

## ABSTRACT

Title of dissertation: SELF-EFFICACY AND STIGMA IN SEEKING MENTAL HEALTH SERVICES IN THE U.S. ARMY

Patrick Thomas Koepl, Behavioral and Community Health  
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Directed by: Professor Robert S. Gold, Ph.D., Dr.P.H., Department of  
Behavioral and Community Health

Among the highest personal costs, and perhaps the most pervasive and potentially disabling consequences of engaging the U.S. military in combat operations, is the threat to the psychological health of the servicemen and women and the associated impacts on their families. Negative stigma associated with seeking mental health services undermines servicemen and women's access to such services and to seeking the care they require, either for themselves or their families. While negative stigma is well documented in servicemen and women and their families, little has been done to understand the role self-efficacy plays in relation to servicemen and women seeking such services.

This study assessed and evaluated aspects of stigma associated with seeking mental health services among members of the U.S. Army, and explored the role self-efficacy plays in predicting the seeking of those services. It also sought to explore and understand the factors which predict servicemen and women's willingness to seek mental

health services for themselves and their children in an environment where stigmatization of those who seek such services is high.

This study included an analysis of data from a 53-item email survey administered to active-duty Army servicemen and women in 2007. Stigma was found to be the primary barrier to servicemen and women's willingness to seek care for themselves or for a child, and self-efficacy was found to moderate the relationship between stigma and willingness to seek mental health services. The results of this study will provide information pertinent to developing strategies and interventions for the U.S. Army to assist their servicemen and women (and their families) in overcoming negative stigma associated with seeking mental health services and for improving the access to and use of mental health services offered by the Army.

**SELF-EFFICACY AND STIGMA IN SEEKING MENTAL HEALTH  
SERVICES IN THE U.S. ARMY**

by

Patrick Thomas Koepl

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Advisory Committee:

Professor Robert Gold, Chair  
Professor Sharon Desmond  
Professor Sunmin Lee  
Professor Leigh Leslie  
Professor Min Qi Wang

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## DEDICATION

For my wife Susan and my children, Katie G and Lil' John.

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## LIST OF ABBREVIATIONS

CONUS	The contiguous United States.
DOIM	Director of Information Management, the information specialist in charge of email communications of a military post.
KIA	Killed in action.
MEDCOM	The U.S. Army's medical command.
MHAT	Mental Health Advisory Team.
MTFs	Military treatment facilities.
OCONUS	Outside the continental United States.
OPTEMPO	Operation tempo, a catchall phrase used to describe the pace of military activities, including demands on personnel and materiel resources. Typically, OPTEMPO increases with the intensity and number of operations the military is engaged in. OPTEMPO is generally inclusive of DEPTempo (deployment tempo, measured as the number of days in one month that a military unit is deployed while conducting trainings or operational missions) and PERTempo (personnel tempo, measured as the time an individual soldier spends away from his or her home station). In common military parlance, high OPTEMPO refers to more frequent deployment to hostilities, longer duration of each deployment, and less CONUS time.
PTSD	Post-traumatic stress disorder, an anxiety disorder that can develop after direct or indirect exposure to a terrifying event or ordeal in which grave physical harm occurred or was threatened. PTSD is a condition where experienced traumatic events are re-experienced and continue to affect a person after they are no longer in harm's way. Symptoms of PTSD include nightmares, flashbacks, feeling revved up or irritable, feeling numb, and feeling anxious or avoiding any reminders of the trauma.
POC	Point of contact.
SCT	Social Cognitive Theory, a theory that describes a dynamic, ongoing process in which personal factors, environmental factors, and human behavior exert influence upon each other.

SLT	Social Learning Theory, a theory asserting that people learn not only from their own experiences, but by observing the actions of others and the benefits of those actions.
TBI	Traumatic Brain Injury, an injury to the brain that may range in severity from mild (e.g., a concussion from exposure to a blast) to severe (e.g., a penetrating head wound).
TRICARE	The Department of Defense's managed care program.

# **CHAPTER I**

## **INTRODUCTION**

The purpose of this study was to assess and evaluate stigma associated with seeking mental health services among members of the U.S. Army, and to examine the role self-efficacy plays in predicting the seeking of those services. Among the highest personal costs, and perhaps the most pervasive and potentially disabling consequences of engaging the U.S. military in combat operations, is the threat to the psychological health of the servicemen and women, and the associated impact on their families. Due to the recent operations tempo (OPTEMPO—the frequency and length of deployment) required to maintain two concurrent conflicts (in Afghanistan and Iraq) during the past decade, the Department of Defense has experienced extensive demand for early identification and treatment services for those suffering from psychological wounds. The military's health care system is being especially taxed by the emergence of two signature injuries from the conflicts in Afghanistan and Iraq: post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI) (Altmire, 2007).

The nature of these recent conflicts exposed U.S. military personnel in unprecedented numbers to the effects of blasts, which often result in TBI and can be a factor in PTSD development (Hoge et al., 2008). While PTSD is a well-known, if little understood, artifact of all wars, the number of diagnoses compared to past conflicts has increased significantly (Novier, 2007). Additionally, the incidence of TBI has placed new demands on the military's health system. These conditions have disproportionately impacted the Nation's soldiers (i.e., those in the Army rather than the Navy, Marines or

Air Force), who have accounted for more than 80% of the force deployed in Iraq and Afghanistan (Brookings Institution, 2007). The Army recently stated that approximately 70% of all soldiers deployed to Iraq have been exposed to blast forces, largely due to the enemy's use of improvised explosive devices (IEDs) which can deliver profound concussive injuries (Brookings Institution, 2007). Additionally, it is now clear that TBI and PTSD often coincide, requiring interdisciplinary approaches to treatments and interventions (Hoge et al., 2007; Hoge et al., 2008).

Despite the Army's provision of treatment and services in support of the psychological health of its military service members and their families, soldiers and veterans continue to suffer from mental disorders following deployment in combat zones. Such conditions as anxiety, depression, phobias, and other disorders frequently occur with or without PTSD or TBI. While the Army makes treatment available for the litany of mental health conditions (both combat-induced and other), many believe that soldiers and their families do not fully avail themselves of the offered services (RAND, 2008). Fear of the negative stigma associated with seeking care for mental health conditions, and potential accompanying reprisals for seeking mental health services, predicts an underutilization of mental health treatment by soldiers (Department of Defense [DoD], 2008). The increased OPTEMPO has affected not only servicemen and women, but also their families (DoD, 2008). Spouses may choose not to seek mental health services due to concerns about negatively impacting their spouses' careers. Other barriers, such as uncertainty over how to successfully navigate the behavioral healthcare system, also exist. Family members are not only impacted by the service members' deployment and behavioral health issues but by their own personal issues as well (DoD, 2008). Soldiers

in theater continue to express concerns about the ability of rear detachment commanders (leadership in charge of personnel and equipment, and for assistance to families of deployed soldiers) and family readiness groups (FRGs) to adequately support families.

As a nation, the United States has passed its tenth year of continuous combat in Afghanistan and Iraq. Since October 2001, American troops have been deployed more than 3.3 million times to hostile theaters of operation in either Afghanistan or Iraq, with more than 2 million servicemen and women shouldering those deployments (nearly 800,000 have deployed multiple times) (Tan, 2010). The OPTEMPO of deployment to these hostile theaters is unprecedented in the history of an all-volunteer force (Tan, 2010; Belasco, 2007; Bruner, 2006), with longer durations during and shorter breaks between deployments (DoD, 2010; Hosek, Kavanagh, & Miller, 2006). Improvements in caring for the injured on the battlefield have reduced the number of troops killed in action (KIA), with the unintended consequence of increasing the number of those who survive physical wounds but develop mental health disorders in the process (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Caring for these wounded soldiers often requires intensive mental-health intervention in addition to traditional medical convalescence and rehabilitation, and has become a top Army priority in recent years (President's Commission on Care for America's Returning Wounded Warriors [PCCWW], 2007).

