work with soldiers and officers within Army and ADF training institutions; they work and live within the military population they are expected to serve. The services provided by AAPSYPCH are predominantly delivered to currently serving ADF personnel. Services for families, ex-serving members, and Defence civilian employees are the responsibility of other components of the Defence and Veterans Affairs' mental health workforce.

Unlike other militaries, the relatively small number of AAPSYPCH members compared to the breadth of psychology knowledge required within the Army eliminates the possibility to become wholly specialized in any one field of psychology (such as clinical psychology). Instead, AAPSYPCH psychologists are considered *generalists* in the field of psychology, but *specialists* in the application of psychology to the organization, meaning that all psychologists must have at least a working understanding of a number of different fields within psychology, including clinical, forensic, organizational, and human factors (a field of practice considering the interaction between people and systems, products or

processes). Individual psychologists within AAPSYPCH choose to pursue advanced training in at least one field of psychology as part of their broader professional development. When possible, psychologists will complete one or two postings (assignments) that allow skills consolidation, but they are unable to focus solely on their specialization permanently. Accordingly, AAPSYPCH members are posted to different positions in different locations around Australia (and occasionally overseas) in the same way as other military members. This approach has both its strengths and weaknesses – all AAPSYPCH officers have the skill set to assume any psychology-related role within the Australian Army, which makes for a very versatile and agile psychology workforce. However, for individual Army psychologists who wish to specialize, it can be a longer process to complete their training in comparison to their civilian counterparts.

The broad range of roles and responsibilities of AAPSYPCH is demonstrated by the following model of psychological support to the Army, referred to as the Three Pillars model (see Fig. 30.1 below; Murphy et al., 2010). These Three Pillars consist of Organizational Health and Effectiveness, Performance Enhancement, and Psychological Health and Readiness, as depicted in Fig. 30.1.

The first pillar, *Organizational Health and Effectiveness*, is concerned with the organization as a whole. This pillar primarily (but not exclusively) draws upon organizational psychology, social psychology, and human resource management theory to inform its base. It is concerned with all aspects of personnel selection and management, as well as creating and maintaining an organizationally “healthy” Army with solid values and positive attitudes. The expertise that AAPSYPCH has developed in selection systems is captured in this pillar, as are many broad “organizational psychology” approaches such as unit climate measures and cultural change. These components can be used within any part of the Australian Army, or extrapolated to the ADF as a whole.

The second pillar, *Performance Enhancement*, reflects many of the human factor elements of

military performance and capability. This pillar primarily draws upon human factors, cognitive psychology, psychophysiology, social psychology, and sports psychology to inform its base. It is concerned with the ability to increase the performance outcome of individuals, teams, and people-technology interfaces, and can be used in both specialist niches such as aviation, or more broadly in conventional Army training. The work done in Army Aviation and in Special Forces can be included here, as well as considering important intangibles such as the morale of troops. Once considered the domain of specialist capabilities within the military such as aviation, these elements are increasingly being employed throughout the Army and the ADF more generally by both uniformed and civilian psychologists in the ADF and, in some instances, psychological examiners.

The third pillar, *Psychological Health and Readiness*, is most readily associated with assessment and assistance provided to troops and families for poor mental health and psychiatric disorders, but is also associated with conventional tasks such as psychological screening processes completed after deployment and after a potentially traumatic event. This pillar primarily draws from clinical psychology, neuropsychology, positive psychology, and health psychology as its base. This pillar intersects with both the military health system and the commanders of Army units, and ensures that not only are troops cared for if required, but that they are also mentally prepared as much as possible for future adverse experiences.

The Enabling Foundations at the base of the Three Pillars model are the grounding elements of the model that are essential for the pillars to function. Ongoing professional development – both internal to the military and within the broader psychology profession – of the psychologists and psychological examiners is vital for knowledge and skill maintenance and development, particularly given the wide range of practice areas required for the Three Pillars. Governance – the structures, systems, and processes used to ensure psychological practice is controlled and monitored – is critical for risk

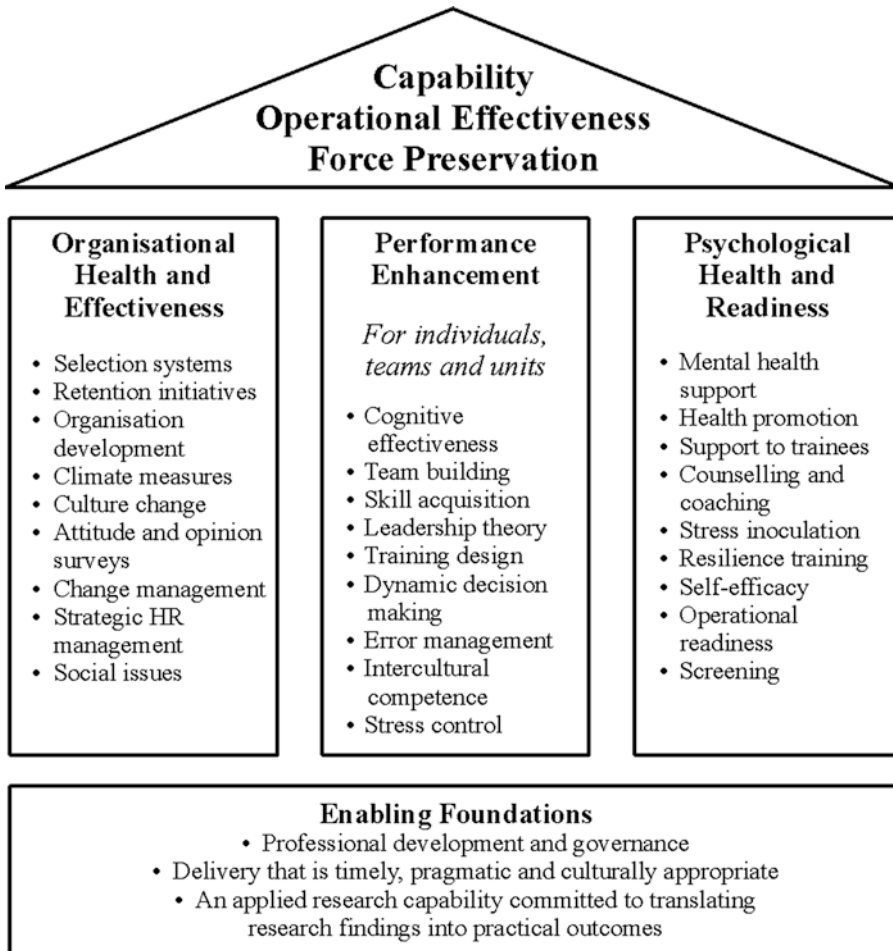


Fig. 30.1 The Three Pillars: Model of delivery of psychological support to the ADF. The current delivery of psychological support to the Australian Army is captured

within these three pillars, and underpinned by enabling factors such as research and governance (From Murphy et al. (2010))

management and to ensure that AAPSych is continuing to contribute to the missions at the top of the Three Pillars model, and this is enabled by both the psychologists and the psychology examiners at all levels as part of their military and professional leadership skills. Service delivery must be completed in a timely and pragmatic manner in order for it to remain relevant and appropriate, and must always be conducted in a culturally appropriate manner – both within the military culture and when working with other cultures around the world. Finally, ongoing research that can be applied to inform new and ongoing work within the ADF is vital for ensuring services remain relevant to the broader mission of the

ADF, as captured by the Three Pillars mission at the top of the model.

Grounded by foundations of research and development, considerations of governance, professional development, and aspects of service delivery, these interrelated pillars tangibly contribute to the greater mission outcomes stated at the top of the model. These mission outcomes in turn contribute to the broader Army mission of fighting and winning the joint land battle. For example, the mission outcome of *Operational Effectiveness* is not just about psychological health and readiness, but also organizational health due to the selection of the right personnel with the right values and attitudes, and about per-

formance enhancement with team building, skill acquisition, and appropriate decision making. These pillars are underpinned by a number of important foundations, not the least including research and development, which again builds on the strong history of AAPSYCH in this area, and also includes considerations of governance and aspects of service delivery.

This model's strengths are that it draws on numerous aspects and specializations of psychology as a profession. For example, the pillar of *Psychological Health and Readiness* not only draws on clinical and neuropsychology, but also considers sports psychology, social psychology, and organizational features within its approach to screening. The model proves to be popular with psychologists and military commanders, as it successfully captures the contemporary work of AAPSYCH and also provides a clear framework from the historical expertise of Army psychology. A weakness is its unspoken assumption that all pillars are drawn upon equally throughout the Army and the ADF, whereas practice suggests that the pillars are sometimes utilized as single entities only. While this focus on one pillar may be required for the specific task at that specific point, it can contribute to an unequal balance of the pillars over time, and thus place both the foundations and mission outcomes at risk. For example, a singular focus by an Army unit on identifying and treating psychiatric disorders that might develop after a deployment (from the third pillar of *Psychological Health and Readiness*) can place at risk the selection and preparation of the right personnel and the right teams for future deployments (from the first pillar of *Organizational Health and Effectiveness*), and neglect the further development of performance outcomes during their training for the next deployment (from the second pillar of *Performance Enhancement*). A balance of the three pillars would ensure that psychological issues from the recent deployment would be addressed whilst preparing for the future deployments effectively, thus contributing to the long-term mission outcomes of capability, operational effectiveness, and force preservation.

Current Application of the Three Pillars Model

AAPSYCH uses the model extensively throughout the Australian Army, and wherever possible within the ADF. For example, to help a Commanding Officer evaluate his or her troops' current level of morale, AAPSYCH may conduct psychological surveillance to understand and manage soldier attitudes and adjustment (first pillar of *Organizational Health and Effectiveness*), conduct stress-control and team building exercises to assist with identified issues in the surveillance (second pillar of *Performance Enhancement*), and provide mental health support to those who require additional assistance (third pillar of *Psychological Health and Readiness*). AAPSYCH also provide innovative psychological strategies and training that utilize the Three Pillars model effectively. For units preparing to deploy on operations, AAPSYCH can advise on delivering resilience training in preparation for operational demands (*Psychological Health and Readiness*), the human technology interface of military effectiveness (*Performance Enhancement*), and more generally on effective ways for units to incorporate training during high tempo periods (*Performance Enhancement*). A more extensive list of military performance aspects addressed by AAPSYCH include morale, cohesion, leadership effectiveness, soldier motivation, management of psychological casualties, operational and ethical decision-making, fatigue management, issues relating to survival, evasion, resistance and escape, stress and performance – all of which draw upon each of the Three Pillars to varying degrees, depending on the emphasis required by the unit or the individual at the time. Additionally, AAPSYCH advises in the psychological aspects of force preparation, maintenance, enhancement, and reintegration in Army operations. Specific examples of the application of the Three Pillars model that highlight military psychology include the Australian Army's deployable psychology unit (1st Psychology Unit), AAPSYCH support to Army Aviation, Special Forces, and garrison health support.

Support to Operations: 1st Psychology Unit

The 1st Psychology Unit consists of 51 AAPSYPH officers (24 serving full-time and 27 Active Reserve) and 47 psychological examiners (24 serving full-time and 23 Active Reserve) that are rapidly deployable and thus able to support all contingencies directed by the ADF. The 1st Psychology Unit is a fully integrated unit, with full-time and Active Reserve Army members posted to support the Australian Army's main combat brigades both across the country and overseas. This unit's main role is to provide operational psychology support in order for the Army to achieve its mission by contributing to capability, combat readiness, operational effectiveness, and force preservation. The 1st Psychology Unit deploy Psychology Support Teams (PsST) comprised of what are referred to as "capability bricks," which are made up of an AAPSYPH officer and a psychological examiner. PsSTs are typically deployed as part of a larger unit. For example, they can be deployed with a logistics support unit or as part of a health element. Psychological support to operations includes resilience training, pre-deployment briefings on mental health and psychology issues, psychology support to deployed troops, mandatory operational mental health screening for all personnel and mental health support following critical incidents that may result in the care and management of psychological casualties. The 1st Psychology Unit actively supports ADF members assigned to combat, peace, and humanitarian relief operations to sustain capability and enhance combat effectiveness across the Force Generation Cycle (Fig. 30.2). Army's Force Generation Cycle ensures that combat brigades, specialist capabilities, and Reserve forces consistently train together through three 12-month phases in a 36-month cycle. The Force Generation Cycle has three discrete phases – Readying, Ready and Reset – where units and formations conduct directed activity and training. The Australian Army coordinates the movement of units and formations through the phases of the Force Generation Cycle by allocating mission-essential

tasks and accompanying training levels and standards dependent on the cycle phasing. For instance, the "readying" phase directs capabilities who are training and preparing for missions, the "ready" phase directs capabilities that are deployable, and the "reset" phase directs capabilities that are redeployed or demounted.

The ADF can also be called upon by the government of the day to provide Defence Assistance to the Civil Community (DACC). These tasks typically involve responding to natural disasters within Australia. Examples include emergency assistance and clean up during floods for the states of Victoria in 2011 and Queensland in 2013, cyclones for Queensland in 2011, and bushfires for Victoria in 2009. During such tasks, the 1st Psychology Unit assets not only provide assistance to the ADF personnel deployed (through preparation and critical incident responses as previously described), but they also provide assistance to the members of the community impacted by the event through the provision of psychological first aid. 1st Psychology Unit can also be tasked to provide specialized psychology response in support of hostage recovery in Defence Foreign Affairs and Trade (DFAT) led activities. 1st Psychology Unit provides capability across the Three Pillars model with its highest priority being the conduct of screening and operational readiness.

In this way, 1st Psychology Unit is contributing to all three pillars within the Three Pillars model. Whilst the pillar of *Psychological Health and Readiness* remains the function that requires the most time and resources, 1st Psychology Unit is also focused heavily on the pillar of *Performance Enhancement* as part of its broader remit of resilience and pre-deployment training, and will also assist units after a deployment with many of their broader issues under the pillar of *Organizational Health and Effectiveness*. It maintains a real-time research and data feedback loop into training and support to troops with its field research and data collection, thus keeping the integrity of the Enabling Foundations for the Three Pillars model to work effectively and contributing to the mission outcomes.



Fig. 30.2 Psychological support throughout the Force Generation Cycle. The diagram details some of the psychological support that AAPSYPCH and other ADF mental health assets provide to units and troops at each stage of the Force Generation Cycle

Support to Army Aviation

AAPSYPCH’s main support to human factors has been its contribution to ADF aviation, with dedicated positions established in the early 1990s. Currently, Army Aviation is a rotary-wing capability of approximately 2000 personnel and operates five helicopter systems in operational and training roles. The Army also operates a fleet of Unmanned Aviation Systems (UAS) with associated human

factors challenges. AAPSYPCH provides three full-time and two Active Reserve psychologists to support a variety of tasks associated with aviation system safety and aviation mission success.

These psychologists primarily target change through activities such as major incident and accident investigation, human factors risk assessment for helicopter systems and the aircrew and maintenance workforces, safety climate measurement and reporting, instructor training and

the development of fatigue risk management systems. Individual support to aircrew and maintenance trainees is provided at the Army's helicopter and operational conversion training centre. There is a significant demand for ongoing education and training in psychology and human factors, and in addition to support Army Aviation tasking. The Army psychologists regularly present to formal training and professional development in the other Services and to civil industry safety and human factors forums.

Aviation support thus requires the skills drawn from all three pillars of the model. *Performance Enhancement* and *Organizational Effectiveness* are utilized most frequently within this field. These pillars are used for the individual (including aircrew and support personnel) to enhance individual selection and training, for teams to ensure they work together seamlessly, for the aviation system as a whole to both address issues as they arise (such as accidents and near misses), and to ensure positive cultural change and development (such as a culture of safety). It also draws upon *Psychological Health and Readiness* to maintain the health and wellbeing of both aircrew and maintenance staff as well as instructors. Like 1st Psychology Unit, it uses a real-time research and data feedback loop into its training and safety systems to enable the Foundations of the Three Pillars model, whilst maintaining a strong focus on governance and professional development.

Support to Australian Special Forces

AAPSYCH has a long history of supporting Special Forces. Support has been provided in the area of selection both in the organization and on the selection courses at the Special Air Service Regiment (SASR), Special Forces Training Centre, and 1st Commando Regiment. Operational support post-deployment was originally provided by 1st Psychology Unit; however from 1996, psychologists were posted into SASR as an embedded asset, followed by Commandos in 2005. Their roles have varied from involvement in ongoing selection, post operational support, psychological triage, improved selec-

tion methods, research, and more recently rehabilitation and high performance initiatives. Like aviation, psychological support for Special Forces also draws upon all three pillars, as it is focused on every aspect of the selection, performance, health, and career of the Special Forces soldier and his or her unit.

Garrison Health Support

Health care within a garrison context is provided for ADF personnel at all stages of their career, including during training, operational pre-deployment and post-deployment, and transition into civilian life. The members of AAPSYCH provide many of the tasks of the pillar *Psychological Health and Readiness* as part of this Garrison Health support capability, including mental health support for minor psychological concerns, to severe psychiatric disorders, counselling and coaching, and psychological screening. However, the support is not limited to just psychological health. AAPSYCH members in Garrison Health develop their expertise in *Organizational Health and Effectiveness* by conducting psychometric assessments and interviews for potential ADF internal transfers, conducting person-environment fit assessments (suitability for service) with subpar performers, engaging individual Commanding Officers on psychological health, social and cultural issues within their unit, and regularly conducting many of the screening and surveys as required by the ADF. The pillar *Performance Enhancement* is also frequently utilized for individuals with stress control measures and specific skill acquisition. The focus of these services is not just with the individual member, but how they fit within the unit to allow the unit to achieve its full operational effectiveness. In this way, Garrison Health support strongly represents how the components of the Three Pillars model work in tandem. As a result, the majority of junior AAPSYCH members gain their initial expertise in the Three Pillars model with a Garrison Health support posting, and return as Senior Psychologists (the rank of Major) or Psychological Practice Managers (the rank of

Warrant Officer Class Two) to a leadership position within Garrison Health. There, they not only lead their team of psychologists and other mental health professionals in the broad array of tasks, but also gain valuable working experiences within a multidisciplinary health team and a Joint Service environment.

RAN and RAAF Psychology

Both the RAN and the RAAF also follow the Three Pillars, however its application differs from AAPSYCH in a number of ways. RAAF civilian psychologists and the small number of Reserve uniformed psychologists concentrate their psychological resources on the pillars of *Organizational Health and Effectiveness*, and on *Performance Enhancement* as it applies to the RAAF, much in the same way as Army Aviation is supported by AAPSYCH. These focus particularly on the effective selection, training, and retention of primarily aircrew but also support staff. They additionally fulfil key functions in RAAF strategic cultural change and development. Of note is that these positions are garrison based, and do not deploy on operations; they also do not provide a function under the pillar of *Psychological Health and Readiness*, which instead is referred into garrison health support for treatment. RAN also focus their resources on Navy-specific requirements within *Organizational Health and Effectiveness*, and on *Performance Enhancement*, and are physically based with the largest fleets and the main training bases in Australia. These also focus on effective selection and training of their personnel, with particular focus on specialties such as submariners and clearance divers. RAN also provide a limited amount of support to the pillar of *Psychological Health and Readiness*, particularly to their trainees, to ships that are deploying to and returning from operations in order to conduct screening, and after a potentially traumatic event has occurred; however, members who develop mental distress or psychiatric disorders are referred into garrison health support for treatment. Reserve uniformed RAN psychologists will deploy on operations

to a ship but rarely embed themselves onboard during a tour. The RAN and RAAF approach to military psychology is therefore somewhat different to AAPSYCH – whilst all three Services utilize the Three Pillars, only AAPSYCH members work in environments and postings that draw upon all three pillars regularly, whilst RAN and RAAF concentrate their resources on niche capabilities within the pillars that cannot be easily outsourced.

The Future: Innovations and Challenges for AAPSYCH

The future for AAPSYCH and its Three Pillars model appear to be full of both exciting innovations and challenges to the stability of the Three Pillars model. Innovations being trialed include physiological monitoring and biofeedback interventions, and the utility of social media and technology through the use of smartphone apps in response to the needs and behaviors of the contemporary soldier (see *Applying Technology to Enhance Health in the Military*). Psychologists also continue to provide support in the establishment of cultural awareness policy and bias training, in career development for troops, as well as its ongoing support to selection and assessment for trades, advice to commanders, and the provision of mental health support for both individual members and their families. Continuation of this work requires AAPSYCH members to maintain their professional mastery across the numerous domains of psychology, and to be responsive to emerging research, concepts, and technology.

An ongoing challenge for AAPSYCH is maintaining the expertise and opportunities that contribute across all domains of psychology. This challenge is not restricted to the Army or the ADF, but reflects a broader shift in psychology in Australia, which heavily focuses on mental health and clinical psychology as a result of the ongoing national mental health reform process. Within the ADF, this is compounded by the gradual shift into civilianizing or contracting out aspects of the work once conducted primarily by uniformed psychologists, such as research and development,

so the Army psychologists could devote greater attention to supporting operations. This could potentially jeopardize the ability of military psychologists to be generalists in the field of psychology in the long run. The success of the small AAPSYPCH Corps is due to its ability to concurrently be generalists and specialists across a wide range of fields captured in the Three Pillars model. Certainly, the demand for services across all domains remains strong in the ADF, including ongoing requests from the Army for psychologist advice and support in new and emerging areas.

Conclusion

Similar to those of other nations, Australian military psychologists have a proud history of contributing to the broader advancement of the psychology profession. Army and Defence leaders value both the focused specialist knowledge and the flexible range generated by the academic and professional discipline that an AAPSYPCH psychologist delivers to the ADF. Being in uniform enhances the capacity to grasp the cultural context of considered issues, generates credibility with the key client (the commander), and facilitates communication and feedback mechanisms. The presence of uniformed psychology officers and examiners additionally provides significant flexibility for the ADF, including the ability to rapidly deploy assets throughout the world.