The new demands have exposed shortfalls in a health care system that now finds meeting the needs of today's forces and their beneficiaries insufficient (DoD, 2007). In particular, the military health system and those networks that support it are being taxed by what have emerged as "signature injuries" from the current conflict: PTSD and TBI (Altmire, 2007). Each of these injuries results in the need for servicemen and women to



seek mental health services, and as such put additional strains on the military's mental health service offerings. While the Army has in place a vast network for providing mental health services to soldiers and their dependents, a variety of barriers to seeking care exist, including strong and pervasive cultural influences such as negative stigma associated with seeking such services.

Self-efficacy, a theory of behavior change developed by Albert Bandura in 1977, is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995). Stated another way, self-efficacy is one's belief regarding his or her ability to perform a particular behavior and the belief that if the behavior is performed, it will lead to the anticipated outcome (Desmond & Price, 1988). It is hypothesized that servicemen or women's perceived self-efficacy has a direct relationship to their willingness to seek the care of mental health services, and further that it has a moderating effect on how negative stigma impacts these individual's willingness to seek care.

## **STATEMENT OF THE PROBLEM**

Negative stigma associated with seeking mental health services undermines servicemen and women's access to such services and to seeking the care they require, either for themselves or their families. While negative stigma associated with seeking mental health services is well documented in servicemen and women and their families (DoD, 2008), little has been done to understand the role self-efficacy plays in these populations as it relates to servicemen and women seeking such services.

## **PURPOSE OF THE STUDY**

The purpose of this study was to assess and evaluate stigma associated with seeking mental health services among members of the U.S. Army, and the role self-efficacy plays in predicting the seeking of those services. The study explored the factors related to the perceived barriers to seeking mental health services in a culture that mandates its members function in conditions anathema to optimal mental health. This study presents insights into servicemen and women's perceived barriers to care, and their self-efficacy related to: (1) their willingness to seek mental health services, (2) overcoming negative stigma associated with seeking mental health services, (3) the moderating effects of self-efficacy on stigma and care seeking behaviors, and (4) the predictive factors associated with servicemen and women's willingness to seek mental health services for themselves or their children.

The results of this study provide information pertinent to developing strategies and interventions for the U.S. Army to assist their servicemen and women (and their families) in overcoming negative stigma associated with seeking mental health services and for improving access to and use of mental health services offered by the Army.

## **RESEARCH QUESTIONS**

This study addressed the following primary research questions:

1. What factors predict servicemen and women's willingness to seek mental health services?

2. Is there an association between self-efficacy for seeking assistance for mental health issues and servicemen and women's willingness to seek mental health services?
3. Is there an association between the perception of negative stigma for seeking mental health services and willingness to seek such services?
4. How does self-efficacy for seeking mental health services moderate the relationship between perceived stigma and willingness to seek mental health services?
5. What factors predict servicemen and women's willingness to seek care for mental health issues for their children?

In order to address these questions, a secondary analysis of data collected via an online survey of active-duty servicemen and women in the U.S. Army was conducted.

#### **DEFINITIONS OF TERMS USED IN THE STUDY**

Access to care	The opportunity to receive health care, including its availability in relation to services offered and capacity of the health care entity to provide care (Novier, 2007).
Army branch	The section of the Army to which the serviceman or woman is assigned (aviation, engineering, special forces, etc.).
Closed head injuries	Injuries incurred when an object or percussive force traumatizes the head without breaking the skull (Hoge, et

	al., 2004). Nearly 80% of traumatic brain injuries are closed head injuries.
Combat stress reaction	Short lived reactions to combat zone stressors (DoD, 2003).
Depression	A common mental disorder that presents with chronic depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration, leading to substantial impairments in an individual's ability to take care of his or her everyday responsibilities (Hoge, et al., 2004).
Families / family members	Family members include spouses, children, adult dependents, and other dependents under age 21 who are not spouses or children. Children include minor dependents age 23 or younger or dependents enrolled as full-time students (DoD, 2003).
Major depression	A depressive disorder characterized by a combination of symptoms that interfere with a person's ability to function normally (i.e., work, sleep, study, eat, and enjoy once-pleasurable activities). Often called <i>clinical depression</i> (Hoge, et al., 2004).
Mental health	A state of emotional and psychological wellness in which an individual is able to use his or her cognitive and emotional capabilities, function in society, and meet the ordinary demands of everyday life (DoD, 2003).
Mental health services	The body of services provided to help promote, maintain, restore and ensure mental health and wellness. In the Army, mental health services include, but are not limited to: assessments/evaluations; crisis interventions; case management; treatment and discharge planning; psychological testing; individual and group counseling; family counseling; alcohol and drug dependency intervention; and other services. For the survey instrument, <i>mental healthcare services</i> was defined as follows: "Services designed to promote the servicemen and women's mental and emotional wellbeing such as handling stress, relating to other people, family relationships, substance abuse, and making decisions. Examples of such services include on-post hospital care, off-post TRICARE network providers, off-post Military One Source mental health care, on-post chaplain services for mental healthcare, primary care physicians, and so on." (DoD, 2008)

Military component	The area of the Army in which the serviceman or woman serves (active Army, Army Reserve, National Guard).
Military grade	The serviceman or woman's rank in the military (private, corporal, captain, etc.).
Military OneSource	A 24/7 resource for Department of Defense active duty, National Guard, and Reserve service members and their families to assist with any and all potential issues, challenges, and problems they face. Military OneSource is an electronic media-based augmentation to the family services offered at military posts world-wide. It is often the first line of intervention for addressing mental healthcare issues faced by servicemen and women (DoD, 2004).
Post	The Army post is the base or camp to which the serviceman or woman is assigned (Fort Lee, Fort Drum, etc.).
Primary blast injuries	Injuries caused by wave-induced changes in atmospheric pressure (Hoge, et al., 2004).
Seeking care	A process that is influenced by social and cultural factors and one that involves symptom appraisal (for example, perceiving a need for mental health help) as well as acting on that appraisal. For the purposes of this study, seeking care refers to seeking mental health and/or behavioral health services within the Army's healthcare structure (Novier, 2007).
Self-efficacy	The belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995).
Servicemen / women	Men and women who are members of the armed services. Also referred to as "soldiers" throughout this document.
Stigma	A mark of shame or discredit, and defined in the social sciences as a negative and erroneous attitude about a person, a prejudice, or negative stereotype (Corrigan & Penn, 1999, pp. 765-766).

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

The purpose of this study was to assess and evaluate stigma associated with seeking mental health services among members of the U.S. Army, and the role that self-efficacy plays in predicting the seeking of those services. The results of this study will provide the Army with information for use in the establishment of interventions to help both reduce stigma associated with seeking mental health services, and provide evidence-based strategies for encouraging treatment for mental health issues and overcoming barriers to seeking such care. This literature review examined the military's recognition of mental health issues resulting from combat exposure; the emergent demand for mental health services for members of the military (including for PTSD and TBI); the epidemiology of PTSD and TBI, including co-morbidities; mental health risk factors and outcomes for servicemen and women and their families; the availability of mental health services in the military; barriers to seeking care, including stigma; the underlying theoretical framework of self-efficacy; and the application of this theory to the current study.

The literature review revealed many studies discussing stigma as a barrier to seeking mental health services, especially for members of the armed services. Few studies were found that either directly or indirectly examined the role that self-efficacy plays in overcoming barriers (such as stigma) to seeking care. While the Army recognizes both the need to provide mental health services to servicemen and women, and the barriers that arise out of the negative stigma associated with seeking such care,

most suggested courses of actions to reduce stigma involve changing military cultural norms related to seeking mental health care. Little if any focus has been placed on the self-efficacy of the care seeker in overcoming the barriers faced when accessing mental health services.

This chapter provides background information on and examination of previous studies related to the barriers that servicemen and women face when seeking mental health services. This background and examination served as the foundation to the present study. The review includes an overview of the history of mental health issues and services in the U.S. Army, the emergent and ongoing demand for military mental health services in recent years (including PTSD and TBI), the current morbidity among servicemen and women based on mental health issues, the availability of and access to mental health services for servicemen and women, barriers to the use of such services (such as stigma and OPTEMPO), issues related to military readiness, and the theoretical framework for the study.

## **THE HISTOY OF RECOGNITION OF MENTAL HEALTH ISSUES DUE TO COMBAT EXPOSURE**

The fact that psychological injuries are as much a part of war and the consequences of battle as are the physical casualties incurred in such engagements is widely acknowledged. The phenomenon of “combat stress” has been a well-documented consequence of war (RAND, 2008), with past names such as “shell shock,” “soldier’s heart,” and “battle fatigue” used to describe psychological wounds incurred during battle. Likewise, the risk to soldiers’ mental health clearly increases during wartime (Rosenheck & Fontana, 1999), and the demand for mental health services among military

servicemen and women is greater during times of conflict (Milliken, Auchterlonie, & Hoge, 2007; Rosenheck & Fontana, 1999; Marlowe, 2001).

The U.S. military has monitored the incidence of psychological casualties since as early as World War II (RAND, 2008). The Army estimates that the incidence rate of psychiatric-related casualties for that war varied widely depending on the soldier's assignment, ranging from 28 per 1,000 to 101 per 1,000 (Dean, 1997). During the Korean War, the estimated incidence rate for psychological casualty was reported to be 37 per 1,000 for deployed troops (Dean, 1997; Jones & Palmer, 2000). During the Vietnam War, the reported incidence rate was 12 per 1,000 (Dean, 1997; Jones & Palmer, 2000). The Army believes that these rates are likely understated for a variety of reasons, (among them lack of uniform evaluation and diagnosis procedures, inaccurate recording, and the lack of post-combat evaluations for such disorders) (Dean, 1997; Jones & Palmer, 2000; U.S. Census Bureau, 1999). While the Department of Defense has made efforts to improve evaluation, diagnosis, and recording of psychiatric casualties, the changing definitions and measures of combat-related mental health conditions make it difficult to compare incidence rates longitudinally or across different wars.

Although medical diagnoses such as PTSD were not formally named and defined until the 1970s, psychological casualties incurred in battle are undoubtedly as old as warfare itself (Rosenheck & Fontana, 1999; Marlowe, 2001). PTSD was officially listed as a mental health disorder in 1979, in recognition of the potentially disabling mental health challenges confronting veterans returning from the Vietnam War (RAND, 2008). Researchers have estimated that 15% (472,000) of Vietnam veterans met the criteria for PTSD diagnosis (Rosenheck & Fontana, 1999; Schlenger et al., 1992). The Vietnam era



also saw the creation of a more formal infrastructure for diagnosing and treating mental health problems related to combat deployment and the stresses that accompany it (Jones & Palmer, 2000).

Analysis during and following the Vietnam War demonstrated that incidence of mental health injuries varied based on the characteristics of combat exposure (Dean, 1997; Jones & Palmer, 2000; Newman, 1964). Research during and following subsequent conflicts also linked deployment stressors and combat exposure to considerable risks of mental health problems, including PTSD, major depression, substance abuse, impaired social functioning, impaired ability to work, and the increased use of health care services (Helzer, Robins, & McEvoy, 1987; Jordan et al., 1991; Kessler et al., 1995; Prigerson, Maciejewski, & Rosenheck, 2002; Kang, Natelson, Mahan, Lee, & Murphy, 2003; Taube, Goldman, & Burns, 1998). Originating during the Vietnam era, there has been increased emphasis on the mental health of returning veterans (Rosenheck & Fontana, 1999), as servicemen and women widely reported psychological problems, including anxiety, depression, nightmares, and insomnia following their return from the combat zone (RAND, 2008; Rosenheck & Fontana, 1999).

### **EMERGENT DEMAND FOR MENTAL HEALTH SERVICES**

As a nation, the United States has passed its tenth year of continuous combat. Since the launch of Operation Enduring Freedom (OEF or the engagement in Afghanistan) in October 2001, more than 3.3 million U.S. troops have been deployed to hostile theaters of operation in either Afghanistan or Iraq (Tan, 2010). The OPTEMPO, or pace of deployment, to these hostile theaters is unprecedented in the history of an all-volunteer force (Tan, 2010; Belasco, 2007; Bruner, 2006). Not only have a higher

percentage of the nation's armed forces been deployed at any given time, but the duration of each deployment has been longer than at any other time since before the Vietnam War (Hosek et al., 2006). Additionally, the breaks between deployments are of a shorter duration than historically typical (Hosek et al., 2006), and the redeployment to hostilities has been unprecedentedly high (DoD, 2010; Hosek et al., 2006; RAND, 2008).

Improvements in body armor, medical technology and the delivery of medical treatments in the field have resulted in fewer servicemen and women being killed in the line of duty than during past conflicts (Regan, 2004; Warden, 2006), a positive outcome with the interesting unintended consequence of placing an increased burden on the resources available to soldiers and veterans. The conflicts in Afghanistan and Iraq have produced the highest wounded-to-kill ratio in U.S. history (DoD, 2010). As of February 27, 2012, the Department of Defense reported a total of 6,365 hostile deaths and 38,612 wounded in action in Afghanistan and Iraq (DoD, 2012). Currently, the ratio of wounded-to-killed in the Middle East conflicts is 1:9, or one fatality for every nine injuries (DoD, 2010). The ratio of wounded-to-killed during World War II was 1:2.4, and in Vietnam was 1:3 (Fischer, Klarman & Oboroceanu, 2007). As a result, soldiers who would likely have died from their wounds in past wars are now more likely to be saved, but often with profound physical, emotional, and cognitive injuries (Hoge et al., 2007).

Since more servicemen and women survive life-threatening experiences (experiences that in the past would have resulted in the death of the soldier), the increased survival rate results in more individuals living with injuries and traumas sustained while deployed to hostile arenas (RAND, 2008). Caring for these wounded servicemen and

women often requires intensive mental-health intervention in addition to traditional medical convalescence and rehabilitation (President's Commission on Care for America's Returning Wounded Warriors, 2007).

Both the Army and the research community agree that the combination of increased OPTEMPO and the improvements in battle survival rates has augmented both the incidence and prevalence of mental health casualties such as PTSD and issues related to TBI (Hoge et al., 2006; Novier, 2007; DoD, 2007; RAND, 2008; Belasco, 2007). Increasingly, safeguarding the mental health of servicemen and women is becoming an integral priority for the Army as it addresses readiness of its fighting forces (OASAFMC, 2007; OUSDPR, 2007.; Office of the Surgeon General of the Army [OSGA], 2005).