Other high-risk professions and organizations regularly seek the expertise developed within the ADF to inform the development of policies and procedures, such as psychological preparation and selection procedures, mental health screening protocols, critical incident support, resilience building, leadership training, and interventions for acute mental health problems. Within the Army, AAPSYPCH members are continuing to work with other mental health professionals to develop techniques to assist individuals, teams, and commanders effectively prepare mentally, physically, and cognitively for the demands of military service (e.g., human factors aspects of the introduction of new systems and capabilities). AAPSYPCH also continue to play a significant

role in providing Army and Defence with the specialist advice and services that shape policy, enhance capability and contribute to force preservation and sustainment. The sheer breadth and depth of skills and knowledge that AAPSYPCH members are able to provide is due to the success of the Three Pillars model, which emphasizes the need to draw from a wide range of psychological theories and approaches, with a strong foundation of research, governance and service delivery, to achieve the mission outcomes.

Despite some challenges, the future is bright for the Corps. The wide range of tasks and demands placed on a small asset is testament to the value placed on psychological support to the Australian Army. The enduring strength provided through the Three Pillars model's strong foundation and adaptability, and its ability to support the mission of the Australian Army specifically, and the ADF more generally, is demonstrated throughout AAPSYPCH's relatively short history and its current broad range of contributions.

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Star Soh and Bernard Lim

Singapore celebrated 50 years of nationhood in 2015. It was a success story of how a poor and small island state (718.3 km²) which had no natural resources became a developed nation with a reputation for strong economic growth, racial harmony, and creating a garden city. Singapore's gross domestic product per capita in 2014 stood at USD56,319 which was five times the world's average and ranked ninth among 186 countries (International Monetary Fund, 2015). In 2014, it had a population of 5.47 million, of which, 3.87 million were citizens and permanent residents (Department of Statistics, Singapore, 2015).

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S. Soh (✉)
Leadalytics, Singapore
e-mail: leadalytics.sg@gmail.com

B. Lim
A public healthcare company, Singapore
e-mail: bernardlimsh@gmail.com

Foundation of the Singapore Military

On 9 August 1965, Singapore separated from Malaysia and became an independent nation. The founding Prime Minister, Mr. Lee Kuan Yew, believed that a strong Singapore Armed Forces (SAF) was needed to provide the security and stability for political, economic, and social progress for this new nation (Chiang, 1997; Huxley, 2000). In March 1967, a National Service (Amendment) Bill was passed in parliament, requiring every male Singapore citizen to serve national service in the military, police, or civil defence forces. Today, Singaporean males are enlisted for National Service Full-Time (NSF) between the ages of 18 and 20 to serve for 2 years – after which about a third of them will go on to pursue their tertiary education.

Thereafter, the NSFs in the military become operationally-ready national servicemen (NSmen), more commonly known as reservists in other countries, who form the main fighting force of the SAF. Most NSmen enter into a 10-year training cycle and are usually called up for military training or duty each year, up to a maximum of 40 days per year (Ministry of Defence, 2015a). National service is therefore part and parcel of life for all male citizens in Singapore. Female citizens are not required to serve national service but a small percentage chooses to undergo training and serve as

Fig. 31.1 18- to 20-year-old male citizens serve National Service Full-Time for 2 years (Source: Cyberpioneer)



regular military personnel, taking up both combat and non-combat roles. Figure 31.1 shows a group of Singaporean NSFs in typical drill and ceremony training formation.

The NSFs and military regulars together form a standing force of about 70,000, with the ability to mobilize over 300,000 NSmen. These numbers exclude a significant number of non-uniform personnel who works in non-combat and support roles. The SAF comprises the Joint, Army, Air Force, and Navy services. The Army is organized into combined-arms divisions and has an array of weapon platforms such as the Leopard 2 tanks, infantry fighting vehicles, howitzers, and high mobility artillery rocket systems. The air force is organized into commands and operates aircrafts such as the F15s, F16s, and Super Pumas. The Navy is organized into formations and has frigates, corvettes, and patrol vessels. The four services work together as a networked and integrated defence force.

In the last decade, the SAF has increased its involvement in Humanitarian Assistance and Disaster Relief (HADR) and Peace Support Operations (PSO), as well as to support multinational forces in countering global threats (Ministry of Defence, 2000, 2015b). For example, over 1500 military personnel from the army, air force, and navy were deployed for HADR operation to help thousands of Indonesians affected by the Tsunami that killed hundreds of thousands in December 2004 (Boey, 2005). More recently, the

SAF provided HADR to the injured in Nepal following the April 2015 earthquake. In support of UN peacekeeping mission to restore peace and security in Timor-Leste, the SAF contributed over 1000 military personnel and equipment from 1999 to 2012. Since 2007, more than 350 military personnel have participated in the NATO-led International Security Assistance Force PSO and reconstruction efforts in Afghanistan. Also, since 2009, more than 700 military personnel have served in the multinational counter-piracy task force in the Gulf of Aden. At home, the SAF provides homeland security in the form of protection of key installations, interception of aircrafts with unauthorized flight paths, and participation in anti-piracy efforts in the international sea lanes around Singapore.

Military Psychology in the Formative Years (1967–2002)

The main pillar of military psychology (Gal & Mangelsdorff, 1991) in the SAF is industrial-organizational psychology. The Ministry of Defence (MINDEF) has long recognized the potential contribution of industrial-organizational psychology to the operational effectiveness of the SAF. As early as 1967, a Psychological Testing Centre was established to screen, select, and allocate NSFs and military personnel for different vocations. Over the years, the requirements for industrial-

organizational psychology grew – leadership development, team development, organizational development, surveys, and research were added. The centre was reorganized to become the Personnel Research Department, then later to become the Applied Behavioural Sciences Department, and subsequently to Defence Psychology Department (DPD). DPD is organized to serve the needs of both MINDEF and the SAF. It is headed by the chief psychologist who reports to the Director of Manpower, MINDEF.

The other two pillars of military psychology in the SAF are counselling and clinical psychology. Counsellors operate out of the SAF Counselling Centre (SCC) which is an independent organization from DPD. But like DPD, the head of SCC reports to the Director of Manpower, MINDEF. Clinical psychologists form the smallest group among the three. They work closely with the psychiatrists and operate within the medical community as part of the SAF medical corps. Together, the counsellors and clinical psychologists run mental health programmes (for the purpose of education and prevention), and provide the care and support for soldiers' adjustment to military life, and for any soldiers who may have encountered traumatic experiences in training and operations.

Psychology in Singapore has a relatively short history. The first full-time tertiary course in psychology was offered at the National University of Singapore only in 1985. As such, up to 1989, MINDEF recruited civilians who were educated in psychology from overseas to serve as non-uniformed military psychologists. Today, three local universities offer full-time degrees in psychology, and some graduates join MINDEF as entry-level psychologists. Unfortunately, there is still a lack of full-time postgraduate courses specializing in industrial-organizational psychology, counselling and clinical psychology in Singapore. Therefore, those interested would need to either go overseas to pursue a full-time course or take up a local part-time course offered by an overseas institution.

In the early 1980s, MINDEF decided that it was important to have uniformed psychologists to augment the pool of non-uniformed psycholo-

gists in the Personnel Research Department (what is now DPD). The main reasons for the decision were as follows: uniformed psychologists, who have undergone military training can better relate to the soldiers, sailors, and airmen, follow them on training and understand the issues they face, and also, they can be readily deployed to support troops in the theatre of operations. As a result, the first batch of seven junior military officers was sent to U.K. and Australia in 1985 to study psychology under a sponsorship programme. Subsequent batches comprising two to three junior military officers were sent over the next few years to build up a critical mass of uniformed psychologists. Upon their return, the pioneering uniformed psychologists continued their training, learning from military psychologists from other armed forces, and began to develop and provide various behavioural science-based services (e.g., leadership, team and organizational development programmes) and consultation for combat units across the army, air force, and navy. They adopted the scientist-practitioner model (Dunnette, 1990; Murphy & Saal, 1990) in the course of their work. Research was performed to examine constructs (e.g., NSF's military socialization, commitment, and motivation to lead) that were relevant to SAF's operational readiness, as well as to customize and evaluate the effectiveness of the psychological services provided.

Professionalism of the military psychologists was further enhanced when uniformed and non-uniformed psychologists were sponsored for post-graduate studies, e.g., Masters in organizational psychology, organizational behaviour, and management, and Ph.D. in industrial-organizational psychology. Upon their return, they contributed to the growth of military psychology in the SAF – practices and research increased in both quantity and quality. Since 2000, many of them have also contributed papers at international conferences (e.g., International Military Testing Association annual conference) and some have been published in top-tier journals (e.g., *Journal of Applied Psychology*).

By the early 2000s, many soldiers had experienced over a decade of behavioural-science services provided by uniformed and non-uniformed psychologists who operated from the Applied

Behavioural Sciences Department (what is now DPD). Commanders from the Joint, Army, Air force, and Navy recognized the contributions of psychology and military psychologists in enhancing human and unit performance. They sought for some of the psychologists to be decentralized and integrated within their command. The request was so strong that in 2002, three psychologists were transferred to the Joint service to help set-up the Centre for Leadership Development and to develop the leadership doctrine and programmes for the SAF.

Contemporary Military Psychology: Operating Principles and Practices

A Conscript Armed Force and Psychology's Multiplier Effect

When reflecting on the organization of psychologists and arriving at their operating principles, due consideration was given to the operating context and desired outcomes of employing psychologists in the armed forces. In the present case, the largely conscript (national service) nature of the SAF and the multiplier role that psychologists could perform were important considerations underlying their organization and deployment. An additional consideration pertained to the need to maintain the competencies and professional standards of psychologists employed by the organization.

As described earlier, all Singaporean males have to serve as NSF's for 2 years typically sometime between the ages of 18 and 20. Consequently, issues relating to civilian adjustment to the military lifestyle as well as motivation and commitment to defence would be important to research and gain understanding over successive generations of these NSF's (Wong 2006; Ministry of Defence, 2013). Such research informs on national service as well as human resource (HR) policies that will impact on NSF's and regular soldiers alike (Leong, 1978, 2013). In addition, the national service system creates opportunities for follow-up interventions to be developed, which may arise from the research described earlier or by way of

optimising the talents of the NSF's in relation to the nation's defence needs.

Hence, research using aggregated cohort data from an estimated 20,000 NSF's allows comparisons for inter-generational differences to be made, while longitudinal studies of soldier motivation and commitment informs commanders and policymakers about changes in motivation and commitment over the passage of time. At the same time, psychometric testing and other psychological testing procedures facilitate a better match between NSF's and the myriad of vocations in the military, while scientifically based selection procedures are employed to identify soldiers for leadership roles. Figure 31.2 portrays Singaporean soldiers engaged in a scenario to assess their leadership capabilities. All these require a pool of psychologists who are centrally organized to develop, conduct, and apply psychological research and skills in partnership with policy and HR stakeholders. This cross-functional partnership has proven to be effective for contextualized understanding of organization-wide psychological research and applications.

On the other hand, issues of adjustment to the military lifestyle and any downstream impact on unit morale and readiness require psychologists to be co-located with commanders and soldiers so that responsive and contextualized support can be provided. These include counselling soldiers to help them adjust to basic military training, assigning soldiers to specific roles in the unit, enhancing leadership and team effectiveness, working with commanders to improve unit and soldier performance, as well as addressing psychological issues from critical incidents. Such issues cannot be managed centrally but are more effectively addressed through employing psychologists who are decentralized to work with commanders and soldiers on the ground.

Supporting Operations and Managing Critical Incidents

Psychologists in the SAF have also had a history of involvement in critical incident stress management and providing psychological sup-

Fig. 31.2 Singaporean soldiers taking a situational test developed by military psychologists (Source: Army News)



port to servicemen and women partaking in various military operations. The former involves assisting commanders to monitor and manage the stress and coping of servicemen who experienced traumatic stress arising from mishaps in training. The latter is concerned with psychological assessments and interventions as part of the process of preparing and maintaining the psychological readiness of servicemen who embark on peacekeeping, humanitarian and disaster relief, and other operations. Psychologists would also be involved in debriefing soldiers towards the end of their mission, to prepare them mentally to rejoin their families after having spent a considerable amount of time away on operational duty. Psychologists partook in supporting the SAF's first UN combat peacekeeping mission deployed to Timor-Leste in 1999, involving screening and selection, preparation, monitoring, and conducting psychological decompression to facilitate returning troops' adjustment upon homecoming. Since then, psychology support has become a common feature for SAF overseas missions on land, air, and sea. Efforts in supporting critical incident stress and operations require the psychologists to have sufficient time on the ground so that trust and rapport are built to enable the psychologists to be effective in working with commanders and soldiers alike.

Maintaining Professional Standards

Finally, specialists and professional resources are obliged to maintain standards of professional practice and align themselves with national and international levels. Minimum qualifications in psychological education have been instituted for the recruitment of entry-level psychologists in the SAF, with more senior positions requiring a combination of postgraduate education and relevant work experience. Consequently, a key role of DPD focuses on establishing standards of practice for psychologists in the SAF, creating a framework for maintaining professional currency and developing systems to enable their professional growth over time.

Together, these considerations (centralization for systems-level research and systems implementation, responsive and customized ground support to meet peacetime and operational needs, standards for employment, training, and development) provide important bases for the employment and organization of psychologists in the SAF. The need for psychologists to effectively address organizational and systems-level issues as well as be responsive to support commanders and servicemen's psychological needs at the unit and personal levels rules out purely centralized or decentralized modes of organization and operating. A hybrid model that makes use of finite pro-

professional resources to meet both levels of needs has thus evolved, one that also allows centralized management of the professional aspects of the psychologists' career and development to be achieved. At the same time, the hybrid model allows for professional oversight and development of psychologists on the ground, thus maintaining standards in the ethics and practice of psychology and contributing to a stronger professional identity in the SAF.

As part of the broader framework of the behavioural sciences, the practice of psychology in the SAF is concerned with an evidence-based approach to improving our armed forces. Hence, psychologists are oriented to be scientist-practitioners from the onset. The initial training of new psychologists focuses on the organizational and environmental contexts for the practice of psychology in the SAF. They are also oriented to the main applications of psychology during this phase of their development. Subsequently, psychologists are supervised on a variety of assignments. Regular professional exchanges with the psychological services of other government agencies as well as attendance and presentations at professional seminars and conferences help to benchmark the work of the psychologists.

Given their training in research and statistical analyses, psychologists in DPD are actively involved in applied research projects involving armed forces personnel. Such research provides the bases for relevant systems level applications, such as vocational assessment and assignment, as well as assessment and selection for junior command. At the same time, empirical research on employee satisfaction and perceptions of conscript service provide relevant feedback for the design of HR policies.

Over the years, regular interactions with academia, consultants as well as military psychologists from other armed forces has allowed the SAF psychologists to tap into best practices and new developments in psychological research and practice. Hence, more sophisticated statistical methods such as data mining and data analytics have been incorporated to facilitate effective analyses of large data sets in applied psychological research. This facilitates the adoption of

evidence-based approaches to developing organizational policies and interventions.

Developments in psychological theories such as Item Response Theory have also facilitated improvements in computer adaptive testing for the assessment and selection of recruits. Incorporating these developments has improved productivity in the psychological assessment of large numbers of NSFs awaiting assignment to vocations in the military. Yet, traditional methods of one-on-one psychological interviews remain a relevant skill for our military psychologists.

Working with unit commanders, in addition to applied research conducted on a smaller scale, psychologists are more involved in one-to-one interventions. These include work counselling, training, and educating commanders and soldiers on psychological aspects of military performance, as well as developing and evaluating localized interventions to improve soldier and unit performance. As with applied research conducted at the organizational and systems level, the focus on empirical outcomes is well received and provides commanders with relevant feedback on unit effectiveness.

Because of the unique context of psychological practice in the Singapore military, there is a need for academic knowledge to be adapted for application. Consequently, military psychologists in the SAF are part of an ecosystem of knowledge development and dissemination through documentation and regular sharing of their experiences in the organization.

Conclusions

This chapter provided an overview of some of the key developments and considerations that influenced the organization and employment of military psychology in the SAF. The unique requirements of securing an island nation's foundation for stability and success coupled with national service for all male Singapore citizens were important drivers in the development of a behavioural sciences' capability aimed at optimizing Singapore's limited manpower resources to meet its defence needs. Employing psychologists in the military has served

the twin requirements of applying behavioural sciences knowledge and research skills to address any issues encountered during military life and to enhance soldiers' performance and unit effectiveness. This has facilitated the contextualization of a variety of theories from the social, organizational, leadership, and even clinical-counselling realms to develop relevant policies and practices for successive generations of personnel who have been called to serve in the SAF.

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Operational and Organizational Practice of Psychology in Indian Armed Forces

32

Nidhi Maheshwari, Vineeth V. Kumar,
and N.P. Singh

Military psychology in India has followed a distinct trajectory, as the country witnessed participation in two World Wars during the colonial era, the struggle for its independence from the British Empire, its partition and sustenance thereafter. This trajectory has further been shaped by the Indian military engagements in various counter-insurgency and anti-terrorist activities apart from five conventional wars, where psychological paradigms have contributed to soldier preparedness in various direct and indirect endeavors. Like many other nations, the alliance of psychology with the military proved beneficial to the Indian soldiers on the one hand, while also helping to secure the country's frontiers all through these constant engagements on the other.

Although there have been spurts in the evolution of military psychology in the country along with the changing nature of diplomacy and deployment of Armed Forces, psychology has

nonetheless consistently contributed to Indian soldier preparedness both in operational as well as organizational spheres. Starting with the selection of men to their classification, placement, training, sustenance, and optimization for operational efficiency, all have been the subjects of military psychology focus. Though military psychologists in India (both men and women) are not posted as brothers-in-arms to soldiers on deployment, they nonetheless toil consistently to improve the selection and maintenance of the fighting force. They are members of the Services Selection Board (SSB), follow-up experts on cadets at training academies, guest faculty to various forward and field locations for conduct of stress management workshops, suicide prevention workshops, critical incident stress debriefing, and junior and senior level leadership development activities. In order to understand military psychology in India today, some historical context is necessary.

N. Maheshwari (✉) • N.P. Singh
Strategic Behaviour Division, Defence Institute of Psychological Research (DIPR), Ministry of Defence, DRDO, Govt. of India, Delhi, India
e-mail: nidhi78_m@yahoo.co.in; npssalyal@yahoo.com

V.V. Kumar
School of Management, BML Munjal University, Delhi, India
e-mail: vvineethkumar@yahoo.co.in

Military Psychology in India: Historical Perspective

Ancient Indian texts like Arthashastra, Zafarnama, and mythological epics like Ramayana, Mahabharata, and Gurbani of Shri Guru Gobind Singh, though classified as spiritual works, nevertheless provide abundant references which impart significant notations about the implemen-

tation of psychological principles to military strategies and operations. Ample evidence exists that reflects upon the practice of vyuhachra (forces' layout strategies) and illusory tactics (military deception) during the Great War of Mahabharata (see Besant, 1973). The great epic even goes on to state the existence of propaganda and rumor (Psychological Operations or PsyOps) as strategies to modulate the morale and motivation of the forces as well as of their warlords.

'War neurosis' or 'combat stress' as it is now being conceptualized was first exemplified in Srimad Bhagwat Gita nearly 5000 years back when Arjuna, one of the five Pandavas who was fighting against his cousins the Kauravas during the Great War of Mahabharata, puts down his weapons while contemplating the futility of such a war. Then, Lord Krishna, Arjuna's charioteer, imparts the sermon which can be called as modern day 'combat stress counseling/management.' The same discourse has been uniquely compiled as Lord's *updeshas* (sermons) in Srimad Bhagwat Gita (Sivananda, 2011).

Likewise, during the war, the grave dissonance in front of Pandavas was to confront their guru (teacher) Dronacharya who was leading the Kauravas' Forces during the war. For eliminating the challenge, use of propaganda strategies is widely known. The killing of Ashwasthama (an elephant with the same name as Dronacharya's son) by Bhima (one of the mighty Pandava) was announced with a subliminal tone by Yudhishthir 'the Dharamraj' (The King of Righteousness) – eldest of Pandavas, that it is not a man but an elephant ('naro na kunjaro') surrounded by sounds of *shankhanaad* (conchshell sounds). Hearing the masked truth, Dronacharya lost his will to fight thinking about the loss of his son and which led to the downfall of the Kaurava Forces and the victory of Pandavas.

As we traverse from the ancient to the medieval and the modern historical perspective of the soldierly engagements, the raids of Mughals (Babur, Humayun, Akbar, and so on), invasions of Timur, Chengiz Khan, Nadir Shah, Gazni, etc. reverberated a rise of distinct military prowess on Indian soil. Exemplary military leaders and strategists include luminaries like Ashoka,

Chandragupta Maurya, Chanakya, Guru Gobind Singh, Shivaji, Maharana Pratap, Rani Laxmi Bai, Tantya Tope, Nana Sahib, Bal Gangadhar Tilak, Lala Lajpat Rai, Bhagat Singh, Chandrashekhar Azad, Raja Hari Singh, Sardar Vallabh Bhai Patel, Subhash Chandra Bose, and Mahatma Gandhi ('The Father of the Nation') to name a few. They have distinctly used various psychological principles and strategies to uproot the contemporary oppressive forces on their native soil.