The Department of Defense anticipates at least some level of engagement in hostilities in both Afghanistan and Iraq for years to come (DoD, 2007; RAND, 2008). The nearly decade-long commitment to these two countries has already taken a profound toll on the Nation's fighting forces, and the Army's continued involvement in ongoing hostilities promises to add to the negative impacts of low morale, mental stress, and risk for physical and mental harm to these soldiers and their families (DoD, 2007; APATF, 2007; RAND, 2008). The impact on soldiers' families must not be discounted, given that confidence in the well-being of the family unit is of paramount importance to the readiness of deployed servicemen and women (Castro et al., 2000; Castro & Thomas, 2007; Hoge et al., 2006). Understanding the scope and nature of the psychological toll for both soldiers and their families is critical to maintaining the overall health of the fighting force (Smith et al., 2008; Bell & Schumm, 1999). The Department of Defense Task Force on Mental Health (2007) stated that the threat to the psychological health of

the United States' fighting forces, their families, and their survivors is among the most pervasive and potentially disabling consequence of the current hostilities.

Most servicemen and women who deploy to hostile theaters return from their service without mental health disabilities (DoD, 2007; Smith et al., 2008); however, recent studies show that nearly one in four servicemen or women returning from either Afghanistan or Iraq may have mental illness diagnoses such as PTSD, anxiety disorder, or depression (Hoge et al., 2004; Smith et al., 2008; DoD, 2007). The frequency of diagnoses for such conditions has increased while rates for other medical diagnoses have remained the same or improved (Hoge et al., 2004; Milliken, Auchterlonie, & Hoge, 2007; Smith et al., 2008). The National Institute of Mental Health (2009) reported that PTSD, major depression, and generalized anxiety were the fastest growing diagnoses of mental health issues for returning servicemen and women. The increased demand for treatment of such conditions, brought on by the nation's involvement in the Global War on Terrorism, has created an unforeseen demand not only on individual military service members and their families, but also on the Department of Defense itself (DoD, 2007).

The new demands have exposed shortfalls in a health care system that now finds meeting the needs of today's forces and their beneficiaries insufficient (DoD, 2007).

Data from the Post-Deployment Health Re-Assessment Survey (an overall health assessment administered to servicemen and women between 90 and 120 days following their return from deployment) indicated that 38% of soldiers report psychological symptoms resulting from their deployment (DoD, 2007; Lowe et al., 2004).

Psychological issues are reported to be significantly higher among those individuals with repeated deployments to hostile theaters (DoD, 2007). Likewise, the Army is concerned

about the psychological impact on family members of the deployed, with hundreds of thousands of children having experienced the deployment of one or both parents to either Afghanistan or Iraq (DoD, 2007; U.S. Army, 2006; U.S. Army, 2007; Huebner & Mancini, 2005).

In particular, the military health system and those networks that support it are being taxed by what have emerged as “signature injuries” from the current hostilities: PTSD and TBI (Altmire, 2007). Each of these injuries results in the need for servicemen and women to seek mental health services and, as such, put additional strains on the military’s mental health service offerings. The two injuries often coincide, requiring integrated and interdisciplinary treatment methods (Hoge et al., 2008; DoD, 2007; U.S. Army, 2007; Smith et al., 2008). Each of these conditions is discussed below.

### **Post-Traumatic Stress Disorder (PTSD)**

Post-traumatic stress disorder, or PTSD, can develop following exposure to life-threatening events, natural disasters, terrorist incidents, serious accidents, or violent personal assaults (U.S. Government Accountability Office [USGOA], 2004; Department of Veteran Affairs [DVA], 2005). PTSD is the most prevalent mental disorder arising from combat, and servicemen and women who experience stressful events while in combat are susceptible to developing the disorder (USGOA, 2004, 2006a, 2006b). Victims of PTSD often relive profoundly stressful experiences through nightmares and flashbacks, have difficulty sleeping, and feel detached or estranged from others. These symptoms may occur within days following the stressful event, or may be delayed in onset for months or years (USGOA, 2004, 2006a, 2007). Symptoms that appear within

the first four days following exposure to a stressful event are generally diagnosed as acute stress reaction or combat stress (USGOA, 2004; Hoge et al., 2007). Combat stress reactions are typically short-lived reactions to stress in the combat zone (Hoge et al., 2007), but when the symptoms of acute stress reaction or combat stress continue for more than one month, PTSD is diagnosed (USGOA, 2004). PTSD is a longer term condition than other stress-related ailments, and its symptoms tend to interfere with social and work functioning over a long period (Grieger et al., 2006).

Research shows that combat exposure and being wounded are consistently associated with positive PTSD screenings and diagnoses (RAND, 2008). Combat exposure includes: having been shot at, firing one's own weapon, knowing someone who has been killed, killing an enemy combatant, handling dead bodies, and similar experiences (Hoge et al., 2004; Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007). When measures such as these were included in logistic regression models, they were consistently associated with increased likelihood of screening positive for PTSD (Grieger et al., 2006; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Hotopf et al., 2006; Kolkow, Spira, Morse, & Grieger, 2007; U.S. Army, 2006).

Having suffered an injury or having been wounded was also associated with an increased likelihood of PTSD across studies (Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Hoge et al., 2007). Among soldiers who were wounded, those with more severe physical symptoms were most likely to have PTSD and depression at four and seven months post-injury, and more severe physical symptoms at one month predicted PTSD at seven months (Grieger et al., 2006). Also worth noting is the fact that

combat exposure was associated with other mental health issues (such as depression) in only 1 of 11 studies that contained measures of other diagnoses (U.S. Army, 2006). Other studies identified additional predictors of reported PTSD and depression, including: young age (<25 years old) (Grieger et al., 2006; Seal, Bertenthal, Miner, Sen, & Marmar, 2007); low personnel morale (Abt Associates, 2006); low unit morale and unit cohesion (Abt Associates, 2006; U.S. Army, 2003); certain ranks (such as junior enlistees) (Martin, 2007; Smith et al., 2008); duration of deployment (U.S. Army, 2006); and, multiple deployments to hostile theaters (U.S. Army, 2005; U.S. Army, 2006).

### **Traumatic Brain Injury (TBI)**

According to the Defense Veterans Brain Injury Center (2009), more than 160,000 U.S. troops have suffered a traumatic brain injury, or TBI, since 2001 (RAND, 2008). The term traumatic brain injury appears in medical literature as early as the 1950s, but its recent application tends to relate to mild concussive injuries sustained in close proximity to blasts. Such primary blast injuries have become a major focus of military medicine since the onset of the current hostilities in Afghanistan and Iraq (Hoge et al., 2008). Researchers believe that upwards of 30% of troops engaged in active combat in these theaters have suffered at least a mild closed head injury as a result of being in close proximity to an explosive blast, such as a roadside or car bomb (Glasser, 2007; Hoge et al., 2007; Hoge et al., 2008). The increased diagnoses of TBIs are largely attributable to the increased use of improvised explosive devices (IEDs) by enemy combatants (RAND, 2008). Beginning in 2005, IEDs accounted for an increasing proportion of those killed or injured in Afghanistan and Iraq, and that proportion remains

high (Brookings Institute, 2007). IEDs are becoming increasingly sophisticated and have proven highly effective against U.S. forces (Brookings Institution, 2007; RAND, 2008).

By some estimates, IEDs account for nearly 40% of all casualties sustained by U.S. forces in these conflicts (Brookings Institution, 2007). Most of these injuries are considered mild (Defense Veterans Brain Injury Center, 2009), and the milder forms of this injury can resolve themselves quickly (often within three months of sustaining the injury) (Defense Veterans Brain Injury Center, 2009). In moderate to severe cases, however, TBI is a frequent co-morbidity of mental health issues such as PTSD, depression, and anxiety (Altmire, 2007; Glazer, 2007; RAND, 2008; Colarusso, 2007). TBI is associated with amnesia, skull fractures, intracranial lesions, increased unconsciousness, and in some cases can lead to death (Thurman, Snizek, Johnson, Greenspan, & Smith, 1995; Colarusso, 2007).

So prevalent are TBIs in the current conflicts that since December 2007, the Department of Defense has included survey items related specifically to TBI symptoms on the Post-Deployment Health Assessment and the Post-Deployment Health Reassessment tools (DoD, 2008). In-theater TBI screenings are now routine for all servicemen and women who have been exposed to any explosive blast, and all evacuees from Afghanistan and Iraq who receive medical care at Landstuhl Regional Medical Center in Germany receive TBI assessment (The TBI Task Force, 2007; Warden, 2006). Additionally, military personnel who have suffered an injury caused by a blast, a motor vehicle accident, a fall, or a gunshot wound to the head or neck are assessed for TBI once they are evacuated to Walter Reed Army Medical Center (The TBI Task Force, 2007; Warden, 2006).



## **Co-Morbidities**

Co-morbidity refers to two or more conditions occurring simultaneously in one individual (Greenfield et al., 1998). Research shows that individuals with co-occurring mental, medical, and substance use disorders have more severe symptoms for each of their co-existing conditions, likely require more specialized treatments for their conditions, tend to have poorer outcomes from the treatment they receive, and experience more disability in social and occupational functioning than individuals with only one condition (Greenfield et al., 1998; Olfson et al., 1997; Ormel et al., 1994; Shalev et al., 1998). The complexity of treating co-morbidities and the diminished successful outcomes from treatment in such cases is of special concern to the military health system in relation to PTSD and TBI (Hoge et al., 2006; VA & DoD, 2004). Research in the general population shows that nearly 88% of men and 79% of women with PTSD experience co-morbidity diagnoses in their lifetimes (Kessler, et al., 1995), on the average having 2.7 accompanying diagnoses (Marshall et al., 2001). Little research specifically related to co-morbidity with PTSD and TBI has been conducted with the current military cohort (RAND, 2008), but researchers agree that the rates of PTSD and TBI seen in returning servicemen and women offer clues to the degree of co-morbidity that may be seen from these conditions.

### **PTSD and TBI Co-Morbidity**

Recent research suggests that PTSD and TBI can and do co-occur (Joseph & Masterson, 1999; Hoge et al., 2008). A study of U.S. Army infantry soldiers surveyed three or four months after return from Iraq showed that, among those reporting a TBI with loss of consciousness, 43.9% also reported symptoms consistent with PTSD. This

percentage is greater than that for those reporting TBI with altered mental status (27.3%), those reporting other injuries (16.2%), and those with no injury (9.1%) (Hoge et al., 2008). Another recent survey found that one-third of servicemen and women with a probable TBI also met criteria for probable PTSD (RAND, 2008), suggesting a strong association between TBI and PTSD.

### **Depression**

Depression is frequently co-morbid with a wide range of other disorders, with about 45% of depression diagnoses in the year following deployment co-occurring with at least one other diagnosis (Kessler, Chiu, Demler, & Walters, 2005). In such cases, depression is rarely the primary diagnosis (Kessler et al., 2003). The recent National Epidemiologic Survey of Alcoholism and Related Conditions (NESARC) found that, in the general population, having major depression within the past year was most commonly associated with personality disorders (38%), anxiety disorders (36%), nicotine dependence (26%), alcohol use disorders (14%), and drug use disorders (5%) (Hasin, Goodwin, Stinson, & Grant, 2005). Depression severity is significantly and positively correlated with impaired functioning (Hasin et al., 2005).

There is substantial evidence for the co-morbidity of both TBI and PTSD with depression in both civilian and military populations (VA & DoD, 2000; RAND, 2008). In civilian populations, PTSD and depression frequently co-occur. For example, among trauma survivors from a hospital emergency room, 78.4% of those with a diagnosis of PTSD experienced depression at some point in their lifetime following their PTSD diagnosis (Shalev et al., 1998). In military populations, a study of hospitalized soldiers

found that more than 6% of the sample met the criteria for both depression and PTSD up to seven months following their injuries (Grieger et al., 2006). Another recent survey found that nearly 66% of soldiers with a PTSD diagnosis also met the criteria for major depression (RAND, 2008). Some evidence suggested that individuals experiencing PTSD and depression simultaneously are more likely to have negative consequences than persons with either diagnosis alone (Campbell et al., 2007). Campbell, et al. (2007) found that veterans in a Veterans Administration (VA) hospital setting with co-morbid depression and PTSD had more severe depressive symptoms, lower social support, more suicide ideation, and more frequent primary care and mental health care visits than did individuals with depression alone. Other studies have found that individuals with co-morbid depression and PTSD had more severe symptoms and lower social and cognitive functioning than individuals with only one of these diagnoses (Shalev et al., 1998; Grieger et al., 2006).

There is strong evidence that co-morbidity between TBI and depression is common (Moldover, Goldberg, & Prout, 2004; Busch & Alpern, 1998). TBI symptoms overlap substantially with symptoms of depression, which can make determining co-morbidity among these conditions difficult (Babin, 2003), but many researchers agree that the conditions can and do co-exist (Babin, 2003; Kim et al., 2007; Deb, Lyons, Koutzoukis, Ali, & McCarthy, 1999; Holsinger et al., 2002). A recent study found that 33% of those individuals with a TBI diagnosis also meet the criteria for depression (RAND, 2008). Individuals with co-morbid TBI and depression experienced more functional impairment, more anxiety and aggressive behavior, and poorer social functioning, and they perceived their disabilities to be more severe than those individuals

with either condition alone (Fann, Katon, Uomoto, & Esselman, 1995; Jorge et al., 2005). Furthermore, individuals with co-morbid TBI and major depressive disorder (MDD) are at higher risk of cognitive disability, anxiety disorders, and poorer quality of life than are individuals who do not develop MDD (Levin et al., 2001). Among those with TBI, risk factors for developing depression include stress, social isolation, maladaptive coping, and lateral lesions (Kim et al., 2007).

### **Suicide**

Suicide, the taking of one's own life, is a major concern in the armed services (Simpson & Tate, 2007; Bresler, Scalora, Elbogen, & Moore, 2003; Kaplan, Huguet, McFarland, & Newsom, 2007). One of the leading causes of death among young people (<25 years old) in the civilian population, suicide rates for the nation are roughly 11 per 100,000 (CDC, 2006; NIMH, 2009). While suicide rates within the armed services are similar to the national averages (Heron & Smith, 2007; Lehmann, McCormick, & McCracken, 1995; Rothberg, Bartone, Holloway, & Marlowe, 1990), data show that veterans of past conflicts have an increased risk of suicide (Kaplan et al., 2007; Boehmer et al., 2004). Among persons who have committed suicide, the majority have had one or more mental disorders, making psychiatric problems one of the strongest risk factors of this outcome (Harris & Barraclough, 1997). Given the growing concerns about elevated rates of mental disorders among servicemen and women returning from hostile theaters of operation, the Army has recently placed tremendous emphasis on suicide prevention among the ranks (Simpson & Tate, 2007; Bresler et al., 2003; Kaplan et al., 2007).

Major depressive disorder, TBI, and PTSD are all co-morbidities for suicide (RAND, 2008; Simpson & Tate, 2007). Studies in civilian populations show that suicide

is closely associated with depressive disorders (Cavanagh, Carson, Sharpe, & Lawrie, 2003; Henriksson et al., 1993; Isometsa, 2001), and that 16% of persons with a lifetime history of MDD had at least one suicide attempt (Chen & Dilsaver, 1996). Individuals with a major depressive episode are ten times more likely to have suicidal ideation and are 11 times more likely to have had a nonfatal suicide attempt (Lehmann, McCormick, & McCracken, 1995).