Needless to say, the first war of Indian independence was also the consequence of a rumor about the cartridge of a newly introduced Enfield rifle, which is a typical example of PsyOps. Also by that time, slogans, poems, and patriotic songs were deployed to invigorate the morale and motivation of the freedom fighters of the country. Bankim Chandra's 'Vande Mataram,' Bhagat Singh's 'Mera rang de basanti chola,' and Rabindra Nath Tagore's 'Ekla chalo re' is unequivocally known to all. The revered national anthem of India is also a product of the erstwhile patriotic literature. All these developments were necessary fallout to the oppressive rule of British over the country for nearly 200 years. Erstwhile, Britishers used to seek enhanced power from the Indian demeanor as cited by Barnett in his book, *The Collapse of British Power* (p. 79):

.....The Indian Army seemed a splendid asset: hearts warmed at the sight of those dusky lancers, gaudy as jungle birds, who trotted beside the vice-regal carriage, and at the thought of British and Indian brothers-in-arms with mule and mountain gun carrying peace up the valleys of the North-West Frontier. The squeal of the bugle, the crunch of iron-shod ammunition boots on the dusty road, red coats and khaki, turban and topee, tents under a sky of brassit was in these terms, touching the heart rather than the critical intelligence, that the British tended to see the power which they believed India gave them....

Similarly, it was during this period that the psychosocial profiling of the Indian society was used to recruit soldiers from the Indian colonial society; often christened as 'martial races' by Britishers. Interestingly, the legacy goes on in today's Indian Army as well. We have the Madras Regiment, Gorka Rifles, Mahar Regiment, Jat

Regiment, Kumaon Regiment, Dogra Regiment, and the Rajput Rifles; just to name a few. Also, until 1919 Indians were excluded from the officer cadre of the British Armed Forces in India.

Thus, under the prevailing colonial era of British rule, military psychology in India had a constricted growth and could not take much advantage of the proactive strides made by Yerkes, Titchner, Thorndike, Binet, Woodworth, and others in recruiting and placing their soldiers to World War I. However, the post-World War I period witnessed a strong awakening in military leadership which demanded taking advantage of the principles of military psychology to introduce corrections so as to sustain the core of military ethos and develop healthy relations between the leader and the led. During the inter-war years, the British Empire had pursued a policy of segregation and institutionalized racism in the officer cadre of the Armed Forces. The 'Eight-Unit' Scheme had ensured that no Britisher would ever have to serve under an Indian officer. The psychological differences were customary to such a decision. In those circumstances, General Palit (1989) observed, "could there have existed much comradeship, fellow-feeling or professional loyalty between the two elements of the officer cadre of the same Army?" The formation of the Indian National Army was the direct consequence of the policy of segregation and isolation of the Indian officers. Later, the Royal Indian Navy and the Air Force Mutinies were also the outcome of nonadherence to the psychological principles of comradeship, group cohesiveness and esprit-de-corps. With these conditions, military psychology was gearing up to prepare an indigenous soldier with an indigenous command and control.

With the changing nature of warfare from ancient to medieval and the modern era, psychological appreciation was put to use in various shades. During the British rule, when the theatre of operations shifted to the East, the recruitment requirement from India for the Second World War increased manifold. Psychological profiling of military personnel seemed an indispensable need to fulfill the requirements of the emerging military scenario during the war. This realization led to the setting up in February 1942 of the foun-

ation for the present day Defence Institute of Psychological Research (DIPR) in India. This was named the War Office Selection Board (WOSB), established at Dehradun as an experimental board to delve into the use of psychological techniques for selection of the Indian Forces' officers.

After India's independence in 1947, followed by the division of India and Pakistan, the biggest challenge for new Indian organization was the division of Armed Forces structure and restructuring Indian Armed Forces leadership. The challenge seemed more significant due to the onset of a combat conflict with the separated partner Pakistan. The Pakistani army had used the available tribal civilian raiders to annex the undecided state of J&K by force. However, due to the immediate intervention of the newly structured Indian Armed Forces, the State was not only saved but the ruler of the State Maharaja Hari Singh signed a permanent accession agreement with the Indian Democratic Republic. In this context, the military engagements of various Indian regiments, like the Sikhs, Rajputs, and Madras to name a few, have become the iconic case studies of military valor for military psychologists in India. Yet, the Pakistani Army has since then been involved in combat with the Indian Armed Forces which has led to three full-blown wars (1965, 1971, and 1999) between the two countries. Fallout from these combat operations has brought out many examples of military valor, morale, esprit-de-corps, and par excellence command and control of the highest order. The victories, namely of Haji Pir Picket (1965) and Kargil Conflict (1999), have become the case studies for student officers at various academies and staff colleges. These case studies have further given rise to military folk music to invigorate the morale of soldiers and pride amongst civilians for their soldiers. For example, the song 'aye mere watan ke logon, zara aankh mein bhar lo paani; jo shaheed hue hain unki, zara yaad karo kurbanii....' (Oh, citizens of my country! Fill your eyes with tears, remember the sacrifice of the martyrs) sung by the legendary singer Lata Mangeshkar, knows no bounds and has become the embodiment of Indian's pride for their soldiers.

With the departure of British command and control, the largest democracy of the world with one of the largest all-volunteer force thus needed a scientific selection of the leadership component to shape its new Army. In order to ponder and concretize the solution to this challenge, India's new dispensation set up a high-power committee called the Ghosh Committee to review the system of selection of Indian Armed Forces. Having worked in a fast track mode, the committee submitted its report in 1949 and with this recommended the setting up of a military psychology center to augment the selection of officers from the Indian population. This center, named as the Psychological Research Wing (PRW), was formed on 29 August 1949 under the leadership of Dr. Sohan Lall with the following road map:

1. To conduct research in personnel selection methods, procedures, and paradigms.
2. Evolve suitable and scientific methods, procedures, paradigms of personnel selection backed by research endeavors.
3. To develop, revise, and validate psychological tests as required for personnel selection from time to time.
4. To carry out follow-up studies for strengthening and reframing the new selection system based on contemporary requisites.
5. To train assessors being engaged in various SSBs.

The new PRW was integrated with the Armed Forces structure through a formal professional alliance where all screening- and selection-based researches were dealt with by PRW, while the implementation of these psychological techniques and tests was shared with the Adjutant General's Branch of Indian Armed Forces. This alliance stood the test of time and continues to perform the same service to this date, except that the scope of DIPR has grown over a period of more than six decades. An important feature of this civil military alliance was the placement of service officers at the center to cater to the requirement of PRW. In order to address the immediate demands of selection procedures, Dr. Sohan Lall envisioned the importance of five

domains which were divided under five sections: (1) Intelligence & Aptitude, (2) Group Testing, (3) Personality, (4) Follow-up, and (5) Training. These sections were manned by a mix of military psychologists as well as military professionals.

The immediate requirement of military leadership which drew the attention of the newly established military psychology institution was to empirically establish the personality profile of an average military officer. It is pertinent to mention here that the Indian Armed Forces psychological model evolved during the period when other pioneer personality theories were coming up. Importantly, the selection was based on a set of personality pointers in an individual rather than solely on leadership ability. The Indian officer selection system took an eclectic approach by incorporating the psychoanalytic techniques of Jung, Murray, and Freud through inclusion of Word Association Test (WAT), Thematic Apperception Test (TAT), and Situation Reaction Test (SRT) as well as the assessment of mental functions or cognitive abilities in the form of intelligence rating. Interestingly, the psychological assessment was triangulated with the assessment of an Interviewing Officer and a Group Testing Officer on the same pointers. Thus, it is a tri-pronged system laid out in the form of Manasa (Psyche)-Vacha (Speech)-Karmana (Action) principle.

PRW also helped in screening the entrants for the Army Medical Corps and selection of apprentices for the Indian Railways. It has contributed in the development of an Officer Rating Scale for the Army, the assessment of pilot potential and reduction of wastage occurring in flying training. However, with the advancing need of maximizing performance in man-machine systems, in 1950, the Ministry of Defence assigned the task of conducting psychological research to the Defence Science Laboratory. An Applied Psychological Research Cell was established to investigate various issues related to human factors, vigilance, thermal stress, problems of pilots, and naval operators. This further led to the establishment of a Human Operator Research Unit in the Defence Science Laboratory and the Naval Psychological Research Unit (NPRU) at Kochi in

1956. In 1958, the Defence Research and Development Organization (DRDO) was founded; and it also became the regulatory authority for psychological research. In 1962, the ambit of PRW was widened and it was redesignated as the Directorate of Psychological Research (DPR). In the same year, the Applied Psychological Laboratory (APL) was also established and it worked as a lower wing of DPR. Now, the work of DPR was (1) selection of army, air force, and navy personnel, (2) human engineering, and (3) ideology. In 1967, APL and NPRU merged with DPR, nonetheless NPRU carried on its functions at Kochi.

With the advancing role of psychology in the military context, in October 1982 DPR evolved further into the establishment of a dedicated psychological research laboratory of the country in service of the Indian Armed Forces; as is called today, the DIPR located in Delhi under the umbrella of the DRDO of Government of India. Since then, the institute has contributed in the areas of communication and ideology analysis, organizational behavior, issues related with leadership profiling, motivation, and morale of soldiers and has advanced in various strategic behavior analysis issues of nonconventional warfare. Mukherjee, Kumar, and Mandal (2009) have given a brief chronology of events shaping the field of Military Psychology in India. Such a growth with evolving paradigms is summarized in the following sections.

Ambit of Military Psychology Endeavors in India

From Paper-Pencil to Computer Adaptive Selection Procedures

Military psychologists over the years have tried to remain abreast with all basic fundamentals of research ranging from changing theoretical formulations to methodological advancements to technological changes. The most recent and eye-opening development has been the expanse from a paper pencil test administration to use of computerized administration. The advent of the first

computer in DIPR in the 1990s paved the way for computer adaptive tests. Kaur, Anand, and Awasthy (2016) have reflected upon the trajectory to intelligence testing in Indian Armed Forces. With emerging requirements, the existing tests were not only adapted to computer version but an advanced online military aptitude test has been a major success since 2006. The online test has helped the potential candidates to test their aptitude for military chores before applying for its commission screening. Besides, computerization of TAT and WAT has facilitated a hassle-free administration of psychological tests in selection boards. Similarly, DIPR has advanced to the development of computerized battery for the screening purposes which is being implemented in near future. The most significant endeavor in this context has been the development of computerized selection system for pilots which is replacing the earlier used aptitude tests for pilots. It is a comprehensive cognitive and psychomotor-based aptitude test which has been designed in light of the complex high-tech aircraft expected to be flown by the potential pilots. A most recent ongoing endeavor is the development of a new selection system which is imbuing technology-enabled, decision-making process for selection of officers to the Indian Armed Forces.

From Conventional to Nonconventional Warfare

The advent of fourth generation warfare has set the ball rolling for the psychologists in the country. During conventional warfare, especially with her neighbors like Pakistan and China, India has adopted the British legacy of fighting wars. But now, psychology is taking turns with technology to win wars mentally and morally rather than physically. The country is facing a 'war of social base' in which psychologists are busy equipping their soldiers with enhanced skills on social engineering, cultural adaptability, situational awareness, strategic leadership, interrogation, negotiation, persuasive communication, and propaganda management. Importantly, studies

are being pursued on crowd management, target leader profiling and suicide terrorism.

From Clinical to Operational and Organizational Psychology

Military psychologists in India have not only catered to alleviating the psychological distress of soldiers; but have also studied and suggested robust soldiering techniques and effective leadership strategies for keeping up the morale of the Armed Forces. Recommendations have been made to deter psychological and psychiatric ailments in soldiers through various self-help guides and manuals as distributed during the stress management workshops at forward and field locations. Psychologists move to the area of operations to deliver such training materials for the benefit of the Forces. Equally, behavioral training modules, psychological strength enhancing modules, and leadership competency modules are supplied to the training establishments for creating a sustainable Force. Further, strategies are suggested to maintain a healthy unit environment which preempts any probable misconduct behavior by any soldier. Nevertheless, selection system for officers and other ranks is designed and developed for getting the right personnel to the right place at the right time. It avoids training wastage as well as deploys the social capital of the country to the desired location. These endeavors are based on long-established comprehensive empirical studies carried out on the experiences shared by the soldiers.

From Forward Areas to Peace Locations

The expanse of military psychology entails both the combat as well as noncombat deployments in the country. Psychologists have studied both the combat and noncombat stressors in soldiers at length. It is assumed that even when the soldier is in the so-called 'peace' location, actually he is preparing for combat and so he is practically never at peace. Neither is he supposed to be at

peace, rather, like in combat locations he has a well-defined doctrine to follow even in peace locations. Such doctrines have got enough psychological inputs and basis for the soldier to follow. Again military psychologists interact with the formations in their training academies and unit locations and make valued additions to reorientation, retraining, and rehabilitation programs. It is pertinent to mention here that the attitudinal makeup is well shaped in the peace locations to prepare the soldier for combat zones and various psychological techniques are used in this context.

One of the unique engagements of the Indian soldier has been deployments at high-altitude glacier areas where physical and environmental challenges surpass any combat challenges. Highly hypoxic conditions with -40 to -50 °C temperature demand appropriate psychophysiological acclimatization and adaptation. Similarly, these same soldiers move to peace locations/noncombat tenure after 1–3 years; often landing in hot and humid conditions of $+40$ to $+50$ °C temperatures under dry conditions. A psychophysiological adaptation and acclimatization to both sets of conditions require sound scientific analysis and data to prepare schedules of adaptation and acclimatization. Psychologists and physiologists have worked together in tandem to carry out comprehensive studies for this scheduling along with introduction of certain indigenous modules on Yoga for soldiers in an all Indian style.

From Pathogenic to Salutogenic Model

Getting hit by the World War experiences, initially, the focus of psychologists was on curing the psychiatric ailments of Indian soldiers. But gradually, the shift seemed obvious to make the soldier immune to such ailments and proactive measures were taken to avert combat stress injuries. The Field Guide on 'Assessment and Management of Combat Stress Behaviours in Indian soldiers' published by DIPR has been a prime document of use for soldiers operating in

low-intensity conflict environment. Interestingly, indigenous yogic interventions are being deployed to facilitate preparedness as well as post-traumatic growth (PTG) in soldiers. Cheema and Grewal (2013) found a significant difference in the biological parameters of the troops of two army units from the northeastern sector of the Indian Army subsequent to a 2-week meditation camp organized under the guidance of an Art of Living (AOL) instructor. Likewise, a resilience-building module is scheduled to curb the vulnerabilities and enhance strength-based prototypes of military effectiveness. Emphasis is also being laid on building resilience in military families (Archana & Kumar, 2016).

From Securing to Peace-Keeping and Peace-Making Missions

India has a unique demographic structure of varied religious followers, with further division of castes and subcastes. The national democratic set-up provides equal freedom and opportunities to all with desired adherence to Indian constitution. However, this variability has often been instigated or used by vested interests for disturbing the security of the country. Though the internal security is dealt with by various layers of policy and paramilitary forces, occasionally it is the Armed Forces who are called to assist the civil administration in reestablishing law and order. The Armed Forces have been called for example to control the riots and crowds during various communal violence or caste-based conflicts. Psychologists in recent times have studied mob violence and crowd behavior for developing suitable training modules to assist the Armed Forces in handling such riots. Also, selection system for the special forces operating in Naxalite regions is underway.

Similarly, the Indian Armed Forces are one of the largest contingents who are deployed in various peace-making and peace-keeping missions of United Nations across the globe. These missions require unique cultural adaptation and communication strategies to achieve the missions in hand. Psychologists are engaged in conducting such

training programs based on empirical studies carried out on cultural adaptation and competence in this context which helps the UN peacekeepers to operate successfully in alien cultures. Nonetheless, DIPR also conducts an aptitude test to assess the capability of personnel to acquaint with and converse in foreign languages before they are deployed in foreign missions.

From Natural to Man-Made Disaster Victims' Rehabilitation

Military psychology in India has been in the forefront assisting the soldiers to manage various disasters and their victims. Skills and expertise achieved through the research in the areas of combat stress management and other mental health programs have helped the psychologists to acquire suitable expertise to rehabilitate the affected population. The psychologists have collaborated with three national institutes of mental health {namely National Institute of Mental Health and Allied Sciences (NIMHANS), Ranchi Institute of Neuro-Psychiatry and Allied Sciences (RINPAS), and Institute of Nuclear Medicine and Allied Sciences (INMAS)} to conduct such training programs. Natural disasters like the earthquake in Latur (2003), Jammu and Kashmir (2008), Tsunami in Tamil Nadu, Super-cyclone in Orissa, Cloud-burst in Ladakh, Floods in J&K (2014), Cloud burst and land slide in Kedarnath (Uttarakhand) etc. created not only physical havoc, but also spread mass trauma amongst the victims.

During the disasters, Armed Forces were deployed to rehabilitate the man and material in place. On certain occasions like the Tsunami, military psychologists carried out mental rehabilitation programs to monitor as well as ameliorate the onset of PTSD and other trauma-related disorders. Individual and group counseling sessions were carried out by teams of professional psychologists for affected populations in schools, colleges and local community centers. Teams led by military psychologists like Sh. O.P. Nim, Dr. K. Ramachandran, and Sh. N. P. Singh carried out long term group counseling sessions for the

affected populations. Similarly, in the context of man-made disasters, counseling sessions were also carried out for the bomb-blast victims of Dhimajee, Assam, in 2004, where lot of young children fall prey to the terrorist attacks during the India's 60th Independence Day celebrations. Conversely, psychosocial care of disaster first-responders, i.e., the Forces themselves is also done by the psychologists of the country (Satapathy, 2016). Besides, research models have also been propagated on the psychological risk-analysis of terrorism in Indian population (Maheshwari & Kumar, 2009).

From Tech-Savvy to Culture-Savvy Forces

The onset of various forms of insurgency in different parts of the country as well as engagements in various international peace-keeping and peace-making missions has brought in a paradigm shift in the operational requirements of the soldier; from a tech-savvy to culture-savvy environment. Success in operations depends more on the cultural understanding and cultural adaptation of the Forces to the local population in the operational environment than on technological efficacy of the soldiers. Military psychologists have contributed to acclimatizing the Indian soldiers to diverse cultures especially sensitizing them so as to respect the beliefs, values and attitudes of the social environment during their military operations. Soldiers are made aware of the cultural sensitivities in winning the hearts and minds (WHAM) of the civil population to alienate them from the enforced bait of militants or terrorists.

From Physical to Psychological Warfare

In the short span of nearly seven decades of postindependence period, India has faced four conventional wars with Pakistan (1947, 1965, 1971, and 1999) and one with China (in 1962). Though the dynamics of these wars is beyond the scope of this paper, frustrations of defeat in the

case of Pakistan and non-resolution of territorial issues with China has made India a victim of incessant insurgency – a form of Low-Intensity Conflict (LIC) – in various parts of the border states. These insurgencies in Border States of North-east, Jammu and Kashmir are the classic examples of psychological warfare which Indian Armed Forces are engaged in. These long drawn-out counter-insurgency operations and counter-terrorism operations have added to the roles of soldier on the one hand and affected their psychological well-being on the other. Hence again, military psychologists have carried out various studies in the area of psychological warfare to optimize the operational efficiency of the soldiers in LIC areas. Studies related to the media impact on soldiers, attitude and alienation of civil population, psychosocial adjustment of soldiers in LIC areas, communication and rumors, interrogation, profiling of war heroes, profiling of target leaders, profiling of target population etc. have brought out suitable suggestions and training programs to optimize the operational efficiency of soldiers.

Preparing soldiers for PsyOps is also one of the endeavors of DIPR to add to the PsyOps and PsyWar skills of the soldier. An international conference on 'Advances in Military Psychology' organized in collaboration with National Academy of Psychology (NAoP) in November 2011, was a major step to sharpen the skills of Indian military psychologists and create an awareness about the potential areas of interest for the psychologist fraternity in India. The conference was addressed by military psychologists like Dr. Reuven Gal, Dr. Mike D. Mathews, Dr. Annen Hubert, Dr. R.C. Tripathi, Dr. Manas K Mandal, Dr. Sagar Sharma, and Dr. Shobini L. Rao to name a few stalwarts; and the proceedings of the conference have further generated interest of young Indian psychologists in military psychology. Also recently in Nov. 2016, DIPR hosted the 58th International Conference of IMTA (International Military Testing Association) at Delhi congregating the best of minds on various psychological issues related to selection and sustenance of Armed Forces.

Apart from the summary of the areas highlighted above, military psychologists are also busy in studying the impact of gender stereotyping for a force which is now considering the inclusion of females to combat roles. Already females serve as officers in the medical and other supporting corps like ordnance, supply, engineers, and education of the Indian Armed Forces. However, recent inclusion of three female fighter pilots in the Indian Air Force on an experimental basis has set the ball rolling for psychologists to study its psychosocial and operational aspects. Also, psychologists in India are engaged in enhancing the efficiency of both manned and unmanned systems. Studies on mental workload (MWL), extreme environment adaptation and survival are the areas of continued focus to draw benefits for the soldiers. Also, studies on mind-control strategies (Johar & Kumar, 2016) like remote viewing, brain electrical oscillation signature profiling etc. are not just distant dreams for Indian military psychologists, but are on the near horizon. Efforts are also being made by psychology professionals to attract the youth to join one of the largest all-volunteer forces of the world.

Conclusion

Service to the nation by serving the soldiers of the country is a sacrosanct obligation of any psychologist who aspires to achieve it. Military psychology in India underwent many crests and troughs across the decades, to arrive at a steep upward graph keeping in line with the operational requirements of the Indian Forces. Psychologists have also evolved during the process to provide a hand in support of the fighting force from conventional to nonconventional warfare. Needless to say that, the military psychol-

ogy discipline and its psychologists are as crucial as the other weapons in the arsenal of Indian Armed Forces.

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Gerry Larsson and Anne Lindqvist

Historical Framing Factors and Early Steps of Military Psychology

Sweden is the country on earth with the longest unbroken period of peace (since 1814). This includes staying out of the two world wars of the last century. Although Sweden has contributed to United Nations (UN) peacekeeping missions since the 1950s, it is still a non-aligned country. However, since the Balkan conflicts in the early 1990s, Swedish military forces have been frequently engaged in multinational peacekeeping and peace enforcement operations. Swedish officers have also been regular participants in international military exercises and high-level command headquarters.