People with traumatic brain injury (TBI) have an increased risk of suicide, suicide attempts, and suicidal ideation compared to those without TBI (Simpson & Tate, 2005, 2007), and individuals with PTSD have an increased risk of suicidal ideation when compared to the general population (Kessler, Borges, & Walters, 1999; Sareen et al., 2005). Kessler, Borges, and Walters (1999) found that PTSD is more strongly associated with suicidal ideation and attempts than any other anxiety disorder. Among a sample of 100 Vietnam veterans with PTSD at a VA hospital, 19 had made a suicide attempt, and 15 more had been “preoccupied” with thoughts of suicide since the war (Hendin & Haas, 1991). Hibbard, Uysal, Kepler, Bogdany, and Silver (1998), found that persons with a self-reported history of a severe head trauma with loss of consciousness or confusion had a higher lifetime risk of having attempted suicide.

### **Co-Morbidity with Other Psychiatric Disorders**

Among individuals with PTSD, the most common co-morbidities are with depression, substance use, and other anxiety disorders (Brady, Killeen, Brewerton, & Lucerini, 2000). Among civilian patients with a PTSD diagnosis, nearly 65% met the criteria for another disorder (most commonly phobia, major depressive disorder, and

bipolar depression) (Olfson et al., 1997). Co-morbidity rates tend to increase as PTSD symptoms increase (Kim et al., 2007). Anxiety disorders such as panic disorder, social phobia, generalized anxiety, or obsessive-compulsive disorder increase as PTSD symptom severity increases (Marshall et al., 2001), suggesting that individuals are at increased risk for co-morbidities as their PTSD symptoms worsen. Within military populations, social phobia and current social anxiety have been associated with anxiety, reports of shame, and homecoming adversity (Orsillo, Heimberg, Juster, & Garrett, 1996). Panic disorder symptoms overlap with PTSD symptoms such as hypervigilance, and have been shown to be more common among personnel and veterans who were exposed to combat during their military service (Deering, Glover, Ready, Eddleman, & Alarcon, 1996).

Higher rates of TBI have been associated with increased risk of psychiatric disorders such as anxiety (Moore, Terryberry-Spohr, & Hope, 2006), depressive disorders (Anstey et al., 2004; Hibbard et al., 1998), and substance use (Anstey et al., 2004; Silver, Kramer, Greenwald, & Weissman, 2001). In a study of individuals with mild TBI, most patients recovered completely, but those who had poorer recovery outcomes were more likely to have co-morbid disorders such as depression and anxiety (Mooney & Speed, 2001). Chronic pain is another TBI co-morbidity, as 56% of patients with mild-to-severe TBI report experiencing chronic pain at brain injury rehabilitation centers (Lahz & Bryant, 1996; Andary et al., 1997).

## **SERVICEMEN AND WOMEN'S MENTAL HEALTH RISK FACTORS AND OUTCOMES**

The total U.S. military force is approximately 2.3 million servicemen and women (DoD, 2010; DoD, 2007). This is considered an “all-volunteer” force (Belasco, 2007; DoD, 2008), and comprises both active and reserve contingencies, with nearly 48% of servicemen and women serving in the Army (DoD, 2008). Army personnel has made up the largest share of the military force in the Afghanistan and Iraq conflicts (O’Bryant, 2006, 2007). They are also the most frequently studied military personnel with respect to their deployment-related mental and cognitive health issues (RAND, 2008; Vasterling et al., 2006; Hoge et al., 2007; Milliken, Auchterlonie, & Hoge, 2007; Lapierre, Schwegler, & LaBauve, 2007).

Women account for approximately 14% of Army personnel (OUSDPR, 2007; DoD—DACOWITS, 2003), compared to 51% of the population of the United States (U.S. Census Bureau, 2009). As recently as 2008, the Army reported that 52% of its personnel are married (OUSDPR, 2008), compared to 49.7% in the civilian population (U.S. Census Bureau, 2009; Narrow, Rae, Robins, & Regier, 2002). Interestingly, there are fewer active duty members of the military (1,365,600) than there are family members associated with the service personnel (1,864,400) (DoD, 2007). More than one-third of active duty personnel are married with children (and 5% are single parents) (DoD, 2007). Most children who are associated with the military are between the ages of birth and 5 years old. Additionally, there are more than 8,300 adult dependents ages 23 or older among active duty military families (DoD, 2007; DoD—ODUSD, 2007; DoD—ODUSD, 2004).

## **Epidemiology of PTSD, TBI and Depression in the Army**

Over the past decade, data on the incidence and prevalence of mental health and cognitive conditions among Army personnel have become more available and robust (RAND, 2008), especially those related to the conflicts in Afghanistan and Iraq. During past conflicts like World War II, Vietnam, or the Gulf War, data related to mental health morbidity were collected well after the completion of service, if at all (Hoge et al., 2008). In the more recent hostilities, data on servicemen and women's mental health have been collected throughout the course of the deployment cycle (Hoge et al., 2008; DoD, 2008). This includes assessments of personnel prior to deployment, while in the field, and immediately upon their return from deployment (RAND, 2008; Hoge et al., 2008). As mentioned earlier, research conducted following past military conflicts has shown that stresses related to deployment and exposure to combat pose considerable risks to soldiers' mental health, including increased likelihood of a variety of ailments like PTSD, major depression, substance abuse, and diminished ability to work (Helzer et al., 1987; Prigerson et al., 2002; Jordan et al., 1991; Kessler et al., 1995). Given the ongoing military operations in the Middle East, mental health disorders are likely to remain an important health care concern for the Army for years to come (DoD, 2007; U.S. Army, 2007).

Recent studies demonstrated that upwards of 6% of active-duty servicemen and women report receiving treatment for a mental or cognitive health issue each year (Hoge et al., 2002; Hoge et al., 2008), but many believe that this figure is an underrepresentation of the need for such services (Hoge et al., 2008; Milliken, Auchterlonie, & Hoge, 2007). For example, , some researchers believed that about half (53%) of servicemen and



women who met the criteria for PTSD or major depression had sought help from a physician or mental health care provider in the past year (Hoge et al., 2008; U.S. Army, 2007). Likewise, of those servicemen and women reporting a probable TBI, more than half (57%) had not been evaluated by a physician (Hoge et al., 2007; Hoge et al., 2008). Military service personnel with probable conditions such as PTSD and TBI seek care at a rate similar to the civilian population, resulting in similar underreporting of such conditions and underuse of the mental health services available for treating them (Hoge et al., 2008; Milliken, Auchterlonie, & Hoge, 2007).

Pre-deployment assessments of mental and cognitive conditions are part of the Army's standing operating procedures, largely to establish force readiness and to serve as a baseline against which to measure changes that occur during deployment (DoD, 2008). Multiple studies have assessed the pre-deployment prevalence of PTSD, TBI, and other mental health conditions, resulting in consistent findings about pre-deployment conditions (Vasterling et al., 2006; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Hoge et al., 2004; Smith et al., 2008). These studies showed that there was no difference in the prevalence of mild TBI between servicemen and women who later deployed and a comparison group that did not deploy (Vasterling et al., 2006). Hoge et al. (2004) reported that 9% of a pre-deployment sample screened positive for PTSD and 11% screened positive for depression regardless of functional impairment.

During the past decade, the U.S. Army Surgeon General has implemented Mental Health Advisory Teams to study mental health issues related to deployment to Iraq and Afghanistan (DoD, 2008). Since 2003, these studies have been conducted annually in July to help assess the prevalence of PTSD and depression among servicemen and

women in theater (DoD, 2008). These reports focus specifically on Army brigade combat teams in Iraq and Afghanistan and use the PTSD Checklist (PCL) instrument to identify cases of acute stress (OSGA, 2003; OSGA, 2005; OSGA, 2006a; OSGA, 2006b; Weathers, Litz, Herman, Huska, & Keane, 1993). Prevalence estimates for acute stress across the years were at roughly 10%, while rates of depression were also relatively constant at between 5 and 9% of troops meeting probable diagnostic criteria (OSGA, 2003; OSGA, 2005; OSGA, 2006a; OSGA, 2006b). Although these studies provide estimates of stress reactions experienced by servicemen and women while they are in theater, researchers are still unsure of how to relate to symptoms that emerge or continue when service personnel return from the combat environment (Hoge et al., 2008).

In April 2003, the DoD mandated assessments for returning soldiers via the Post Deployment Health Assessment (PDHA) questionnaire (RAND, 2008). As a result, prevalence estimates of PTSD and depression are available for service members immediately upon their return from deployment. Soldiers typically complete these assessments prior to leaving the country to which they are deployed, or in some cases within two weeks of returning home (Hoge, Auchterlonie, & Milliken, 2006). The PDHA has a low specificity, so it is likely to return incorrect positive screens for PTSD and depression (Hoge, Auchterlonie, & Milliken, 2006; Martin, 2007; Milliken, Auchterlonie, & Hoge, 2007), but it aims to ensure that soldiers suffering from these conditions do not slip through the cracks. The PDHA assessments, and the subsequent Post-Deployment Health Reassessment (PDRA) (described below), generally reveal that the estimated prevalence of PTSD and depression increases as the time from returning from deployment increases (Hoge, et al., 2008). Typically, approximately 10% of those

returning from theater screened positive for PTSD, and 4% screened positive for depression (Milliken, Auchterlonie, & Hoge, 2007).

There is a widely held belief among military mental health providers that returning personnel do not complete the PDHA honestly, since doing so runs the perceived risk of delayed reunions with family members and friends (RAND, 2008). Additionally, many symptoms of psychological disorders or morbidity develop slowly and may not be present immediately upon return from the theater. These circumstances resulted in the Army adding an additional Post-Deployment Mental Health Assessment, the PDHR instrument, to allow for a six-month follow-up on the preliminary post-deployment assessment (Martin, 2007). Using this tool, the Army has documented increased percentages of returning troops screening positive for PTSD and depression, with rates jumping to 17% (Milliken, Auchterlonie, & Hoge, 2007; Martin, 2007). Of those servicemen and women that screened positive for PTSD using the PDHR reassessment instrument, roughly 30% had screened positive for PTSD on the initial PDHA, meaning that approximately two-thirds of the positive screens were newly diagnosed cases (Martin, 2007).

Longitudinal studies of cohorts who experienced multiple deployments to hostile theaters showed that identification of PTSD and depression increases as time passes (Grieger et al., 2006 Lapierre, Schwegler & LaBauve, 2007). For example, at one-month post-deployment, 4% of the study cohort screened positive for PTSD and 2% had co-morbid PTSD and depression; however, at four months post-deployment, the PDHR revealed that the same cohort reported 12% positive screenings for PTSD and 8% co-morbidity of PTSD and depression (Grieger et al., 2006). When assessed at least one

year following the return from Iraq or Afghanistan, 17% of Army soldiers met criteria for PTSD (Hoge et al., 2007). Smith et al. (2008) collected cohort data from soldiers twice, establishing a baseline and conducting a follow-up assessment. They found that among those soldiers who screened positive for PTSD at baseline and were subsequently deployed to Iraq or Afghanistan, 48% who reported combat exposure met the criteria for a PTSD diagnosis, compared to 22% of those that did not see combat.

Researchers estimate that within four months of returning from a tour of duty in Iraq or Afghanistan, 15% of soldiers reported a traumatic head injury during deployment severe enough to cause loss of consciousness or altered mental status (Hoge et al., 2008). An assessment of 1,490 soldiers at Fort Irwin Army Post in California, 12% suffered concussions during their combat tours—injuries severe enough to be consider TBI (Zoroya, 2006). Eighty-five percent of those soldiers were still suffering from symptoms related to those injuries ten months later (Zoroya, 2006).

### **Consequences for Family Members**

Populations suffering relatively high rates of PTSD, depression, or TBI are likely to demonstrate relatively high rates of family difficulties as well (Hoge et al., 2008). PTSD, depression, and TBI all take a toll on family relationships, whether with spouses, in parenting roles, or both (Galovski & Lyons, 2004; Uysal, 1998). Such impairments also result in a substantial care-giving burden for family members of the afflicted (Figley, 1993), with the spouse or intimate partner of the soldier often bearing the burden.

The term “secondary traumatization” is used to describe a situation in which the intimate partners of trauma survivors themselves begin experiencing symptoms of trauma

(such as nightmares or intrusive thoughts) (Figley, 1993; Glaovski & Lyons, 2004).

There is extensive evidence in the literature that secondary traumatization occurs and has serious negative consequences for the emotional and psychological well-being of soldiers who return from war with a PTSD diagnosis (Dirkzwager, Bramsen, Adèr, & van der Ploeg, 2005; Verbosky & Ryan, 1988). Regardless of whether the soldier's trauma was psychological (manifest in PTSD symptoms) or neurological (TBI), there is evidence that the trauma's negative effects can spread to the individual's intimate partner (Ben Arzi, Solomon, & Dekel, 2000).

The more symptoms of PTSD reported by a soldier, the greater the caregiving burden reported by their intimate partner, and the more likely the partner will experience anxiety, irritability, grief, and dysphoria (Solomon, Waysman, Belkin, et al. 1992; Solomon, Waysman, Levy, et al., 1992). Evidence suggests that depression in one partner predicts depressive moods in the other partner (Joiner & Coyne, 1999), declines in relationship quality (Ben Arzi et al., 2000), and increased risk for divorce (Joiner & Coyne, 1999). Intimate partners of soldiers suffering from PTSD or TBI (or both) report significantly higher levels of distress and psychological symptoms than do the partners of healthy veterans (Ben Arzi et al., 2000).

In addition to the transmission of symptoms of trauma to their intimate partners, returning servicemen and women who suffer from mental disorders report emotional challenges such as anger with, and aggression toward, their loved ones (RAND, 2008). Research following Vietnam showed that managing anger was among the most challenging issues returning veterans faced (Blum, Kelly, Meyer, Carlson, & Hodson, 1984), and there is evidence to suggest that challenges regulating anger are prevalent

among veterans with PTSD (Chemtob, Novaco, Hamada, Gross, & Smith, 1997). Veterans with PTSD experience chronic and excessive sensitivity to threats, and a tendency to act aggressively or even hostilely to perceived threats (Chemtob, Hamada, Roitblat, & Muraoka, 1994). Veterans with PTSD experience higher levels of anger than nonveterans with PTSD or veterans with other psychiatric diagnoses (Chemtob et al., 1997). Rates of violence or abuse within marriages among veterans with PTSD are alarmingly high. For example, Williams (1980) found that 50% of couples seeking treatment where one spouse was a Vietnam veteran with PTSD reported physical aggression and violence within the household. Studies comparing veterans with PTSD with veterans seeking care for other reasons found that those with PTSD report higher rates of domestic violence than do those with other diagnoses (Carroll, Rueger, Foy, & Donahoe, 1985; Rentz et al., 2007). Vietnam veterans with higher levels of PTSD symptoms were more likely than other groups to engage in violent behavior within the home (Jordan et al., 1992).