The political decision to stay non-aligned led to a necessity to be one's own master. Conscription, which was compulsory for men, was abolished in 2010. If fully mobilized, Sweden with a population of about nine million at that time could have fielded a force of about

800,000 men. Among these, mobilized civilians were expected to man some 95% of all commanding positions.

The new post-Cold War era, following the fall of the Berlin wall in 1989, has seen a dramatic change in the Swedish Armed Forces (SAF). An all-voluntary force has replaced the conscription system (which formally is "resting" and can be resumed again if necessary). If fully mobilized, the present armed forces 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.

The early steps of military psychology need to be seen against this background. The conscription system called for a selection system that could be used on a large scale. Intelligence testing began in the 1940s. Teams of medical staff, military officers and psychologists travelled around the country to assess all 18-year-old men.

In 1955, the Military Psychological Institute was established. The main field of military psychology was selection. Intelligence and aptitude tests were developed and refined. Military psychologists were also involved in constructing manuals for interview-based assessment of leadership capacity and mental stability in conscripts. In the late 1960s, the mobile assessment system was replaced with regional enlistment offices with permanently employed psychologists.

In 1974, the Military Psychological Institute was incorporated into the Swedish National

G. Larsson (✉)
The Swedish Defence University,
Stockholm, Sweden

Innlandet University College, Elverum, Norway
e-mail: gerry.larsson@fhs.se

A. Lindqvist
The Swedish Armed Forces, Stockholm, Sweden
e-mail: anne.lindqvist@mil.se

Defence Research Institute, and formed the Department of Behavioural Sciences. Within this new department, psychology was integrated with educational science and sociology. This organizational change also came to be a milestone regarding tasks and positions of psychologists in the Swedish defence. Three clusters emerged: one continuing working with conscript assessment within the Swedish Defence Recruitment Agency (SDRA), one working with human factors, special selection and mental health, respectively, within the SAF, and finally one involved in research and teaching at the Swedish National Defence Research Institute. These three clusters still remain and are presented in more detail in the following section.

Kinds of Psychologists Currently Employed

In this core section of the chapter, we present the three organizational settings described above. The goal is to present the kind of tasks and positions that currently fall under the umbrella of military psychology.

The Swedish Defence Recruitment Agency

On 1 January 2011, the National Service Administration (NSA) became the SDRA. The change of the name was made when the Swedish Parliament decided that the supply of personnel for the Swedish defence should be voluntary instead of being based on national service. The main mission of the SDRA is to conduct selection tests of applicants to the SAF and other agencies within the security sector, e.g., applicants to the Police Academy, the Swedish Prison and Probation Service, the Swedish Customs and the Swedish Civil Contingencies Agency.

The SDRA has about 110 employees, e.g., psychologists (approximately 20), medical officers (approx. 5), nurses (approx. 16), IT personnel (approx. 20), administrators of the war organizations, economists and information offi-

cers. It is a non-profit organization, funded with grants and charges for commissions (which the SDRA conducts for other authorities and organizations within the total defence).

The SDRA administers applications for the basic training of the SAF and manages parts of the selection process. Information is collected on an annual basis about the personnel circumstances of Swedish 18-year-old youths by use of a web-based biodata form. The information is used to decide which individuals should enrol and possibly serve if national service is reinstated again. SDRA conducts reporting on the staff of the total defence and maintains a register of those with war posts.

The psychologists at the SDRA conduct testing and perform evaluations of those who apply for a position as a soldier or sailor in the Swedish defence. They are also involved with applicants for the special forces and the military officer profession. For soldier and sailor applicants, the first step is a computerized cognitive test, which was developed at the agency. Here, a score of 4 or higher on a 9-point general intelligence scale is necessary. This is followed by a semi-structured interview, lasting for approximately 1 h, with one of the psychologists. Ratings are made in relation to a number of aspects regarded as important in order to manage a soldier or sailor position. Composite evaluations of psychological functioning ability are made on a 9-point scale. A score of 4 or higher is a necessary condition for employment. Applicants with a score of 5 or higher on the cognitive ability test are also evaluated on leadership capacity.

On behalf of the security service of the SAF, a security evaluation of each applicant is also made by the psychologists. This is partly integrated in the interview. Assessments are made of the applicant's loyalty, trustworthiness and vulnerability.

The psychologists at the SDRA have a strong influence on the outcome of the selection process. Low scores on the psychological variables cannot be compensated, for instance, by excellent values on the physical tests. In order to maximize the reliability and validity of the psychological assessments, regular evaluation exercises are performed by the psychologists.

The Swedish Armed Forces

The SAF is one of the nation's largest government agencies. The task is to be responsible for Sweden's military defence. There are approximately 35 psychologist positions within the SAF. The different work areas are presented below.

Special Selection Department The oldest branch of military psychology is the Special Selection Department (SSD) and its origins trace back to 1944 when psychological selection of military aircraft pilots began in Sweden. The SSD has over the years become engaged in several other areas of the SAF, such as selection of Army and Navy personnel, as well as selection of regular officers.

The positions in the SAF that are identified as requiring psychological selection are mostly positions that have high demands for cognitive functioning and/or integrity and/or involving higher risks to personnel. Examples of these positions are fixed/rotary wing pilots, aircrew, flight leaders, meteorologists, UAV-pilots and operators, boat drivers, rangers and intelligence personnel.

The SSD is the centre of psychological selection competence in the SAF. Its primary function is to ensure that personnel in key positions within the SAF have got the necessary abilities and skills to function well in their respective positions. Its tasks involve supporting eligible units, functions or positions with psychological selection as well as providing resources to conduct psychological selection of officers.

Aviation psychologists A number of psychologists in the SAF have a military background as pilots. Their overall mission is to improve aviation security in the SAF. Tasks include supervision/guidance of commanders on aviation security issues, participation in selection processes and settings, taking part in incident examinations and providing family support.

Joint Operations Command Psychologists at the Joint Operations Command, J1, focus on mil-

itary psychological factors within international and national operational settings (deployment psychology), including continuous development and adjustments of organizational methods and requirements. An example is advising the Chief of Joint Operations regarding military psychology and specific areas that need to be considered during different phases of deployment.

Typical tasks for the psychologists are the following. During the pre-deployment phase: education, threat assessment, risk analyses, etc., during the deployment phase: methods for sustaining resilience and maximum operability, monitoring ongoing operations, monitoring the personnel and assessing areas that need to develop, and during the post-deployment phase reinforcing the deployment psychology perspective into different aspects of the organization and processes, cooperating with veteran affairs and ensuring adequate methods of assessment and support.

Military healthcare centre: The SAF in-house occupational healthcare centre According to Swedish Law on The Work Environment (Sveriges Riksdag, 1977, Act 1977:1166), occupational health service is arranged as an independent part of the in-house activities of the SAF. Multidisciplinary collaboration is often required to solve complex problems. Therefore, several professional groups are involved and contribute to a holistic view on work environment, organization, productivity and individual health. Activities at the individual, group and organizational levels are performed within the areas health promotion, health prevention, medical care and rehabilitation. A strength of the in-house occupational health service is good knowledge of the military environment and military tasks.

Veteran Affairs The SAF defines anyone who has been an employee in the Forces abroad or at home, armed or unarmed, as a veteran. In Sweden, there are more than 100,000 Foreign Service veterans, many of them have done more than one International Mission. The Parliament controls and coordinates a well-established veteran policy.

According to Swedish Law on The SAF Personnel in International Military Operations (Sveriges Riksdag, 2010, Act 2010:449), SAF has the responsibility to actively assess its personnel post-international military operations deployments. The assessment must be conducted through personal contact and needs to go on for 5 years after the person redeployed to Sweden. The responsibility for post-deployment monitoring and rehabilitation lies on the local units.

As we all know very well, the work carried out by the SAF does not only affect our employees, but also their family members and friends. Family members often have questions concerning the period before, during and after employment or a posting. In order to support a family member, the SAF offers contact through special contact persons, information meetings, cooperation with non-profit organizations and information brochures.

The Swedish Defence University

Following some reorganizations after 1974 when the former Military Psychological Institute was incorporated into the Swedish National Defence Research Institute, this organizational unit nowadays constitutes the Leadership Center at the Swedish Defence University. In 2008, this university was transferred from the Ministry of Defence to the Ministry of Education. This means that it is now formally equivalent with other Swedish universities and colleges.

Being part of the ordinary university system means that there are now two groups of customers with different needs. On the one hand, the academic tradition with number of peer-reviewed publications, citations, etc., is a driving force. On the other hand, the SAF and civilian crisis management system still want practically useful research results.

Another change concerns the educational background of the employees. Until the mid-1990s, almost everybody was a registered psychologist. Now the picture has changed. The new generation of employees have psychology as their main subject and they do take their doctor-

ates in psychology. But they are typically not registered psychologist and they do not identify with the label "military psychologist". Currently there are only four of us left, out of about 15 employees, at the Leadership Center who are registered psychologists.

Three broad areas of psychological teaching and research can be identified as results of these changes. The first is research on military recruitment and selection. A practical example is the development of an adaptive intelligence test (Carlstedt, 2001) which is used by the SDR (see above). Since the introduction of an all-voluntary force in 2010, the focus has changed to research on how the military can attract, and even more important, retain young men and women.

A second area is leadership under stressful conditions. A new theoretical model labelled Developmental leadership (Larsson et al., 2003) was officially declared as *the* leadership model of the SAF in 2003 (and it still is). This model could be described as an integration between the models transformational leadership (Bass, 1998) and authentic leadership (Gardner, Avolio, & Walumbwa, 2005). A complementary model of indirect leadership at higher organizational levels has also been developed (Larsson & Eid, 2012). A number of studies have been conducted on military leadership in connection with multinational missions and on civilian crises management agencies. Recent study topics include destructive leadership, emotions in leadership and moral stress. Most of this research is also being transformed to theoretical and practical leadership courses.

The third major research area can be summed up by the label "risk and crisis". The majority of studies have been conducted in civilian crisis management contexts, but there is also a growing trend with military risk research. A typical research question concerns the balance between risk taking and safety. A number of antecedent conditions from the individual to the societal level have been explored (see, e.g., Enander, Lajksjö, & Tedfeldt, 2010). Also in this area, much of the research is being transformed to civilian and military educational settings.

Future Directions

The organizational division described above has led to psychologists working with different kinds of tasks in a variety of positions. A consequence of this, in turn, is that military psychology as a concept and source of common identification, no longer plays an important role. However, different aspects of *psychology* still play, and will in all likelihood continue to play, an important part of the Swedish military and civilian defence organization.

A relevant, but hard to predict, factor regarding the future of psychology in the Swedish defence is the political development in the Northern European Region. An illustration of this is that, after more than 20 years of downsizing, there is now a political consensus in Sweden that the defence sector, and the armed forces in particular, need more resources.

Selection, leadership, psychological fitness and stress management are all predictable evergreens. This applies to research-based methodological development as well as to hands-on work with selection, occupational health, academic teaching and research. In the footsteps of globalization and current security-oriented trends, we venture to guess that these stable foundations will be broadened to incorporate more aspects related to moral stress, cultural competence and terrorism.

Finally, we foresee more cross-disciplinary integration. Psychological aspects are increasingly being integrated with war science in the Swedish officer education from the lowest to the highest level. Civil-military dual use of psychological competence will probably also expand as

a consequence of the increased integration of these sectors in society at large. Thus, we have come a long way from seeming to be an isolated group, to becoming a well-established and respected part of the modern society.

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Military Psychology Practice in Italy: From Grass Roots to Recent Applications

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Isabella Lo Castro and Stefano Livi

In 1999, the Italian Armed Forces (IAF) recruited the first military psychologists (MPsys), although since the 1980s Italian military psychiatrists and civilian psychology had already dealt with some psychological issues (LEVADIFE, 1998). “Military Psychology (MP) is not limited to those wearing the uniform” (Krueger, 2010, p. 5), as it embraces decades of work by dozens of mental health professionals in the military and civil defense.

Nevertheless, the purpose of this chapter is to briefly describe the history and development of MP in Italy in the last decades, as well as the current practices of psychologists working in several settings around Italy and overseas. It mostly focuses on the Army, as the number of psychologists in this service – both military and civilian ones – represents approximately 70% of those present in all four services.

The uniformed psychologists themselves have been in the driving seat of a long process that served as the basis for the vast majority of MP studies in Italy. The chapter will also discuss the

role of MPsys with regards to multiple issues, namely protocols for recruitment; organizational socialization; communication, and leadership training for Commanders; unit training with a view to coping with operational stress management; support to military families; and prevention of combat stress-related disorders.

A Brief History

Since 1980, due to its involvement in UN and NATO missions, the Italian military began to deploy abroad in an international environment for the first time after World War II. Since then, the IAF have faced new challenges and coped with the new needs of their personnel. More recently, the complexity and uncertainty of the twenty-first century global environment have placed multiple demands on Italian military personnel and their families. The men and women serving in uniform are now being reassigned more frequently, and the majority of positions entail the risk of injury and/or death.

Furthermore, as far as the Italian Ministry of Defense is concerned, several strategic and organizational changes have been implemented over the last two decades of the twentieth century. The transition from conscription to a professional model and the enrollment of female personnel in the IAF increased the complexity of the picture. On the other hand, the new IAF model, the

I. Lo Castro (✉)
Department of Military Psychology, Italian Army
General Staff, Rome, Italy
e-mail: isabella.locastro@esercito.difesa.it

S. Livi
Department of Social and Developmental
Psychology, University of Rome “Sapienza”,
Rome, Italy
e-mail: stefano.livi@uniroma1.it

challenging deployments overseas, and the economic recession combine to make the military occupation an attractive alternative to young and well-educated Italians more than in the past. At present, approximately 103,000 Italian servicemen and women serve on active duty (M 93.5%, F 6.5%).

Psychology has been largely employed in aptitude testing for selection and individual evaluation since 1920 (Lombardo & Foschi, 1997), but was developed in particular after World War II, also on the basis of the expertise developed in other countries (Manfredi & Salvatico, 1995). Hence, understanding the human dimension and improving human health and performance have become more crucial than ever in the IAF. This was the main reason why MPsys have been recruited in Italy since 1999. Their number increased steadily over the years and totals 74 personnel to date.

Italian Army Psychologists: A Brief Profile

As a prerequisite to receive their commission as MPsys in Italy, the candidates must obtain a five-year University Degree in Psychology and successfully attend a 12-month mandatory traineeship to be qualified for practice. Later, they can apply to receive a Direct Commission as Second Lieutenants in the Army Medical Corps. If accepted, they attend a six-month Basic Officers Training: at the beginning, they spend three months at the Military Academy to learn the tenets of military life and assimilate military values and culture. From a professional point of view, an empathic understanding of what soldiers do and what drives them to do what they do is perhaps the main aspect and the whole point of the period spent at the Academy. The second part of training is more MP-focused and entails several visits and meetings with Senior MPsys who work in many areas MP relates to. At the end of the six-month training, the new Officers receive their first assignment, generally at a tactical level, i.e., a School, a Recruitment Center, or a Brigade HQ.

MPsys belong to the Army Medical Corps, but in order to differentiate their role from that of other medical professionals, the Italian Army General Staff (AGS) has created different beret and collar insignia in 2010 (Fig. 34.1).

Since 1999, the number of uniformed psychologists serving in the Army has grown to 74. What is more, just recently a call for selection of new MPsys positions has been published on the Italian Army website.

Over the years, MPsys employment policy has been modified several times. Eventually in 2009, an Italian AGS Directive on MPsys was issued to detail the aspects related to their education, training, and employment. After the initial 4–6-year assignments in tactical units, MPsys are generally reassigned to a more operational level; it is predictable that approximately within a decade they will serve in a higher Command or HQ, either single service or joint.

This means they will be participating in working groups focused on several important issues that may be useful to define the priorities of Army Psychology; likewise, they will share information and sometimes influence important decisions that affect military personnel and the Army as a whole. Nevertheless, the MPsys who were first recruited represent an exception in this respect, since a vast majority were employed at the Italian AGS to create and foster the culture of MP. Consequently, many of them have spent much of their career serving in a Staff Officer role.

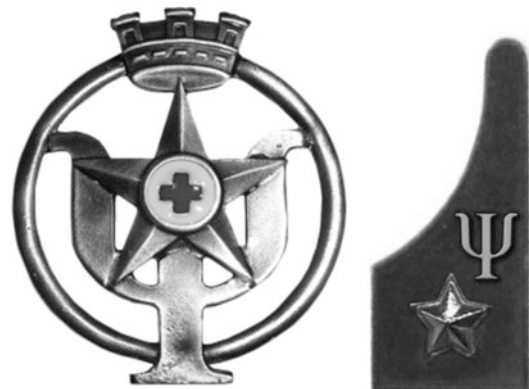


Fig. 34.1 Italian Army psychologists' beret and collar insignia

At present, Army intermediate education programs include no courses for MPsys; vocational update and refresher courses focus mainly on specialized knowledge and skills.

In general terms, almost all areas of MP have been developed in the Italian Army. The present situation is the result of a long, not always linear, and still ongoing process mostly driven by the uniformed psychologists themselves. Since the very beginning, the majority of MPs have been employed in Selection and Recruitment Centers, i.e., where military life begins and where psychological competence and skills were first used in our professional history. Until now, MPsys have been gradually assigned to units and HQs at the tactical and operational levels and dealt with different matters such as recruitment, basic and advanced training and education, human resources, deployment-related stress management, and support to soldiers and families.

The areas of application of MP are closely interconnected and every MPsys is expected to keep that in mind at all times. Such awareness should be the driver for every psychological intervention carried out in an organization. Based on their experience in the Italian Army, Lo Castro and Fanelli (2016) have been consistently offering the following definition of MP: *“A discipline aimed at understanding, developing, and facilitating military-specific socio-psychological and organizational processes. The final goal of MP is to enhance the efficacy and effectiveness of units by optimizing/streamlining the relationship between the (military) organization and individuals. Our conceptual framework is systemic and dynamic in nature and assumes that the good functioning of the organization depends on the individuals through permanent interchange.”* (translated by the authors). The Italian Army sees all MP-related activities from a multidimensional and integrated perspective. In other words, the subjective, relational and organizational dimensions of MP are all taken into consideration at once.

From the point of view of MPsys, military working processes are organized in different, subsequent phases that include – inter alia – selection for recruitment, management of human resources, education and training, and psycho-

logical support. Besides their uniqueness, these phases are so strictly related to the same model of organizational culture that they find their justification while also reinforcing it. As a consequence, the psychological aspects are part of the life cycle of IAF military units and cannot be conceptually separated from it if we consider the need to fulfill their goals. The gradual integration of psychological aspects in terms of ‘psychological readiness’ in each branch of military life is one of the main contributions offered to the development of a psychological military culture. In short terms, we support the idea that every area to which MP is applied is connected to the others. The artificial separation we propose in this contribution is only aimed at making the conceptualization easier to present.

Recruitment and Selection

Selection applied to recruitment is one of the pillars of MP. Not only was it the first area the Italian uniformed psychologists have dealt with but it is also the field in which half of them currently work. At present, about 50% of all Army MPsys are assigned to Recruitment Centers.

A huge number of MPsys was assigned to the National Recruitment and Selection Centre in Foligno, where the majority of public competitions for Army enlistment take place. Since 2007, more MPsys have been assigned to other Recruitment Centers in northern, central, and southern Italy that are dedicated to recruiting enlisted personnel for a one-year term of service. Over the last decade, the total number of psychologists involved in such a key process has grown steadily and reached 35 personnel, including the two Officers serving at the Italian AGS. In the selection process, the military-to-civilian-psychologist ratio is very high and this reflects the crucial importance the Army attaches to selection, for everyone is aware that the efficiency of the organization depends on the reliability of the process itself.

In order to fully understand IAF selection procedures, it is worth noting that the Directorate General for Military Personnel is ultimately

responsible for all the selection procedures that are part of the IAF enrollment process, even if selection takes place at service level. The Italian Army recruits undertake public and internal competitions, with the latter being used for some categories. Consistent with special laws and Ministerial Decrees, a quota of the available places is reserved for those who are already serving in the military in a different category¹ than the competition refers to. At the end of every competition process, suggestions and proposals are made to the Personnel Division (1st Division) of the AGS based on experience and feedback collected during the meetings organized to address pending issues. Such proposals aim at improving the process related to the next competitions to follow.

As far as the Army is concerned, the 1st Division of the AGS drafts detailed guidelines for every competition according to the category to which the competition refers. By defining procedures, tests, and professional resources, the guidelines translate into physical and psychological selection parameters, including aptitude, skills, and education. As to MPsys, personality and aptitude evaluation is the last step of the selection process. They verify if an applicant is fit for duty from a personal and psychological point of view. In order to reach this goal, psychological, physiological, and aptitude tests, or HR tests for short, are based on a well-structured, highly transparent, and reliable process of evaluation that consists in two steps:

- Medical condition, which is assessed via lab analyses and general and specialized medical examinations;
- Personality and attitude evaluation, which is achieved through standardized psychometric tests and individual interviews.

In order to be successfully selected, candidates must pass both steps.

¹Military personnel are organized into four categories, namely Officers, Non-Commissioned Officers (NCOs), and two more categories for enlisted. NCOs are divided into Senior NCOs and Junior NCOs, or Sergeants. Enlisted personnel are often referred to as 'Volunteers' (noun, with capital 'V').

Human resources are a key factor for every organization striving to achieve success. The proper selection of future staff and employees and the selection process itself are indeed crucial.

Therefore, personality and aptitude evaluations as a whole represent an attempt to match the skills a position requires with the skills every individual has. This is why the Italian Army selection process aims at profiling contestants psychologically, and considers their interests, aptitude, personal expectations, and professional motivation, to which the ability to adapt to a military environment is added.

In their work, MPsys follow the guidelines issued by the AGS and rely on their psychology studies and professional experience to reach the goals the Italian Army has set for the different categories of personnel. The MPsys and the Selection Commission fill one final report known as Aptitude Profile Summary for every accepted candidate. Four domains are evaluated, namely 'Adaptability to Military Environments'; 'Emotional Area'; 'Relational Area'; and 'Work Area', based on several psychometrics and a unique integrated interview. Metrics may vary according to the category being evaluated. The following theoretical models are used in the evaluation:

- The Five-factor or "Big Five" personality test (Caprara, Barbaranelli, & Livi, 1994; Perugini, Gallucci, & Livi, 2000), which was adopted in the early 1990s is widely recognized and accepted in the field of personality assessment (Digman, 1990);
- Emotional Intelligence Model (Bar-On, 1999; Goleman, 1995) as the ability to recognize, understand, and use emotional information regarding oneself and others and therefore deliver effective performance (see also Bowles et al., Chaps. 14, 19, this volume).

On the whole, the assessment is about the abilities, not only cognitive, but also skills and learned capabilities that influence individuals in facing and coping effectively with the environmental requirements and stressors. Self-awareness is also something that future soldiers and commanders must possess. Soldiers should

know what emotions they may face and be able to leverage them as they make decisions. Proper decision-making is, in fact, what is expected from every person serving in the military.

The Contribution of MP to Training and Education

In 2001, the first MPsys were assigned to the Military Academy for Officers (OFs) in Modena and the Non-Commissioned Officers Academy (NCO) in Viterbo to provide professional support to the courses where future commanders develop their leadership skills and prepare to lead their subordinates. In the following years, more MPsys were assigned to the two Academies and to the Training Units Command, to which the Recruits Training Regiments report. The number of uniformed psychologists directly involved in military training and education programs has increased steadily ever since and today seven of them serve in this capacity on a permanent basis.

MPsys accomplish several tasks in Army Schools today and the activities they develop may vary also depending on the categories of personnel they deal with. Among these, activities are

- Promoting the social inclusion of cadets/recruits and supporting the development of their sense of belonging to the Army (OFs, NCOs, and enlisted personnel)
- Supporting the new recruits during the course, especially during the tougher initial phases, and reinforcing the functional coping skills of OFs, NCOs, and enlisted personnel
- Enhancing cohesion among them as a group and fostering the individual motivation of OFs and NCOs
- OFs and NCOs develop Command-related skills through education and training, e.g., leadership, communication and operational deployment-related stress management
- Prevention preventing the development of individual psychological diseases
- Consultation and advice providing consultation and advisory services to the OFs, NCOs,

and enlisted personnel in the chain of Command of Schools

Uniformed psychologists work with future leaders not only through academic lessons but also by leading experiential group activities developed as part of the daily routine at the Schools or during military exercises and training camps. Moreover, during the courses, individual interviews are conducted based on prearranged schedule or upon request by Commanders at all levels. These interviews are intended to fulfill ad hoc educational needs. Furthermore, in this respect, specialized contributions are provided to boost cohesion and team-working attitude among Commanders at all levels and to improve the teaching skills of military instructors and mentors. As a matter of fact, before and during annual courses, MPsys and all the Schools' Commanding Officers conduct joint activities based on the experiential learning process, and focused on teams working that span across several days.

Early years spent at Military Academies and Recruits Training Regiments, and especially the very first moments, are particularly significant to the young people who enlist since they represent a sort of 'imprinting' at the beginning of the military career. The way they socialize, learn to manage obstacles and frustration, and attach meaning to the organizational and the relational environments they live in are key to building and structuring their military experience as well as learning how to cope with possible, future tough situations (Farnese et al., 2016; Livi et al., 2017).

We conceptualize *military socialization* as a learning process with different content domains, such as task, role, politics, and relationships, that helps the newcomers make the environment more predictable and build an appropriate sense-making structure (Cooper & Anderson, 2006). Since 1999, when the IAF transitioned from conscription to a professional military force, monitoring socialization has become particularly important to enhance the identification of self and to develop a sense of belonging. Achieving high retention rates is also a fundamental goal, especially during the early interaction with the organization. To this end, a research program in collaboration with the University of

Rome “La Sapienza” has been established in 2009 to analyze all the aforementioned processes related to military personnel and adaptation skills. Military socialization is, *de facto*, a key aspect in adaptation. It is the process through which a new recruit adapts him/herself to the internal life of the military organization as a result of developing new skills, knowledge, and values (Cooper & Anderson, 2006; Livi et al., 2014). This is why the IAF have decided to investigate the processes of social inclusion thoroughly through monitoring initiatives. As a corollary, recruits training programs have been expanded to encompass the more general development of socialization. The research program has two main objectives, namely

1. Understanding the extent to which individuals accept organizational goals and values and successfully manage new tasks and social transition
2. Developing a measure of socialization in order to monitor the search for information and the development of adaptation skills across the military

With these objectives in mind, from 2009 through 2014, a questionnaire was submitted and focus groups organized that involved more than 560 recruits in five cohorts during their first year of service (at the third, fifth, and seventh month after enlistment). The questionnaire included several scales, notably the Military Socialization Questionnaire (Livi, Lupardini, Lo Castro, & Alfonsi, 2010) that measures organizational socialization and specifically addresses the military environment; some other scales about information seeking frequencies and the kinds of sources for information-seeking, as well as other measures of individual differences. Moreover, after collecting the first round of questionnaires, some focus groups have been organized with a view to in-depth analysis and the collection of qualitative data. Together with the results of the questionnaires, such data have been presented to and discussed between the Chain of Command of the Military Academy and the MPsys who deal

with the cadets directly. The recommendations at the end of the first five years of the research focused on the need to give more consideration to the need for inclusion of new recruits, especially during the early phases of the training program, and to define procedures for internal peer mentoring in a much clearer manner.

Employment-Focused Selection

Based on a deeper and much clearer knowledge of their professional role, the total number of MPsys increased while more areas of application for MP were being developed. MPsys today can easily be considered an answer to the requirements of an evolving organization, that is, increasingly aware of the unavoidable changes a postmodern military force calls for.

As far as the employment/placement is concerned, and more specifically the selection process for potentially high positions/role, since 2002 MPsys have been increasingly involved in the evaluation of military personnel who applied for command or training positions in military schools; Officers to be selected to attend the Joint Staff College or as specialists in psychological operations, human intelligence, and the special forces.

During the early years, MPsys participated in individual interviews conducted by an interdisciplinary committee to evaluate the psychological aspects and aptitude of candidates.

Later on, the global process of employment-focused selection was also based on what is known internationally as the ‘Assessment and Development Centres’ (Ballantyne & Povah, 2004), and especially the model developed by Cocco (2008) in Italy (see also Bertrand et al., Chap. 16, this volume). Both MPsys and J-1 Staff Officers in charge of employment in the Italian Army study the approach to human resources evaluation of the latter.

Putting the right person in the right position assumes the required personal and organizational abilities required to hold that position have been

identified and defined. During the assessment phase, the behavior of each and every candidate is observed as planned group activities are developed to simulate real-work situations, including organizational problems that must be solved. During the group work, the candidates' behavior depends on how strong the individual abilities we look at are. The level of observed abilities is then compared to benchmark levels to determine individual success as a result of individual performance. By assessing the frequency and intensity of such abilities, qualified observers will be able to draw a professional profile and the related skills and abilities associated to the position to which the selection is referred. The profile also results from the answers to questionnaires and psychometric tests and to a semi-standardized individual interview. In other words, acceptance or rejection does not depend entirely on either of the examinations/observations alone but rather on several assessments designed to give the Selection Commission an understanding of the potential of every single applicant.

The characteristics and organizational skills that the assessment focuses on may vary depending on the position and associated responsibilities. The very huge basket of possible skills and abilities is organized into clusters, i.e., inter alia, thinking, emotional, relational, management, and only those that are required for the position being considered will be selected. In the relational area, for instance, communication skills, ability to work in groups, and ability to adapt/interact apply to every soldier. On the other hand, more composite skills and multifaceted abilities, including from the same cluster, such as leadership, negotiation, and public speaking will be assessed for more complex tasks.

Within the above process as described, what is actually more important and valuable is the education and training activities that generally follow employment-focused selection: educational development and training processes can be tailored to specific needs if individual profiles have been carefully defined.

Operational Cycle of Employment: Early Psychological Implications

Since 2003, the Italian Army has developed experimental deployment-related activities. Before this date, an AGS Work Group had already conducted regular studies on the issue for approximately five years. After Italy suffered a terrific terrorist attack in Iraq in November 2003, new attention was devoted to the potential psychological consequences of traumatic events. In the very beginning, however, such attention has mostly focused on wounded soldiers.

In 2005, the Land Forces Headquarters invoked psychological support for units under his command and their Commanding Officers with a view to proper stress management. The request was motivated by several factors: First, the increasingly demanding and risky conditions in some theaters of operations the IAF deployed to, e.g., Iraq and Afghanistan; second, the rising number of attacks by and skirmishes with insurgents; third, the frequent use of improvised explosive devices (IED) against our troops and the uncertainty generated in soldiers as a result.

After an experimental phase in 2010, the Italian AGS approved what is known as the "Annex X" to the Italian Army Training Directive. This annex focuses on stress management entirely and defines the Italian policy for operational stress, mental/behavioral health problems, performance decrements in soldiers and the related training programs (Stato Maggiore dell'Esercito Italiano, 2010). The annex is consistent with NATO publication AC/323(HFM-081) TP/188 "*Stress and Psychological Support in Modern Military Operations*" (Hughes, Adler, Tichy, & Cuvelier, 2006). The annex – which is the result of the work of a multidisciplinary working group – has not only the Commanding Officers at all levels but soldiers at large as the target audience. Two of the main messages contained in the annex are

1. Stress management should be considered part of unit training programs; stress itself is not pathological in nature

2. Good knowledge of the issue and sound self-awareness, which adds to the appropriate actions by the Chain of Command and to unit cohesion, are the best protective factors against deployment-related stress

Annex X was divided into two parts:

1. The first part deals with stress and stress prevention extensively from a more theoretical and general perspective and addresses the concept of stress, the definition of stressors, mission-related stress, war zone-related stress, reactions to stress and indicators for problems, effective strategies and resilience, and so on
2. The second part lists intervention methodology and procedures that MPsys will use during the pre-deployment training phase, which every unit must undergo with a view to obtain its operational readiness certification

This annex has been approved and issued by the Assistant Chief of Staff of the Italian Army and included in the Training Doctrine. It provides important doctrinal guidance representing the beginning of the second decade of Italian MP.

The Emotional Cycle of Employment: Practical Implications

The psychological readiness of operational units is the result of recursive and constant training efforts. Thanks to such increased awareness, MPsys were able to successfully plan and execute all the activities described above in a more orderly manner than before. As a matter of fact, it took some years for the psychologists in uniform assigned to the AGS in different Departments to finalize the diagram presented in Fig. 34.2.

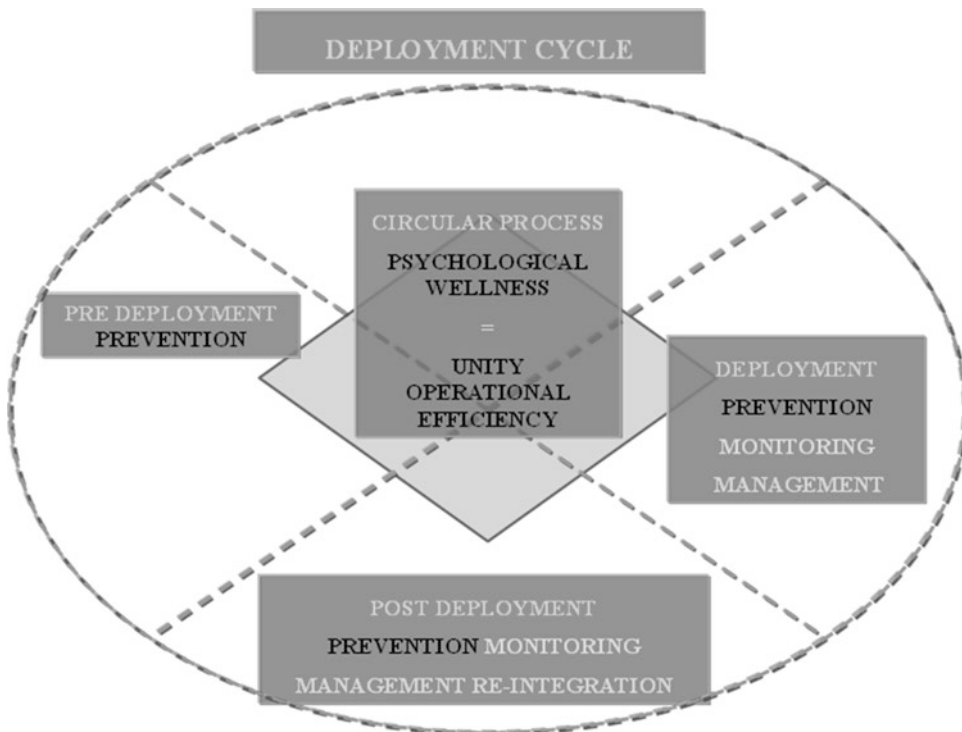


Fig. 34.2 Emotional cycle of deployment: phases and goals

As far as the psychological activities related to the deployment cycle are concerned, the conceptual framework of reference considers psychological wellness of soldiers as a factor that is both affecting as well as influenced by unit operational effectiveness. The latter is the first target every mission entrusted to the Army must accomplish. These two aspects mutually influence each other in either a vicious or virtuous cycle. Similarly, the three phases of the Emotional Deployment Cycle (see NATO, 2008) are strictly related. The military units we will refer to in the following paragraphs are listed in a purely conventional order.

At present, Mpsys carry out several activities during the phases mentioned above according to the guidelines issued by the AGS. Such guidelines are based on criteria such as unit reaction time, seniority, and the usual sectors where psychologists are employed, etc.

Pre-deployment Activities

Pre-deployment activities aim at preventing possible deployment-related psychological diseases and consist of discussion groups²; the groups, which rely on an interactional and experience-based training process, are composed of soldiers who are used to working together. The starting point for the discussion is the “Training Agreement” among all participants. Mutual knowledge and trust is expected and represents an essential prerequisite for the intervention to be successful. Should the interventions focus on a chain of command, team work, team building, and leadership issues are addressed and discussed.

Some time is specifically devoted to separation from family and rituals, such as “parting with the loved ones.” Besides being experimental in nature, some activities related to military families are recommended before deployment. Families and relatives are welcomed at the barracks where the Commanding Officer presents

the operational scenario to them and introduces the concepts of Family Support Group. The MPsy who assists the CO informs the families about the reactions they could experience during separation and identifies the actions required to enhance family support. Given the geographical shape of Italy and despite the fact that our barracks are spread all over the territory, military families, and military members frequently live apart, which represents a real obstacle to the delivery of this form of support.

Deployments

In 2003, following the directives of the Joint Operational HQ – i.e., the Italian Headquarters in charge of Operations – the first Army MPsy deployed with the Italian troops within the Civil Military Cooperation Center to support the local population in An Nasiriyah, Iraq.³ Over time, more functions and activities to the benefit of Italian soldiers were progressively added to the Mpsy role. During this first tour of duty, as a result of the direct observation of the emotional and organizational needs, the procedures were updated and later applied to the psychological interventions carried out on the medical responders who operated in the aftermath of the November 12 attack.

From 2004 through 2009, the MPsys deployed on several missions abroad, including in Iraq, Kosovo, Bosnia-Herzegovina, and Afghanistan. Eventually, in 2010, their role, tasks, and functions were more clearly defined. At the same time, a three-year deployment plan for MPsys was designed by the Personnel Department of the AGS for the main theatres of operations where Italian troops were deployed, namely Afghanistan and Lebanon. From an organizational point of view, in the majority of cases, MPsys are found in Brigade HQs’ G4 Cell and technically reporting to a Medical Doctor. The key tasks of uniformed psychologists on operations (see Fig. 34.2) involve preventing possible deployment-related

²The groups are generally at platoon level for a total of 20 people maximum, including the Platoon Leader. In case of different units, e.g., a Brigade HQ, the discussion group will include Staff personnel and the related superiors.

³In the same period, a Navy MPsy was afloat on the “San Giusto” ship.

psychological problems, monitoring the psychological condition of troops, and managing crises as necessary. More specifically, the MPsy tasks include

1. Analyzing the psychological climate and morale of the Task Force;
2. Providing advice to the chain of command;
3. Delivering psychological support in case of critical/potentially traumatic events or on demand by individuals;
4. Preparing a psychological assessment on request by the Medical Doctor.

Standardized questionnaires, individual interviews with Commanders at all levels and soldiers, platoon-wide group discussion, direct observation during military activities, brief individual support (5 on-demand sessions maximum) are the main instruments used to achieve the aims mentioned above. More importantly, what gives meaning to the actions of MPsys is their presence among soldiers and COs and the subsequent knowledge and professional trust they earn.

Nevertheless, MPsys must be very careful to prevent soldiers or any other stakeholders from misinterpreting their attitudes and actions. It is not about acting or behaving as a friend rather than a superior towards military personnel; more so, it is about establishing an ethically inspired relationship. In the authors' opinion, this condition represents a solid foundation for every professional, effective, and efficient activity and intervention by MPsys.

Post-deployment Activities

The first official request for a post-deployment assessment of personnel dates back to 2010, when a Brigade Commander wanted the deployed Task Force to be evaluated after its return from Afghanistan. The assessment was carried out during the following months, with psychological interventions made in every unit of the Brigade. The AGS has received requests by other units to provide similar services over the last four years, which have been delivered on an on-demand

basis. Later, considerations for and studies about regular and mandatory post-deployment support were carried out, which have led to an experimental protocol approved by the Army Chief of Staff just recently.

Inspired by NATO recommendations and aligned with Italian experience in the field, the main objectives of the protocol have been defined as follows:

1. *Prevention, monitoring, and management* of possible deployment-related difficulties;
2. *Reintegration of the experience* and readjustment to achieve operational effectiveness.

It should be noted, however, that individual wellness and organizational growth are the ultimate purposes of the whole deployment-related psychological training process and are precisely what we focus on during the pre-deployment and deployment phases. The proposal by MPsys rests on the same pillars as pre-deployment activities, that is

- (a) Focusing on field units, generally at platoon level, but also on the entire chain of command. These are generally considered psychologically safe environments where personal and group experiences can be discussed. Personnel of the same unit has to abide by the rules that apply to this kind of intervention;
- (b) Accommodating soldiers' request for support that are forwarded during the individual interview;
- (c) Involving Commanding Officers in the organizational learning process as well as providing them with the results of the psychological climate and morale analysis and the organizational issues that have emerged.

In the post-deployment activities, a process we labeled as Event-Focused Group Discussion takes place. It is similar to the interventions in emergency situations and aims at merging personal and group experience and to (re-)connecting the emotions people have experienced with their sensorial perceptions. Our theoretical and clinical

choice was to give everybody the chance of telling his/her own history – or just listening to others’ – and of creating and re-authoring a narrative framework to give a new meaning to experiences. By re-storying conversation, our personnel could therefore give new meaning to events and the related experiences.

Psychological Support to Families of Wounded and Deceased Soldiers

As far as the history of the Italian MP is concerned, uniformed psychologists have been employed in support of military families as close as possible to Critical Events (CE) or Potentially Traumatic Events (PTE).⁴ Military families are family systems in which a military member has suffered an injury or has been wounded or killed on operations or during an exercise.

With the terrorist attack perpetrated on November 12, 2003, all of a sudden after decades, the Italian Ministry of Defence and the national community as a whole were forced to face the full effects of such a deep tragedy. On that date, a suicide attack on the Italian military police headquarters in Nasiriyah (Iraq, south of Baghdad) was launched. Due to the huge explosion, at least 28 people were killed, including 13 Italian Carabinieri, four Italian Army soldiers, two Italian and nine Iraqi civilians. More than 100 people were injured, including 20 Italian soldiers. There had not been an attack so severe against Italian soldiers since Operation Restore Hope in Somalia. The terrorists’ actions of November 12 shocked all of Italy. The soldiers killed were provided with a state funeral, and Italy as a whole mourned the tragic event for 3 days. With its 19 fallen and 20 wounded personnel, therefore, the attack represented the first huge death toll Italy had to pay after the end of World War II.

In the aftermath of that shocking event, the Italian AGS updated the procedures concerning the moral and psychological support offered to seriously wounded soldiers and to the families of the seriously wounded and deceased personnel following the CE. It is worth noting that, in addition to special allowance, the Italian military offers two kinds of support, namely moral and psychological; both are available immediately after the CE and continue in the short and long term.

Moral support aims to sustain the families in an effective manner and to foster the sense of membership. Soldiers at large can therefore observe the kind of support the Army provides to their colleagues’ families through its institutional members, i.e., Commanding Officers, Chaplains, Social and Welfare Clerks,⁵ etc., or through other people who are emotionally tied to the family. Moral support does not require any training as it focuses on a physical presence among the family members in the moments that follow the CE, as well as in the short and long term, in addition to taking care of all formal, legal, and bureaucratic procedures.

Since 2003, the number of MPsys in the General Affairs Division of the AGS – which is responsible for the moral and psychological support to the families of soldiers involved in a CE – has reflected the number of tasks assigned to uniformed psychologists in those circumstances and the level of commitment of IAF in the theatres of operation. In the first phases of support, only one MPsy was assigned to the GA Division, as opposed to nine (out of 35 in total) during the 2005–2007 timeframe. As of today, two MPsys are in service at the GA Division, out of 74. Due to the changes to employment criteria implemented over the last decade and the fact that MPsys are assigned to units, especially tactical units, the GA Division Team is now in charge of coordinating support activities Army-wide.

⁴Being involved as witnesses or providing First Aid in critical events is more and more considered potentially traumatic as well and, therefore, psychological intervention is generally asked for or provided.

⁵The so-called “Social and Welfare Clerk” is a new role we defined. He or she works beside the psychologist, and can be selected from motivated personnel of every rank and specifically trained for this role.

Table 34.1 Main characteristics of a normal family

Quality of organization in terms of roles and functions, definition of subsystems, and shared rules that affect boundaries

Flexibility and inflexibility, i.e., the ability to adjust the family life cycle to reflect paranormative events

Communication in and out the family

Role and function of the deceased

After Walsh (2011)

In order to better understand the related objectives and the procedures (Lo Castro, 2014a, 2014b), the context-related aspects of these interventions should be considered. They are very peculiar since everything happens publicly before the local and military communities, the civil population and authorities, and under the spotlight of mass media. All of the above are the potential stressors for bereaving families one must take into account in the planning of support.

Moreover, since a CE may occur during the ordinary professional life of a soldier, it has the potential to affect his/her world, notably his/her life, family, and unit. All activities are therefore aimed at supporting both soldiers and their families. They include a physical presence at the soldier's home after the critical event has been communicated, or during the hospitalization in case of seriously wounded soldiers, or during funerals.

In order to better understand the impact and the development of the critical event in that specific family system, MPsys are required to take into consideration the main characteristics of a normal family (Pley, Lester, & Mogil, 2013; Walsh, 2011, see Table 34.1).

As per the support offered to military families in case of a CE, the very first contact professional supporters have with the family occurs at the initial stages of a crisis; they develop their knowledge of the family's structural characteristics as events unfold. Since families are very different in terms of internal functioning, communication, expressing emotions, and sociocultural aspects, the approach psychologists and all other actors operating at this time use shall be as thoughtful as possible; they should be able to observe the relational and communication modes

of the family as quickly and closely as possible in order to establish contact in a respectful and effective manner. On the side of psychological support, the following main goals have been identified:

- Prevent individual psychological and psychiatric disorders resulting from the elaboration of bereavement;
- Prevent the outbreak of trauma-related relational dynamics within the family that could be not functional to the developmental phases the family passes through;
- Carry out secondary prevention.

In order to achieve these goals, family members are cared for in the aftermath of the CE, as well as in the short and long term (i.e., approximately 2–3 years). All activities focus on:

- Facilitating communication within the family about the event and the related issues;
- Monitoring the individual elaboration of grief over time;
- Monitoring family emotional and relational dynamics as they appear, according to the related developmental phase;
- Carrying out dedicated therapeutic or support actions.

Where Are We Going? New Perspectives and Conclusions

Military operations and the related IAF tasks and missions have changed in the postmodern era. The demands on military personnel have increased considerably. The IAF today are requested to deploy on a broader range of international operations that are multifaceted in nature and changing quickly and frequently. Within such environments, the challenges to leaders and soldiers are both hard and demanding. Enhancing the value of what is known as the 'human dimension' is more crucial than ever, today. What is more, according to the experience of Italy and other NATO countries, MP is considerably important in order to achieve this goal.

Although psychology as a discipline has been applied to different activities since World War II, especially clinical activities and personnel selection, only in the late nineties MPsys have started to acquire greater and greater importance thanks to the official recognition of their role. During the last 16 years, since the first uniformed psychologists were recruited, the IAF has taken significant steps. MPsys have been assigned to deal with several new areas of application, which has required assigning many of them to a larger number of HQs and units.

The psychological factors impact human cognitive and physical performance, especially in demanding operational environments. As mentioned in the chapter, during the last decade, the Italian uniformed psychologists have contributed to improving the working conditions of soldiers in the theaters of operations but also in the management of emergency situations at home. This is why MPsys have been progressively assigned to all organizational sectors of the military, including from selection for recruitment, to the management of human resources, to education and training, to stress management and related support, and so on.

Furthermore, as per the several activities developed over recent years, such as military family support during the deployment of a military member, new procedures shall be defined in order to fulfill the goal of creating what is known as 'family readiness', in fact an essential aspect of soldiers' and units' operational readiness. Similarly, new directives for the evaluation of unit morale and the guidelines for Commanding Officers will soon be published.

The increasing involvement of Commanding Officers at all levels in psychology-related activities is the best testimony of their interest in MP and a recognition of the role MPsys can have in designing a more effective Army. This is why the development of specific stress management programs, for example in Counter-IED (C-IED) training, has been identified as a priority and some other educational needs are beginning to surface.

Just to mention a recent example of the contribution of MPsys, the Italian Military Paralympic

Sports Group has recently requested MPsys support to enhance group cohesion among the athletes and to develop their awareness about the goals of participating in Paralympic Military competitions.

How effective leadership can be taught and developed is a topic of enormous interest today. MPsys are engaged in offering new and rich theoretical perspectives in this respect. In particular, as far as the conceptual framework applied to selection, education, and support by Italian Army Psychologists during the Deployment Cycle is concerned, the validity of hardiness is stressed (Bartone, 2006; Maddi, 2004; Maddi & Kobasa, 1984). This is, in fact, a sound conceptual foundation to understand the importance of command action and to strengthen the influence of leaders with a view to increasing the stress resilience of the unit under their command, and to achieving both individual wellness and organizational effectiveness.

Finally, the Italian MP – capturing the zeitgeist of international psychology trends – is now focusing on multidisciplinary research programs in order to connect the dots among the different disciplines of psychology, such as neuroscience, clinical and social psychology, and advanced statistical analysis skills. These are in much demand and consistent with the new operational needs of the military. With this in mind, specific lab research programs could reasonably be implemented in the near future to develop military-focused tools that capitalize on the stronger psychological awareness in military organizations and on the need for a widely recognized theoretical and practical experiential exchange (Livi et al., 2014). From our point of view, Italian MP has taken significant steps forward over the recent years. While we are aware that the road ahead is still long, we remain firmly committed to walking along it with the same passion and enthusiasm of the last two decades. We are convinced that cooperation among Italian university researchers, Italian military psychologists, and the civil and military psychologists of other countries is key to achieving our shared goals.

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“What If?” the Swiss Armed Forces’ Approach to Military Psychology

35

Hubert Annen, Can Nakkas,
and Thomas M. Gehring

As in any military organization, the Swiss Armed Forces spends a majority of its time training for operational readiness. Unsurprisingly, Swiss military psychology pursues the same objective in its efforts. However, aside from some peacekeeping and disaster relief operations, the experience in combat or combat-related deployments is sparse. It thus does not make much sense to focus mainly on operational stress when teaching and conducting research in military psychology. Instead, it has to be considered how military psychology can provide tools and methods to prevent or decrease stress in the early phases in order to make Army members operationally ready and resilient. As a consequence, selection, assessment, motivation, basic stress, and leadership are the pivotal fields of practice and research of Swiss military psychology.

Despite its inception in the 1920s, military psychology has only been instituted in Switzerland officially since the mid-1990s.

H. Annen (✉)
Swiss Military Academy at ETH Zurich,
Zurich, Switzerland
e-mail: hubert.annen@milak.ethz.ch

C. Nakkas
Psychological-Pedagogical Services
of the Swiss Armed Forces, Thun, Switzerland
e-mail: can.nakkas@vtg.admin.ch

T.M. Gehring
Swiss Armed Forces Joint Staff, Recruitment,
Windisch, Switzerland
e-mail: thomas.gehring@vtg.admin.ch

Psychologists and educators in the Psychological-Pedagogical Service of the Armed Forces give counseling and guidance to soldiers and cadre alike, while in the recruitment centers psychologically trained personnel maintain a high quality in psychological testing. Military psychological research is conducted at the Swiss Military Academy at ETH Zurich (MILAK).¹ This chapter offers an up-to-date overview of the activities of these institutions, and shares their insights based on practical experiences and scientific research.

Historical Overview

Following the success of the United States’ Army Alpha and Army Beta tests during World War I, the Swiss Armed Forces developed “psychotechnical” exams in the 1920s, but never introduced them officially. In 1924, the Aeromedical Service was founded, which not only developed, but also applied psychiatric and psychological methods for the selection of air force pilots.

The success of these early selection methods as well as lessons learned from other armies led to the creation of the Defense Psychological Service (Wehrpsychologischer Dienst, WPD) in 1941 by

¹MILAK is the acronym for the “Military Academy at the Swiss Federal Institute of Technology in Zurich (in German, Eidgenössische Technische Hochschule or ETH Zürich)”.

order of General Henri Guisan, Commander-in-Chief of the Swiss Armed Forces. The aim was to facilitate the tasks of the commanding officers and enhance the effectiveness of their efforts by teaching them the laws of psychology, which dominate the relationship between men (Troller, 1968). The WPD did so by creating leaflets for commanders, holding lectures in cadre courses, and developing new aptitude tests and training methods. However, the WPD was perpetually understaffed and struggled to meet the many demands of the commanders. After squabbles about its competencies, it was dissolved in 1945. Four years later, the WPD was reestablished, this time with a more focused mandate of delivering psychiatric services, conducting research on the motivation of conscientious objectors, identifying personnel of lower intellectual ability, and holding lectures on military psychology at the Department of Military Sciences at ETH Zurich.

Within the context of a further reorganization in the early 1960s, the WPD's mandate was extended to include applied psychology, e.g., advising commanders and counseling the cadre. This new orientation was formally reflected in the publication of *Truppenpsychologie* (Troop Psychology; Guggenbühl, Tuggener, Brun, Knoepfel, & Stucki, 1978). During the next Army Reform, in 1995, the WPD was renamed Commission of Military and Disaster Psychiatry, which in fact expressed its assignment more properly.

With the exception of the Aeromedical Center (formerly the Aeromedical Service) – and in contrast to other armed forces – up until the 1990s military psychology in Switzerland was conducted mainly by militia officers. It is thus fitting that the next milestone in Swiss military psychology was a new militia organization. In 1995, the Swiss Federal Council enacted a regulation creating the Psychological-Pedagogical Service (*Psychologisch-Pädagogischer Dienst*, PPD) as a branch of the Swiss Armed Forces (Bundesbehörden der Schweizerischen Eidgenossenschaft, 1995). Its main focus was to support recruits with psychological problems. The federal regulation then formalized and broadened the duties of the PPD.

On academic as well as professional levels, the introduction of the Department of Military Psychology and Military Didactics in 1996 signified the formal incorporation of military psychology into the Swiss Military College (the former name of the Military Academy at ETH Zurich). The department was renamed Department of Military Psychology and Military Pedagogy in 1999 and has provided the basis for intense research and publication activity since then.

The second professional component was introduced during the last army reform in 2004, when the conscription procedure was extended to 2 days. In order to ensure the professional implementation and evaluation of the newly designed aptitude tests, several positions were created for psychologists at Switzerland's six recruitment centers.

Since these psychologists as well as the members of the PPD work almost exclusively on practical tasks, military psychological research and teaching is done mostly at the MILAK. In the following paragraphs, these three organizational units are described in more detail.

The Psychological-Pedagogical Service of the Swiss Armed Forces

As mentioned above, the duties of the PPD were defined in 1995 by federal regulation. Its main purpose is to offer counseling services, and its specific tasks can be defined as follows: facilitating the integration of recruits into their unit; supporting army doctors in the evaluation of fitness for duty of service personnel; advising the cadre on related leadership problems; running stress-prevention projects; and conducting practice-oriented research in psychological and pedagogical areas relevant to the military.

While a small core of around a dozen civilian and military employees ensures the operational and logistical readiness, most of PPD's personnel consist of militia officers. Admittance into the PPD hinges upon one's military experience and more importantly one's expertise and experience in a psychological or pedagogical profession. Accordingly, 19% of the 422 active personnel are

psychiatrists and psychologists by profession, 40% are teachers and educators, and the remainder consists of a cross-section of caring professions such as social workers and nurses.

The service itself is organized as follows: the PPD Chief and Deputy Chief, located at headquarters, ensure command and control of the entire unit; and the Chief of Staff and his staff provide specific support to the troops by means of specialized detachment, e.g., coaching of cadre or teaching reading skills to recruits with functional illiteracy. The remaining service personnel are allocated to one of five regions. At almost every training ground in these regions the officers of the PPD deliver support to recruits with psychological problems, ranging from individual counseling to stress-prevention sessions for entire sections. Additionally, in the past years, an overarching component aimed at providing support for victims of traumatic events was established within the PPD. It consists of approximately 100 PPD officers and military chaplains who – as a secondary function – have received special training in critical incident stress management and can be deployed at short notice.

The organization of the PPD illustrates the great advantage of Switzerland's militia system,

as the Swiss Armed Forces can exploit synergies by drawing on the civilian expertise of its service personnel while maintaining low training costs. Furthermore, the deeply entrenched civic virtues of these citizen-soldiers result in a high level of service motivation, as indicated by the fact that most officers of the PPD remain active personnel even after they have reached the end of their compulsory national service age.

The Role of Psychologists in the Recruitment Process

At the age of 18, all Swiss men are required to attend basic recruitment for the Swiss Armed Forces. The complete process includes a medical checkup, a psychological evaluation and physical fitness test, as well as a forensic examination. The main goal is to identify physical and mental disorders as well as to reduce the attrition rate in basic military training. The psychological part of the recruitment process attempts to diagnose psychiatric disorders and to detect risk factors for the development of adjustment problems and stress-related symptoms of conscripts during military training (see Fig. 35.1).

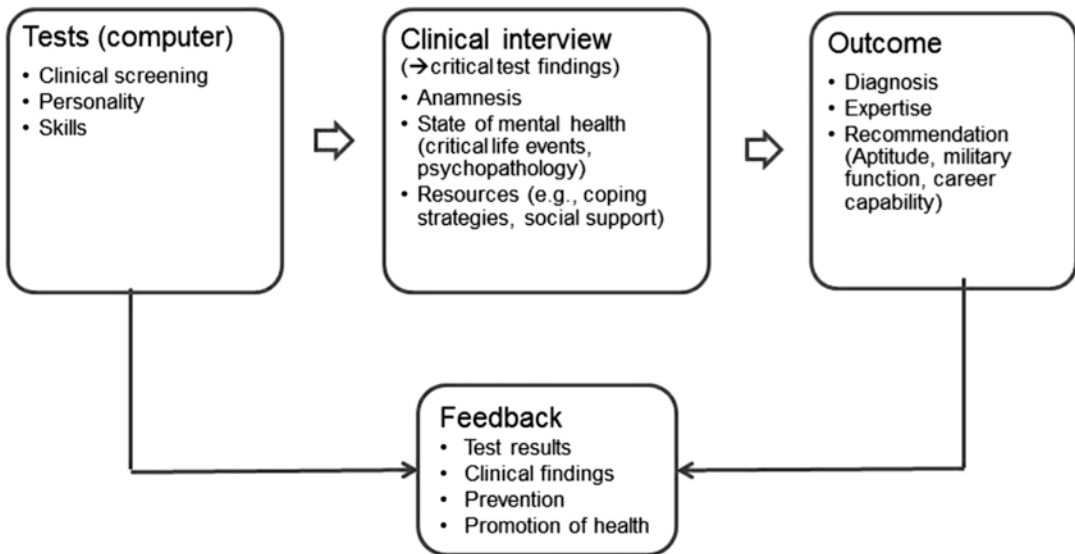


Fig. 35.1 Process of psychological evaluation of conscripts

Applied Test Methods and Processes

The psychological examination takes place in six national recruitment centers and lasts 2 days on average. It evaluates a recruit's cognitive skills, state of mental health, vulnerability, and resilience regarding the military service. At the beginning of the recruitment, the conscripts are requested to complete a questionnaire that refers to family, school and job history, specific mental and physical disorders, drug abuse, and a self-evaluation of military aptitude. This questionnaire reveals relevant anamnestic data and risk factors, which allow a preliminary evaluation of the conscripts. The subsequently administered computer-assisted testing (CAT) lasts 90 min. It consists of two cognitive tests (text comprehension; figural perception and verbal competence) and two clinical inventories (psychopathological symptoms and vulnerabilities as well as resources and resilience). With regard to the allocation to a military function and to the identification of leadership capabilities and motivation, conscripts complete an additional CAT battery. These questionnaires focus on personality (interests, motivation) and aspects of leadership. All tests were specifically developed for the Swiss Armed Forces.

Moreover, all conscripts undergo a security check by the forensic unit of the recruitment center including an evaluation of criminal records. This investigation aims at identifying persons with deviant behavior (e.g., drug abuse, aggressive behavior) and has an impact on the assessment of the military aptitude, the eligibility for being trained on a weapon, or the cadre recommendation.

In Switzerland, almost 40,000 conscripts are psychologically investigated every year. In general, those conscripts with normal CAT results are considered to be psychologically fit. Approximately one-third of the conscripts are required to undergo an interview, as a result of their tests. The purpose of this semi-structured clinical interview is to further examine cognitive skills, psychiatric and psychosocial problems, signs of insufficient or dysfunctional stress-related resources, and coping strategies. Based on the interview, the psychologist writes a short expertise and recommendation regarding the mili-

tary aptitude. Usually, half of the interviewed conscripts are evaluated as fit for military service. The unfit conscripts are classified in two different categories, namely, evidence for psychiatric disorder (e.g., depression) and vulnerabilities such as problems adjusting to the military system (e.g., unstable personality). The interview is followed by an interdisciplinary conference with the medical staff, and the final decision about aptitude (physical and psychological) is made by the head of the medical unit of the recruitment center.

Statistics and Measures of Quality Management

The crucial outcome of this process is to anticipate whether the selected recruits will be able to complete their military training. Therefore, the psychological section of the recruitment centers is responsible for the statistical data analysis and quality management. The data include anonymous records of different psychological variables such as screening reports, diagnosis, psychological recommendations, and decisions about military aptitude. These figures are published periodically and provide a basic component of quality control of the psychological section of the recruitment process. In addition to the evaluation of the reliability and the validity of the psychological tests, the quality of the clinical interview is continually improved by external supervision and training as well as inter-rater-reliability studies.

Application-Oriented Research at the Swiss Military Academy

The MILAK is the institution for the education, training, and development of career officers of the Swiss Armed Forces. The cooperation between military and university (ETH) offers the ideal opportunity to train and educate military specialists in an academic environment, and it also provides a framework for the Swiss Military Academy as an internationally recognized center of competence for military sciences. The Department for Military Psychology and Military Pedagogy is one

of six academic departments at MILAK. It is responsible for the Assessment Center for prospective career officers, for the lecture in military psychology on various levels of career officer's basic and further education, and for carrying out research projects with practical relevance.

Holistic Model of Military Psychological Research and Teaching

As is well known, the Swiss Armed Forces' experience in war theaters or war-like operations is sparse and as a consequence, a general and prevention-oriented approach is needed for military psychological activities. Against this backdrop, over the recent years, a holistic model (Annen, 2014) has been developed (see Fig. 35.2) based on the following hypotheses:

- Stress is a result of perceived excessive demands. With scientifically sound and professionally conducted *selection* procedures, one should be able to ensure that military personnel and specifically military cadres are not overstrained by the demands of their job.
- Motivated people are less stressed. Thus, with continuous research on *motivation*, the relevant motivators in everyday military life as well as in more demanding situations can be identified. This results in valuable suggestions to the personnel management and the training and educations of leaders.
- Bad leaders can be a huge stressor. Thus, various measures to foster the *self-reflection* of

military cadre on every hierarchical level have been initiated as this has a pivotal role in their development and advancement as credible and competent leaders.

Based on this model, and largely regardless of the current tasks and missions of the Swiss Armed Forces, it is possible to conduct purposeful research, to include meaningful content to the lecture of military psychology, and to give useful advice. In order to fill this model with content, selected research projects with practical relevance are described and discussed below.

Selection

As mentioned above, basic psychological testing is carried out at the psychological section of the recruitment centers. However, cadre selection is a core task of the Department of Military Psychology and Military Pedagogy as it is responsible for the preparation, execution, evaluation, and further development of the Assessment Center for Prospective Career Officers (*Assessment Center für angehende Berufsoffiziere, ACABO*).

The ACABO takes place three times per year. Around 30 career officer candidates participate in each administration, which lasts for 2 days. It consists of the following six exercises: (a) a short oral presentation in front of the group of candidates and assessors; (b) a leaderless group discussion characterized by twin objectives—"enforcement of one's own interests" versus "representing the interests of the group"; (c) a motivational talk, in which the candidate is required to convince or motivate a role-player to take on an unpleasant task; (d) a debate in which two groups argue for or against a given issue; (e) a set of short case scenarios, in which each participant explains how he would act in difficult situations taken from everyday military life; and (f) a lecture on an aspect of military education. In addition to those simulation exercises, three cognitive ability tests are administered. In each exercise, the candidates are assessed in three to four out of seven dimensions, which are based on a job profile for career officers and operationalized with corresponding behav-

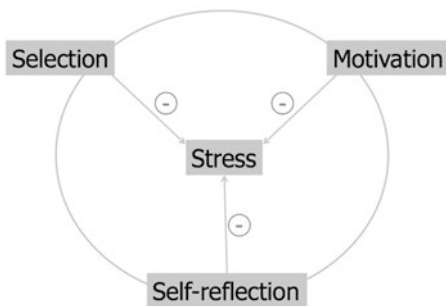


Fig. 35.2 Holistic model of military psychological research and teaching

ioral characteristics (see Annen, Eggimann, & Ebert, 2012, for more information concerning the design of the ACABO). These dimensions are personal attitude, motivation, organizing and planning, analysis, communication, cooperation and problem solving, and leadership.

A strong emphasis is placed on a systematic appraisal process as well as the competence of the assessors. The latter group consists of personnel managers from those branches of service that are presenting candidates, who, as a result of their own careers in the army, are familiar with the demands placed on career officers. Militia officers and civilians who are psychologists and familiar with personnel selection from their civilian occupation support the personnel managers. All assessors complete a training course before their first assignment and refresher training before each ACABO. In each exercise, two assessors observe one candidate. Subsequently, the two assessors independently evaluate the dimensions targeted in the respective exercise, then, under the guidance of a lead assessor, the different ratings are discussed and matched to one rating. A rotation scheme is applied to ensure that different assessors evaluate candidates in the different exercises. After the 2-day ACABO, an evaluation matrix provides a comprehensive overview of all ratings for each candidate. This matrix serves as the basis for the assessors' conference that concludes the process. In this conference, the entire group of assessors discusses primarily those candidates who exhibit below average performance in several aspects, in order to agree on whether they receive a rating of "passed" or "not passed." The selection decision is communicated to the candidate by phone, within 1 day after the conclusion of the ACABO. Within 2 weeks, a detailed report is disclosed to the candidate in a personal feedback discussion with the responsible personnel manager.

The ACABO conforms to current standards (International Task Force on Assessment Center Guidelines, 2015) and has considerable similarity with assessment centers in the private sector, as well as in other countries to select officers for the respective armies. Furthermore, according to

prior research, the ACABO has been shown to provide a good predictive validity (Gutknecht, Semmer, & Annen, 2005; Melchers & Annen, 2010), which allows for a fair and unbiased selection (Melchers & Annen, 2010), and distinguishes itself by a high social validity (Eggimann, Annen, & Stöckli, 2015).

The department's practical and theoretical knowledge in the Assessment Center method is well perceived within the Swiss Armed Forces and as a consequence it has been assigned with the development and implementation of three additional Assessment Centers. In addition, it was substantially involved in the Armed Forces Joint Staff projects on the improvement of the militia cadre selection and is currently running a comprehensive research project on the evaluation of the new instruments of this selection procedure (Goldammer & Annen, 2015).

Motivation

Because the Swiss Armed Forces consists primarily of militia personnel that provides their service in basic military training and refresher courses, the Department of Military Psychology and Military Pedagogy is interested mostly in service motivation, i.e., the willingness of a serviceman to personally make a contribution to national defense as a citizen in uniform (Annen, Steiger, & Zwygart, 2004). Organizational citizenship behavior (OCB) (Organ, 1988) offers itself as an operationalization of this heuristic construct, as it is often described in terms of extra-role behavior or "good soldier syndrome." A comprehensive longitudinal study provided evidence that fair and supportive behavior of superiors increases the likelihood of soldiers to exhibit OCB (Annen & Baer, 2009). Subsequent explorations in that area were dedicated to the question as to whether OCB expresses itself not only in a general attitude, but also in concrete additional performances such as the voluntary pursuit of a career as militia cadre.

In this context, it has to be considered that this decision results in a significant increase in the

number of days of required service. This prolonged service time and its associated interference with the soldier's civilian plans might be one of the main reasons why potential future militia cadres are hesitant to consider such a career. Thus, it was examined whether OCB might serve as a motivational indicator and also if it predicts the voluntary pursuit of a militia cadre career (Annen, Goldammer, & Szvirsev Tresch, 2015). And in fact, it turned out that OCB is positively associated with the willingness to pursue a militia cadre career voluntarily and accounts for incremental variance in this criterion beyond the effects of the control variables such as age and education. As a concrete consequence and immediate application of this study, the OCB scale was implemented in the recruitment centers' CAT battery and has therefore become a relevant part of the cadre recommendation. That is, on the soldiers' record, the officer responsible for cadre selection is able to identify those with a high degree of OCB. Provided that the respective soldiers also appear to be apt for a leadership position those high in OCB are more likely to be motivated for a cadre career than those low on the OCB scale.

Regarding motivation, militia members are not the only focus of the department's research efforts. Studies have examined the determining factors of job satisfaction and commitment among military professionals. For example, it has been shown that personality traits have an influence on how career officers and NCOs rate their subjective mental state during times of change, and that commitment has a stronger impact on turnover decisions than job satisfaction (Gutknecht, 2007). Another study explored the impact of appreciation at work among military professionals. The examination of how much influence-perceived appreciation at work has on stress and job satisfaction made clear that appreciation has a buffering effect on the relation between working hours and job satisfaction; when appreciation was low, longer working hours led to decreased job satisfaction, and when appreciation was high, job satisfaction increased even with longer working hours (Stocker, Jacobshagen, Semmer, & Annen, 2010).

The studies described above shed a light on the decisive role of a leader and which deep impact he has on the motivation of his subordinates and accordingly on their willingness to do more as required, and – specifically in a military organization – to risk their life. Therefore, the focus on leader selection is key, but this is only the first step. To ensure that leaders maintain a realistic self-image and are willing to grow in proficiency is just as important.

Self-reflection

Relevant topics of leadership studies are discussed in various courses at the Swiss Military Academy. Additionally, and in order to stimulate leaders to reflect on their behavior and its consequences regularly, a self-appraisal has been implemented in the normal assessment process for cadre in the Swiss Armed Forces (Annen, 2004). Every 4 weeks, as a normal part of military training, army members receive a structured feedback based on a standardized appraisal form. Cadres on all levels are obliged to rate themselves on the same form and bring this document to the appraisal interview. Although the rating of the supervisor should not be changed, the comparison of both views has the objective to encourage a dialogue on relevant leadership behaviors and the way they have been perceived by others in the past 4 weeks. That results in specific measures with regard to the further development as a leader. Thus, from the very beginning of being a military leader, cadres of the Swiss Armed Forces become accustomed to reflecting on their behavior and its outcomes and to discussing it with a more experienced superior.

With the aim of supporting the above-mentioned development process of military leaders as well as to offer them guidance in difficult situations, bespoke coaching programs have been introduced in the past years. For instance, "Coaching for Military Personnel" is a coaching program provided by a trained and experienced professional officer or NCO (Annen, 2011; see also Bowles et al., Chap. 19, this volume). This coach is not a line manager

but a person of trust that can be consulted for specific needs in challenging situations or who may act as adviser during a phase of either occupational or personal advancement. So, rather than just conveying general principles and messages in a detached manner, coaching offers the possibility of addressing leadership issues in a much more personal way.

Also within the context of self-reflection, the Department of Military Psychology and Military Pedagogy conducts large research projects on military values and virtues (Eggimann, Ruch, & Annen, 2013), and studies the impact of leadership styles on behavior and performance in military training.

Stress

Although a majority of Swiss citizens have a positive view of the Armed Forces, the young men in particular who are obliged to provide military service, tend to a “Yes, but without me”-attitude (Szcwircsev Tresch, Wenger, Ferst, Pfister, & Rinaldo, 2015), and they perceive basic military training as a stressor. This is one of the reasons that the attrition rate in the first weeks of basic training is too high. Most recruits leave the army due to physical problems, but the number of dropouts due to mental reasons is not negligible. With the aim of deriving measures to reduce the attrition rate, a comprehensive research project in cooperation with the Swiss Federal Institute of Sports has been conducted (Annen, Bösch, Sefidan, & Wyss, 2012). In addition to an intervention study that investigated the outcome of targeted improvements in physical training, the data collection was expanded with psychological elements, e.g., on several points of time the recruits had to fill in questionnaires, in which they reported their well-being, their motivation, the perceived leadership style, as well as their perceived stress. In addition, a standardized stress test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993) took place in week 1 and week 11 of basic training. In this context, objective stress measures, such as heart-rate variability or saliva alpha-amylase, were obtained.

The evaluation of the respective large and comprehensive data set is still under way. But selected results and insights of particular importance have already been disclosed to the Armed Forces command. For instance, it was obvious that the intervention group showed a significantly better level of fitness after 10 weeks of improved physical training and a lower attrition rate; and the sports intervention also significantly improved the recruits’ motivation. The psychological results reveal that not only is basic training a stressor, it also takes its toll, i.e., stressed recruits are more likely to drop out of basic training. This basic point seems obvious, but the benefits of the study become clear with a deeper analysis. More detailed evaluations showed that stressed recruits are less able to activate an adequate stress response; it seems that they use their resources to cope with everyday stress and when confronted with a stressful situation (TSST) they have difficulty mobilizing additional energy (La Marca et al., 2012). Furthermore, specific personality traits have an effect on stress; in particular, the findings demonstrate that high optimism and a high self-concept reduce negative consequences of the perceived stress such as depressiveness. Eventually, the results also support the relevance of leadership styles, so it could be shown that transformational leadership is closely connected with trust, quite contrary to a *laissez-faire* leadership style that has a decidedly negative correlation with trust (Annen, Sefidan, Bösch, & Roos, 2012).

Although stress was the main element of the study described above, all elements of the holistic model depicted in Fig. 35.2 were investigated. This is characteristic for the current efforts to gain more insights in the dynamics and interdependencies of the relevant fields as postulated in the holistic model of military psychology.

Conclusion

In the past 20 years, military psychology in Switzerland has experienced a significant upturn. In particular, the psychological-pedagogical service has established itself as a service mainly for recruits with integration problems. In addition, it

provides related advice to those supervising these recruits, carries out workshops on stress management, and ensures psychological care after severe incidents. It is also a typical organizational unit of the Swiss Armed Forces since it generally consists of militia soldiers, who put their civilian skills and knowledge into service. With the development of the psychological section of the recruitment centers, an unfulfilled proposal from the 1920s finally was met. The psychological tests were developed specifically for the needs of the Swiss Armed Forces and make a valuable contribution to the decision about military aptitude and to the allocation of each recruit to an appropriate branch of service.

Teaching and research in military psychology takes place in the respective department at MILAK. Against the backdrop of the structure, the mission and the challenges of the Swiss Armed Forces as well as of relevant experiences in this field a holistic model of military psychology has been developed. This model provides orientation for research projects, which should lead to a better understanding of its elements and interactions, and serves as a solid basis for practice-oriented lectures, and adequate advice for military leaders on all levels. Today more than ever, military psychology contributes to a more effective use of the human potential for the Swiss Armed Forces.

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Part VII
Epilogue

Martin F. Wiskoff and Morgan T. Sammons

The purpose of this final chapter is to bring together concepts expressed in the previous chapters in this volume with a current understanding of the state of the art in military assessment and military clinical psychology. We review current practice in assessment and measurement, and provide some insights into how developments in assessment technology might improve personnel selection and classification, as well as providing more robust screening of security and intelligence personnel, essential capabilities in an era of cyber-conflicts. We next discuss recent advances in military clinical psychology, and provide a roadmap for the way ahead regarding critical issues in the field. These include, for example, the diagnosis and treatment of post-traumatic stress disorder and mild traumatic brain injury, the so-called “signature wounds” of the conflicts in Iraq and Afghanistan. Issues awaiting resolution and directions for future leaders in military psychology in both fields will be presented.

M.F. Wiskoff (✉)
Retired Research Psychologist
Department of Defense, Monterey, CA, USA
e-mail: wiskoff@aol.com

M.T. Sammons
National Register of Health Service Psychologists,
Washington, DC, USA
e-mail: morgan@nationalregister.org

Assessment and Measurement in Military Psychology: Looking Back

Chapters in this book have illustrated the major advances in measurement and assessment that have been and are being made by military psychologists. As Krueckel (see Krueckel, Chap. 28, this volume) stated, “The military often leads the way in innovative research and creative use of technology out of a need for effectiveness.” The development and validation of cognitive tests for screening, selection, and personnel assignment have by far been the subject of the most intensive research and development. The breakthrough in cognitive testing that started in the 1960s with theoretical research sponsored by the US Office of Naval Research was implemented in the 1990s by the Department of Defense as the Computerized Adaptive Testing-Armed Services Vocational Aptitude Battery (CAT-ASVAB; Sands, Waters, & McBride, 1997). The CAT technology is now standard in many government and commercial testing organizations. An excellent exposition on recent achievements in military enlistment testing was published as a special issue of *Military Psychology* (Rumsey, 2014).

Bertrand, Defranc, Huybens, De Nil, Van Landeghem, Tibax, Peeters, and Mylle; (see Bertrand et al., Chap. 16, this volume) described extensive research on a competency-based approach to improve selection and reduce

attrition in the Belgian defense forces. They provided an informative discussion on the design of a situational judgment test; a methodology that previous research has shown provides incremental validity over cognitive and personality tests in predicting work performance. The exploration of noncognitive or personality tests in enlistment screening and selection also has had a long history, but the path to acceptance has been more difficult because of concerns that applicants would “game” their responses in directions that they deem favorable, e.g., looking good where a positive test outcome would bring the desired reward and an opposite strategy where selection would be undesirable.

Stark et al. (2014) detailed how these problems are being addressed through the use of item response theory (IRT), and the potential of computerized adaptive forced choice personality tests to support selection and classification by providing resistance to faking and other forms of response distortion. The US Army Research Institute for the Behavioral and Social Sciences (ARI) has developed the Tailored Adaptive Personality Assessment System (TAPAS) with great potential for use in personnel classification and for diagnostic purpose. Rupperecht, Heffner, Wolters and White (2015) discussed how the Army’s use of TAPAS serves to increment the ASVAB and education credentials for predicting first term attrition, career intentions, and performance in training. Stark et al. (2014) also reported that the U. S. Navy has developed the Navy Computer Adaptive Personality Scales that is being evaluated for different operational applications and is part of the selection process for Special Operations training assignments.

Johnsen (see Johnsen, Chap. 18, this volume) stated, “Psychological hardiness has been found to predict performance of military cadets, over and above the Big Five factors (Bartone, Eid, Johnsen, Laberg, & Snook, 2009), and also predicts success in a US Special Forces selection course (Bartone, Roland, Picano, & Williams, 2008).” Miao, Wang, Liu, Zhu, Xiao and Wu (see Miao et al., Chap. 29, this volume) reported on a newly developed fusion detection

technology in China that integrates personality tests, eye-movement techniques, EEG, soft neurological signs detection, and MRI that has advantages of greater objectivity and is less subject to human error.

Assessment and Measurement in Military Psychology: Looking Ahead

Previous research publications provide some insight into future needs in military screening and assessment. Daniels, Spero, Leonard and Schimmel (2015) conducted a content analysis of articles published in Division 19’s journal *Military Psychology* from 2002 to 2014. They found that 80.5% of the articles were empirical and of these, 92.5% were classified as quantitative. When analyzed by branch of psychology, the top five were counseling (17.2%), quantitative and measurement (13.2%), industrial/organizational (12.9%), clinical (11.6%), and cognitive and perceptual (9.5%). We recognize that military psychologists publish in many different journals but this analysis does provide some indication of recent emphasis. Future research will be driven by the same influences as in the past, i.e., organizational requirements (whether explicitly stated or anticipated by researchers) and technology that both addresses the needs and sometimes serves to generate research that subsequently leads to requirements. We will look at possible directions for each of these.

Organizational Requirements

Requirements will continue to focus on traditional areas of personnel recruitment, screening, selection, and classification of recruits and officer applicants. The recent impressive research advances in recruit screening and selection should generate additional support as operational improvements in prediction of training performance, attrition reduction, and on-job performance are further documented. This research methodology will also lead to renewed interest in

selection of personnel responsible for recruiting applicants and those who train them.

Premature attrition prior to completion of a term of service is very costly and disruptive to organizations and service members. White, Rumsey, Mullins, Nye and LaPort (2014) described the attrition phenomenon, the research history, and the recent progress toward addressing the problem. They stated, "Ultimately an approach that combines selection, classification and in-service interventions can be expected to produce the most desirable results" (White et al., p. 149).

The growing importance of high-risk operational personnel, those who engage in "physically and psychologically demanding missions under conditions of extreme threat, isolation, and complexity" to support military objectives was elegantly described by Picano, Roland, Williams & Bartone (see Picano et al., Chap. 17, this volume). Those authors stated, "these personnel include, but are not limited to, astronauts, Special Operations Forces (SOF), clandestine intelligence operatives, and certain tactical law enforcement personnel." Developing assessment and selection programs is challenging because of small data samples and paucity of actual performance criteria. The authors suggested that research on "hybrid methods" of data combination might be a fertile area for measuring success of the various procedures employed to select these personnel.

While unforeseen global events and technology advances will create new requirements, we see four areas of current concern that should generate considerable interest in the future. There has been a major increase in military suicide programs and research within the DoD and the individual services that reflects the desire to increase the care and well-being of military personnel and their families during and after military careers. Ghahramanlou-Holloway, Baer, Nielsen, Neely, and Koltko (see Ghahramanlou-Holloway et al., Chap. 6, this volume) discussed the establishment of the Defense Suicide Prevention Office (DSPO) within DoD. Greater support needs to be provided to DSPO in light of a DoD Inspector General report that has found deficiencies in the

DSPO strategic plan on guidance for measuring success, timelines for completing goals, or resources required to achieve the office's objectives. Johnston, Robinson, Earles, Via, and Delaney (see Johnston et al., Chap. 1, this volume) described the successful "community-based, evidence-based approach" launched to reduce the suicide rate in the Air Force that could serve to inform others facing this critical threat.

The DoD has also expressed the need to better understand the nature of sexual assault and harassment and improve what has been criticized as slow responsiveness. A Sexual Assault Prevention and Response Office (www.Sapr.mil) has been established with one of its goals to conduct and sponsor research and collect data to inform programs for sexual assault prevention, training, victim care, and accountability. Early research sought to develop measures of the verbiage used to refer to the different components of sexual violence. Thomsen, Stander, Foster, & Gallus (see Thomsen et al., Chap. 21, this volume) provided valuable insight into definitions, prevalence, trends, and research along with methodological issues in the assessment of sexual aggression. Their discussion of the effects of sexual trauma on military personnel and the military workplace reinforces the requirement for further research to more clearly explicate the personal and organizational consequences, along with means for preventing sexual assault and harassment.

The increasing world turmoil creates a pressing need for protecting the security of personnel and governmental assets. The cases of Army Major Nidal Hasan who in 2009 killed 13 people and injured more than 30 others at Fort Hood, TX in the name of Islamic Jihad and Aaron Alexis who in 2013 fatally shot 12 people and injured three others at the Washington Navy Yard in D.C. shook the military and punctuated the need for better individual security. In 2010, the leak of vast amounts of classified information by Bradley (now Chelsea) Manning to WikiLeaks and the release in 2013 of thousands of classified NSA documents by Edward Snowden have sensitized us that better screening and surveillance is needed of individuals who are entrusted with our nation's

secrets. There is worldwide concern over personal protection due to the rise of ISIS and other terrorist organizations. Control over our most personal data has disappeared with the incursion of other government-sponsored and independent hackers into governmental and private databases. We see increasing demand for research to develop better tools and methods to protect personnel and information security, and also to assist victims of security attacks. Recognition of this requirement is reflected by the theme of the 2015 International Military Testing Association Conference, "Psychological selection, leadership and security in a high-risk military context."

While all militaries assess personnel upon entry and throughout their careers, the data often are not in a form to allow researchers to analyze linkages and behavioral trends over time. A new model of continuous evaluation is being discussed within the personnel security community where emerging information on violations, arrests, financial issues, etc., would be immediately available to determine continuing eligibility for a clearance. This model could have great utility for deflecting future "insider threat" incidents since those perpetrated by Hassan, Alexis, Manning, and Snowden might have been prevented had greater attention been paid to their past behaviors.

Data Availability and Analyses

One of the advantages of conducting research in the military environment is the availability of military populations on whom data can be collected and analyzed in an organized, systematic manner to facilitate valid findings. The information explosion triggered by the internet provides an additional vast source of data on individuals through their use of social media such as Facebook, Twitter, LinkedIn, blogs, postings, websites, photo sharing, Social Bookmarking tools, and news sites. The technology for tracking such information and blending it together to generate meaningful data sets, while still quite young, is growing rapidly and will be an invaluable future tool. A key issue in the use of social

media data is correctly identifying individuals and linking a person's postings over different media and over time. The question has to be answered whether unstructured social media data contributes incremental validity over structured testing. There needs to be ethical consideration for the possible misuse of social media data, its legality or possible invasion of privacy, such as the unintended identification of third parties. While there may be greater acceptance for use of these data by law enforcement in tracking criminals and by intelligence agencies in deterring terrorist attacks, will the public balk at its use for screening/selection? One area that might win earliest acceptance is use of social media data in nationally acknowledged critical areas, such as for obtaining and maintaining security clearances, and for other positions of public trust such as TSA handlers, child care workers, and border patrol agents.

The value of massive amounts of data is predicated upon our "big data" analysis capability to make sense of the information. We have seen recent successful applications in law enforcement and terrorist deterrence in identifying people and locations. An emerging area in data usage is sentiment analysis to provide insight into the attitudes and emotional states of data generators and text mining to reveal evidence of cognitive and social processes for assessment of the mental state of the writer. The potential of the information explosion for military psychologists will best be realized in conjunction with interdisciplinary teams with complementary technological and analytical skill sets.

Assessment Strategies

Mobile Assessments The proliferation of technologically advanced smartphones and tablets make their future use in testing a certainty. The Society for Industrial and Organizational Psychology (2015) declared mobile assessment as the number 1-workplace trend in 2015. This strategy, in addition to its convenience, will allow for a broader array of instrumentation like collecting data through games specifically designed

for individuals, pairs, and even group assessment. The potential use of games is intriguing but there has not been a wealth of research. Researchers need to answer questions such as differences in data quality obtained via computers and mobile devices, validity of information and how best to use the information. What type of constructs and tests lend themselves to use in mobile devices? How will current computer tests need to be adapted to mobile devices? Will computer modifications such as font size and scrolling affect scores? Will the shift to mobile devices be equitable for all test takers?

Unproctored Internet Testing There has been growing interest for increasing the flexibility of test administration via the internet in an unproctored setting, along with much debate as to how to control the potential for falsification. The availability of CAT has led DoD researchers to evaluate coupling an unproctored test with an adaptive confirmation test in a controlled setting, and determining that it is effective in reducing the negative effect of cheating. The pre-screening, internet-delivered Computer Adaptive Test is an unproctored version of the full ASVAB that currently provides recruiters with the ability to effectively determine if an applicant is qualified before sending them to a military entrance processing station or military entrance test site (Russell, Ford, & Ramsberger 2014). Future research will be needed to determine whether unproctored internet testing introduces different psychometric properties, subgroup performance differences, and frequency of falsification.

Advances in Testing/Psychometrics The significant personality measurement accomplishments that were described earlier are encouraging future refinement and expansion of these measures' utility. Stark et al. (2014) and Russell et al. (2014) reflected on the success of the new personality measures. Rumsey and Arabian (2014) noted, "further efforts to improve the measurement of personality are warranted" (p. 239).

The progress in coping with personality testing issues through the use of IRT models has led to renewed research on the potential of employ-

ing vocational interest measures for military screening and selection. Nye, Su, Rounds and Dragow (2012) conducted a meta-analysis of over 60 years of research that showed correlations of interest with task performance ranging from .21 to .30. The most recent Service inventories, the Army's Work Preferences Assessment and the Navy's Job Opportunities in the Navy both have shown promise for providing incremental validity to the ASVAB. Concerning future development, Rumsey and Arabian (2014) stated "the TAPAS (Tailored Adaptive Personality Assessment System) approach does provide a methodology for developing fake-resistant interest inventories, using multidimensional pairwise preference items balanced in terms of social desirability and extremity" (p. 241). Nye, Dragow, Rounds, Stark and Chernyshenko (2015) provide thoughts on how advances in psychometric theory can address the concerns with using vocational interest measures, and suggested a conceptual framework for developing a new generation of interest measures.

Researchers continue to explore new psychometric procedures that will assist in item and test development. Stark, Chernyshenko, Nye and Dragow (2014) discussed lessons learned in multidimensional forced choice testing, and some persisting questions about internal consistency and test-retest reliability. They also describe some new directions for item parameter estimation, scoring, alternative format, and IRT models. Green, Jacobson, Waggoner, and Armistead-Jehle (see Green et al., Chap. 10, this volume) suggested that in the future neuropsychologists might find virtual reality technology useful in enhancing the "ecological validity of neuropsychological tests without the significant time constraints associated with field observations" (p.).

Future Pre-accession Instruments

The National Research Council (NRC, 2015) issued a report sponsored by ARI to develop a basic research investment agenda for the next 20 years. The constraints were that the instruments to be developed could be administered

pre-acquisition, they were inexpensive, requiring no special skills to administer/or were unprocured and had no elaborate equipment. The NRC was asked not to address genetic and biometric testing, because despite the breakthroughs of knowledge in medicine and other fields, cost and ethical issues limit the potential for near-term military use for screening and selection. Topics that they deemed most promising included the ability for problem solving (fluid intelligence, adaptability, and inventiveness), teamwork, spatial ability, cognitive biases, hot cognition (cognition influenced by emotional state), and psychometrics (IRT, big data, and games).

The NRC did endorse additional research into spatial ability, and recently Held, Carretta, and Rumsey (2014) presented empirical evidence for expanding the ASVAB by adding tests of spatial ability (Assembling Objects) and speed/accuracy (Coding Speed). These tests increase the breadth of ASVAB, increase predictive validity and improve classification. The authors also indicate that research is underway by the Defense Manpower Data Center and the services to evaluate new measures of nonverbal reasoning and working memory that are related to fluid intelligence. The future will also see a wider range of spatial tests capitalizing on computer graphics display capabilities.

Russell et al. (2014) presented the notion of using implicit association tests that “attempt to assess fundamental, perhaps subconscious, aspects of an individual’s mental concepts and processes, such as beliefs, attitude and personality”(p. 17). They stated “implicit measures could be developed to assess psychological risk factors likely to be relevant for enlisted individuals” (Russell et al., p. 17). Trippe, Moriarty, Russell, Carretta and Beatty (2014) discussed the growing requirement for high-quality cyber/IT personnel in the military, industry and the government and the development, pilot testing and validation of a cyber knowledge test. The test is in the process of being adopted by the services with a next phase being to develop an operational item pool suitable for computer adaptive administration.

Multidisciplinary Research Programs

We are witnessing an expansion in the breadth of research being conducted within military psychology as opportunities are provided by new data sources and technology advances. This speaks to greater use of teams composed of individuals with broad interdisciplinary talents. Lo Castro & Livi (see Lo Castro & Livi, Chap. 34, this volume) reflected this direction with their comment that “the Italian MP –capturing the zeitgeist of international psychology trends – is now focusing on multidisciplinary research programs in order to connect the dots among the different disciplines of psychology, such as neuroscience, clinical and social psychology, and advanced statistical analysis skills . These are in much demand and consistent with the new operational needs of the military.”

Technology Implementation

The extensive research documented in this book bodes well for the continued development of new technologies to support the military. Krueger & Lyons (see Krueger & Lyons, Chap. 25, this volume) stated “The ultimate goal of all such research programs is to transfer general findings and principles from research to the “line military” in terms that impact and improve military doctrine, policies, and practices.” However, obtaining support for the adoption of these advances in military settings, as pointed out by Krueger and Lyons has sometimes been problematic. Ohse, Hedge and Deloughery (2015) noted that significant investments of time and resources are required for the successful transition of new technologies into the work environment. They present a model of technology acceptance that was developed in conjunction with a Department of Homeland Security project. There are many variables, financial, political, and sometimes personal, that drive implementation of good research. As scientists, we have to play a dual role of technical experts and proponents, developing close relationships with operational users and policymakers, and

recognize that the path to implementation is often much longer than the research and development phase.

Clinical Psychology in the Military: Challenges Ahead

Responding to Social Change

Glotfelter, Geogemiller, and Bandermann, in their comprehensive analysis of issues surrounding the legal recognition of LGBT service members in the military (see Glotfelter et al., Chap. 20, this volume), outlined some of the training requirements incumbent on active duty and VA psychologists and trainers in order to provide comprehensive services to this population. The military has evolved from active discrimination against LGBT personnel, through a period of willfully ignoring their presence, to one of legal acceptance. Psychologists as clinicians have accordingly moved from the awkward position of having the ethical obligation to treat LGBT military personnel after receiving training that often conflicted with regulatory guidance (where disclosure likely would end a service member's career), to one of acknowledging deficits in training and knowledge base of best practices in working with a large LGBT population. The abolition of the "Don't Ask Don't Tell" policy, implemented in 2011, and the 2015 Supreme Court decision in *Obergefell v. Hodges* that legalized same sex marriage nationwide have accelerated these changes. Indeed, it is likely that the VA is now the largest single provider of services to lesbian and gays. It is currently estimated that over 1,000,000 veterans have same sex partners (Averill, Eubanks-Fleming, Holens, & Larsen, 2015).

As Glotfelter et al. noted, the open inclusion of LGBT service members has not had deleterious effects on unit cohesion, as many top commanders had feared. Although homosexual conduct has been a cause of military discharges since the days of the Continental Army, homosexual identity was not an explicit exclusionary criterion until WWI. In the 1950s, military com-

manders had commissioned a report on the potential effects of inclusion of homosexual service members. The Crittenden report, finalized in 1957, concluded (somewhat remarkably, for its era) that there would be no deleterious effects on unit cohesion or military readiness by allowing gay service members to remain on active duty. This report, however, was repressed until it was inadvertently released in 1976 as a part of the military response to one of the first lawsuits challenging the exclusion of gays (the Leonard Matlovich case, cited in Shilts, 1993).

While in general there is a lack of directionality between LGBT status and mental health problems in-service members or veterans, a few studies have found a higher incidence of substance abuse, psychological disorders, or veteran maladjustment in military LGBT populations, possibly associated with higher levels of work stress, absence of social support (e.g., Blosnick, 2012; Morral et al., 2016) and higher risk of sexual assault, particularly among lesbian service members (Mattocks et al., 2014). Thus, it is important that trainers be alert to the unique needs of this population amongst both active duty service members and retirees. Glotfelter et al. cited the recognition of LGBT training programs at the Walter Reed National Military Medical Center as evidence of the responsiveness of military trainers to the unique needs of an LGBT population. The VA's response has also been robust. Nine VA medical centers have established post-doctoral psychology training programs in LGBT mental health (https://www.patientcare.va.gov/LGBT/LGBT_Veteran_Training.asp). Some have criticized the military response to LGBT inclusion as incomplete or tardy. But in reality, the military's response appropriately reflects societal and political changes regarding gay rights. Even in pre-"don't ask don't tell" times, military psychology internships kept pace with other APA accredited training programs and provided both instruction in treating lesbian and gay individuals and suggestions for managing patients with concerns regarding sexual orientation in the closeted environment of the times. Ultimately, militaries in democratic societies respond to societal norms and do not establish

them. The evolution of gay rights in the military should be viewed in this context.

Managing Post-traumatic Stress Disorder

As the second author has argued in other contexts, the framework for analysis of the role of psychological factors in combatants has fundamentally shifted (Sammons & Batten, 2008). Prior to the current “Long War” in Iraq and Afghanistan, in no other conflict in human history have we paid as much heed to the role of psychological factors in determining military readiness and their role in determining sequelae of involvement in combat. In this sense, then, we are dealing with an epochal change in our conceptualization of the both the role of psychological factors and the involvement of psychological sciences in military readiness. For the first time in the unfortunate course of human warfare, it is fair to say that psychology has become an integrated part of the battle plan and a key component of readiness.

Since antiquity, we have been aware of the psychological sequelae of participation in combat. No better exemplar exists than the Homeric description of Achilles’ response to loss of his companion Patroclus in *The Iliad*, a comprehensive emotional catalogue of grief, rage, despair, aggression, and impulsivity (but one that does not add up to a current diagnosis of PTSD, as some modern authors have erroneously concluded). In classical times, such dysfunctional emotions and behaviors were assumed to be a manifestation of conflict between warring deities, over which the individual had no control. Now we presume them to be maladaptive responses to traumatic events, although we have little understanding of why certain individuals are more likely to display them than others.

The expository distance between classical and modern conceptualizations of such behaviors may not be as great as post-Enlightenment scientists would like to believe, but nascent psychological science has, since at least the time of the US Civil War, been involved in systematic

attempts to classify emotional sequelae to combat (e.g., da Costa’s syndrome, soldier’s heart, shell-shock, etc.) During the First World War, as Green, Jacobson, Waggoner, and Armistead-Jehle note in their chapter on military neuropsychology (see Green et al., Chap. 10, this volume), psychology became famously involved in attempts to scientifically classify fitness for duty and to a lesser extent to treat victims of the psychological consequences of combat (most mental health treatment during that era, however, was relegated to psychiatry). As is well known, the profession of clinical psychology in the US came into its own in the aftermath of the Second World War, providing services to returning combatants, usually in Veteran’s Administration facilities. But until the recent past, psychology has not been an integral component of the battle plan, although psychiatrists and psychologists have been deliberately deployed as members of the medical component since at least the Second World War.

This began to change in 1990 when the US Army released its first coordinating draft of FM 8–51, *Combat Stress Control in a Theater of Operations*, which described mental health sections that would be responsible for prevention and treatment of mental health problems within the area of operations. This doctrine was implemented in a number of ways by teams of mental health personnel working during the 1991 Gulf War (Belenky, Martin, & Marcy, 1996; Stokes, 1996), and later in US Army operations in Bosnia (Bacon & Staudenmeier, 2003; Bartone, 1996). In the late 1990s, the US Navy began regular deployment of clinical psychologists as a regular component of ship’s company on aircraft carriers, not only to treat sailors with mental distress but to enhance operational readiness. Since then, the concept of an embedded mental health provider has gained real currency, with psychologists and psychiatrists serving as treatment providers, and also as consultants to command regarding the prevention and amelioration of combat related stress injuries (Bartone & Krueger, 2013). In 2008, the Department of Defense established the Defense Center of Excellence for Psychological Health and Traumatic Brain Injury (DCoE), an agency that

had no historical precedent in the military. The DCoE mission is to improve care and prevention efforts by providing clinical and educational information, identifying and prioritizing gaps psychological health and traumatic brain injury research, and then translating that research into clinical practice for military personnel and veterans.

While PTSD is a widely recognized problem for military personnel exposed to combat and deployments, prevalence estimates vary widely. Ramchad et al. (2010) analyzed the large divergence in estimates of combatants with PTSD. Lack of sample comparability and divergence in assessment methods used to arrive at PTSD estimates led, in their analysis, to significant disparities in PTSD estimates. Importantly, they also identified the absence of statistical estimates of uncertainty as a major factor leading to imprecise estimates. While these authors did not aim to provide an exact estimate of PTSD prevalence, they presented a range of 5–20% of assessed samples as being a more or less normative range for PTSD prevalence. The Institute of Medicine's (2014) analysis of PTSD service provision in the VA system noted that over 20% of all service members seeking treatment in the VA system had a diagnosis of PTSD, a number that had grown by a factor of three between 2003 and 2012, at which point approximately 600,000 VA patients had diagnoses of PTSD (these numbers also included veterans from Vietnam and other conflicts). Of these patients, 75% received a disability rating of 50% disabled or greater. Using this calculus, then, approximately 20% of all returning combatants from OIF/OEF have received PTSD diagnoses in the moderate to severe range, an extremely high number.

It seems then, that factors other than exposure to traumatizing events are needed to explain these high disability numbers. As Riggs and Mallonee (see Riggs & Mallonee, Chap. 3, this volume) noted, the high degree of overlap between manifestations of mild traumatic brain injury (mTBI) and certain PTSD symptoms leads to diagnostic uncertainty, and it is possible that some diagnoses of PTSD exist not in response to psychic trauma but reflect more protean manifestations of

brain injury. The lack of "caseness" or diagnostic specificity, is, after all, common to both PTSD and mTBI; not only are these conditions commonly comorbid but there are likely to be common etiological mechanisms underlying both (Howlett & Stein, 2016). There are wide variations in estimates of brain injury prevalence in-service members. Green et al. (see Green et al., this volume) cite the Defense and Veteran's Brain Injury Program 2016 estimate of 350,000 service-members with TBI, but rightly caution that of these, 82% are judged to be in the "mild" range, where full recovery is expected, and many of these are not blast related, with over 80% estimated to occur in garrison, not the battlefield. Others report lower numbers. For example, dePalma (2015) noted that between 2002 and 2012 over 250,000 veterans of the conflicts in Iraq and Afghanistan were reported to have some symptomatology post-blast exposure with most of these being assessed as having mTBI. Significantly, over 70% of these individuals had comorbid PTSD diagnoses.

For mTBI (and to a lesser but still significant extent) PTSD, then, we are confronted with the fact that far greater numbers of service members report symptoms or seek treatment at rates much higher than would be predicted from recorded combat injuries. How do we explain this discrepancy? Imprecise epidemiological estimates, such as the conflation of in garrison and in combat injuries, as Green et al. noted, is undoubtedly in part responsible, as is imprecise in-theatre medical reporting and record-keeping. But other factors are clearly at play. On the positive side of the ledger some increased numbers are likely due to the fact that we have had at least modest success in reducing the stigma associated with mental health diagnoses. Public awareness campaigns among active duty service-members and veterans have undoubtedly led to a greater willingness to disclose psychological trauma, although, as Riggs and Mallonee reported, disclosure of psychopathology or mental health treatment may still have negative ramifications for active duty careers, particularly among those in highly technical fields (e.g., aviation) or those with compartmentalized security clearances. Less positively,

societal responses to unpopular conflicts have, as Wessely (2005) speculated, led to the expression of discomfort with such conflicts in psychopathological terms.

But we also cannot deny that our current system of disability compensation has provided some perverse incentives for the over-reporting and maintenance of symptoms of PTSD. PTSD, regardless of our imperfect understanding of the condition and the limited efficacy of current interventions, is undeniably a real disorder. A major challenge for planners is to reform the disability compensation system in such a way that those service members who suffer from the disorder can receive appropriate treatment in a non-stigmatized way. For the many (perhaps even the majority) of those whose emotional response to the horrors of combat reflects not mental illness but a normative reaction to experiences well outside the usual range of human experience, it would behoove us to resist interpreting expressed symptoms as psychopathological responses. For this group of veterans, a phenomenological rather than a pathological approach may well lead not only to avoidance of potentially stigmatizing labels but also a more rapid and complete return to normalcy. If, for example, we interpret intrusive recollections (“flashbacks”) or recurrent, distressing nightmares as futile psychic attempts to change the past, we are quickly led to a position where acceptance rather than symptom suppression becomes the goal of treatment. Similarly, we can interpret high baseline anxiety or excessive reactivity not as symptoms of uncontrollable sympathetic outflow but rather as inappropriate expressions of an adaptive emotional response (hypervigilance is adaptive in a combat environment, less so when confronted with routine domestic stressors). Such a view might lead to lesser reliance on pharmaceuticals to quell anxiety and greater emphasis on correct interpretation of environmental stimuli and re-learning of adaptive responses.

The clinical response to PTSD, mTBI, and the management of the needs of LGBT service members and their families are perhaps the most visible current manifestations of the activities of military clinical psychology, but the field contin-

ues to lead in other important areas. Campbell, Grieser et al. (see Campbell et al., Chap. 15, this volume) provide an important example of how clinical and research psychologists at the University of Pittsburgh Sleep Tactics Laboratory are working to improve operational readiness by studying the effects of sleep deprivation on performance. Such initiatives have resulted in changes in military practices as set forth in the Army Field Manual and Navy and Marine Corps Operational Stress Control doctrine, with obvious relevance for civilians in hazardous, high stress occupations.

The Future of Military Clinical Psychology

In the civilian sector, growing recognition of the inseparability of physical and mental health has led to a restructuring of health care delivery and payment systems. The Veteran’s Administration has long been a leader in Integrated Health Care. The passage of parity legislation and Medicare payment incentives for incorporation of mental health into overall healthcare delivery mark growing societal recognition of the fundamental association between physical and emotional wellbeing (i.e., “no health without mental health”). In the military, a similar transition has occurred. Until the recent past, psychology and psychiatry were hospital-based specialties focusing on the identification of psychopathology and, more often than not, providing medical grounds for discharge from the military. Our command roles were, with the exceptions of a few subspecialties like aviation psychology, mostly limited to screening candidates out or identifying service members who were unfit or unsuitable for further service. With the emergence of operational psychology as a distinct subspecialty, military psychology has moved out of the clinic and has become integrated into the command structure. We have gone from being “discharge machines”, distrusted by personnel and commanders alike, to force multipliers, assisting the mission by enhancing operational readiness.

One of the second author's most memorable moments on active duty came when, while serving as the Navy's clinical psychology Specialty Leader, he was advised in no uncertain terms by the commanding officer of an aircraft carrier that the ship was not sailing without its psychologist on board – and that one *would* be found in very short order. This directive from the fleet reflected the remarkable success by aircraft carrier psychologists in reducing personnel losses while underway (a project inaugurated as recently as 1997 by a female psychologist – then LT Helen Napier – only a few years after women had first been integrated into ship's company). In this context, it is important to note the review provided Saitzyk, Harvey, Landes, Long and Porter (see Saitzyk et al., Chap. 24, this volume), who detailed the expanding role of women in the military. Women have overcome a history of occupational discrimination which is still present, but their success has now led to women's ability to serve in ground combat roles and in senior leadership positions in the services. Brigadier General Dana Born was, at the time of her retirement in 2013, the highest ranking psychologist in military history, having graduated from the Air Force academy and later obtaining a PhD in industrial and organizational psychology from Pennsylvania State University.

Although the intensity of the conflicts in Iraq and Afghanistan has diminished considerably in the past half-decade, the demands of a low intensity but protracted "long war" will require a different planning mindset. In the past, military medical planners used epidemiologically based algorithms (often based on civilian models) to determine the appropriate size of the military psychology community. Future planners would be wise to shift from such models to alternatives that recognize the increasing importance of embedded mental health providers in operational units, where productivity is not measured in terms of treatment provided but in terms of personnel retained at readiness standards.

Additionally, it is anticipated that the success we have achieved to date in reducing stigma associated with identification and treatment of mental distress will further increase demand for

mental health services, as such demand was in all probability artificially depressed by legitimate fears that seeking help would have negative career repercussions. Due to operational concerns, sensitivity to psychological illness will continue to influence a service member's decision to seek care, but hopefully we are entering an era where judgments regarding suitability for continued service will be based on the true functional nature of the disorder rather than rote prescription.

As noted earlier, much more work is needed to refine our nosological and treatment protocols for the commonest of military mental disorders – PTSD and mTBI. Both are "young" disorders – PTSD did not enter the DSM until 1980, and we are still frustrated with our understanding of many non-penetrating head wounds. Diagnostic imprecision and lack of targeted treatment is inevitable as we struggle to gain more concrete knowledge of these problems. Without a doubt, clinicians of the future will marvel at the naïveté of our conceptualizations and interventions, just as we look back with chagrin at what passed as 'evidence-based' protocols in the twentieth century. In such circumstances it is our duty to avoid hubris and false certainty. *Primere non nocere* should be the "north star" of treatment; in this context we must recognize that a symptom-driven emphasis on pathology, rather than an expectation of resilience and return to normalcy, may do more long-term harm than good.

Finally then, planners of the future must address our broken disability compensation system – one that perversely rewards the maintenance of illness. One potential solution lies in the more complete integration of VA and military healthcare systems. By making VA care accessible to all veterans, regardless of length of service or disability rating, we remove a powerful driver of the disability rating system. Making the Veteran's Healthcare Administration a TRICARE provider is politically and bureaucratically onerous but doing so would result in numerous efficiencies, not least among them the ability to treat veterans' medical and mental health needs in the context of their families. The classic "moral hazard" versus "moral imperative" argument in

mental health care is not yet definitively settled. While the moral hazard does not seem to be as great a concern as once feared (Barry, Golden, & Huskamp, 2016), erring on the side of the moral imperative when treating veterans and their families may indeed be our public duty.

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