A diagnosis of depression is also a predictor of intimate-partner violence, in both the general and military populations. When controlling for other related factors, levels of depressive symptoms are positively associated with increased violence toward female partners (Boyle & Vivian, 1996). More severely violent men report higher levels of depression than do less violent men (Boyle & Vivian, 1996). Pan, Neidig, and O'Leary (1994) found that depressive symptoms among men in military populations were associated with rates of aggression against female partners. They found that each 20% increase in depressive symptoms led to a 74% increase in the likelihood of physical aggression against a female partner (Pan, Neidig, & O'Leary, 1994). Schumacher,

Feldbau-Kohn, Slep, and Heyman (2001) found depression to consistently predict intimate-partner violence. Loss of impulse control and increased aggressive behavior are known to be direct consequences of the neurological damage associated with TBI (Kim, 2002; RAND, 2008). Research with men receiving treatment for spousal abuse shows that this population has a higher prevalence of TBI than that found in the general population (Marsh & Martinovich, 2006).

Post-combat mental disorders also impact parent-child dynamics. The mechanisms of the negative effects appear to be similar in negative intimate partner relationship and in diminished effectiveness in parenting (Cozza, Chun, & Miller, 2011; Cozza et al., 2010; Cozza, Chun & Polo, 2005; Davidson & Mellor, 2001). Research focusing on family outcomes for individuals with post-combat mental health disorders found that men with PTSD reported significantly more problems and less satisfaction with parenting than did other veterans (Jordan et al., 1992; Ruscio, Weathers, King, & King, 2002). Symptoms of PTSD such as disinterest, detachment, and emotional unavailability and numbing are all considered factors of poor parent-child relationship in military families (Ruscio et al., 2002). Research in the general population also consistently shows that depression impairs parenting behaviors (Downey & Coyne, 1990; Jordan et al., 1992; Ruscio et al., 2002). Such studies show that depressed parents' interactions with their children are characterized by reductions in positive affect and energy with simultaneous increases in hostility and irritability, when compared to parents who are not suffering from depressive symptoms (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Parents suffering from depression have difficulty with child management (Cummings & Davies, 1999) and demonstrate ineffective and inconsistent

discipline of their children (Oyserman, Mowbray, Meares, & Firminger, 2000). There do not appear to be any studies examining the effects of TBI on parenting in military populations (RAND, 2008), but studies of the impact of TBI on parenting in the civilian population have been conducted (Pessar, Coad, Linn, & Willer, 1993; Uysal et al., 1998). These studies suggest that parents with TBI are less engaged, less encouraging, less consistent in discipline, and less emotionally expressive than are their uninjured counterparts.

The impacts of combat-related mental disorders on intimate partner relationships and parenting practices are likely to have long-term negative effects on the development of the children of military families (Wamboldt & Reiss, 2006). While these consequences may be only indirectly related to the injuries suffered by the serviceman or woman, their impact may be no less profound (Cummings, DeArth-Pendley, Du Rocher Schudlich, & Smith, 2001). Parents with one diagnosis of PTSD in the household report increased levels of child behavior problems when compared to non-PTSD households (Cummings et al., 2001; Jordan et al., 1992), and outcomes of children of abusive veterans with PTSD are especially negative (Rosenheck & Fontana, 1998).

The outcomes for children of depressed parents have not been specifically studied in military populations (RAND, 2008) but have been extensively studied in the general population. Across numerous studies, the results are clear and consistent: children of depressed parents are at greater risk for behavioral problems, academic disruptions and challenges, and psychiatric diagnoses than the children of non-depressive parents (Beardslee, Bemporad, Keller, & Klerman, 1983; Beardslee, Versage, & Gladstone, 1998; Cummings & Davies, 1999).



## **AVAILABILITY OF MENTAL HEALTH SERVICES**

The Department of Defense's health care system, commonly referred to as the military health system (MHS), has two primary missions: enhancing the nation's security by providing health services for the full range of military operations, and sustaining the health of those entrusted to its care (DoD, 2008). More than nine million individuals are eligible to receive care within the MHS, including servicemen and women on active duty, their family members, military retirees and their families, and some reserve component personnel (TRICARE, 2009; TRICARE, 2004). The MHS provides care to its beneficiaries through two means: direct care via military treatment facilities (MTFs) and clinics, and supplemental care via TRICARE, a health care plan comprised of services purchased in the civilian sector (local civilian hospitals, pharmacies, and health professionals) (TRICARE, 2009). The MHS direct care system includes 83,800 primary care providers, 77,300 specialists, 65 in-patient hospitals and medical centers, 412 medical clinics, 414 dental clinics, and the Military OneSource offerings (TRICARE, 2009).

Soldiers serving in Afghanistan or Iraq also receive health care at military facilities in theater. In the event of traumatic injury or illness, servicemen and women are evacuated from theater to the trauma center at the MTF in Landstuhl, Germany. This evacuation typically occurs within 24 hours of sustaining a traumatic injury (Cullen, 2006; Moore et al., 2007). If necessary, the injured soldier can be returned for treatment at a MTF in the United States within the next 24 hours via the Air Forces' Critical Care Air Transport Teams, which are essentially airborne intensive care units (Cullen, 2006; Moore et al., 2007). By contrast, injury-related evacuations from Vietnam to U.S.

hospitals typically took 45 days (Cullen, 2006). Care and rehabilitation for injured servicemen and women progresses from inpatient to outpatient, either at the MTF where initial care is received or following a move to another facility (including VA facilities) (RAND, 2008).

Congress allocated \$42 billion for MHS spending in 2009 (DoD, 2008). This did not include spending on veterans' health care, which falls under the auspices of the Veterans Health Administration (VHA). In FY2008, Congress appropriated \$31 billion for health care to the VHA for the 7.9 million enrolled veterans and their families (DVA, 2009). The MHS and VHA offer a broad array of health care services, ranging from preventative services to sophisticated trauma care and rehabilitation (e.g., for severe combat-related injuries). Health care costs account for approximately 8% of the Department of Defense budget, and there are concerns that providing the current level of services is cost-prohibitive in the long term (GAO, 2007). The Army has made a commitment of materiel and human resources to provide care to servicemen's and women's service-related chronic mental health conditions (DoD, 2008), and these efforts have had some positive results in terms of increasing utilization for such services and desired outcomes.

Utilization rates for mental health services among military personnel with probable PTSD or major depression were similar to rates found in the general population of the United States (Wang et al., 2005). Across all categories, veterans of recent combat showed increased utilization rates for mental health services, with servicemen and women returning from Iraq accessing care more than veterans in any other category used by the Army (Hoge, Auchterlonie, & Milliken, 2006). These increases in utilization rates

are largely due to the Army's required screenings for mental health disorders, with personnel assessments for such disorders a mandated component of pre- and post-deployment activities (DoD, 2008).

When care is received, there is evidence from within the military and the private sector that it works. Evidence on the efficacy of treatments for both PTSD and major depression is plentiful (Butler, Chapman, Forman, & Beck, 2006; Hollon et al., 2005; Institute of Medicine, 2007; Pampallona, Bollini, Tibaldi, Kupelnick, & Munizza, 2004). The Army reports that with evidence-based interventions, at least partial improvement can be expected for most patients with PTSD, and complete remission can be achieved in up to 50% of the cases (Friedman, 2006). Military mental health professionals are confident that PTSD is reversible given adequate time and treatment (Friedman, 2004; Friedman, 2006). Effective treatments for major depression are available and have been shown to be successful in both civilian and military populations (APA, 1994; APA, 2000; Pampallona et al., 2004). Currently, less is known about the efficacy of interventions for TBI, but experts suggest that individuals with such ailments can regain functioning given the proper rehabilitation and treatments (RAND, 2008).

Despite the increased identification of these conditions and the demonstrated efficacy of mental health services for them, the majority of individuals with the need for mental health services have not received minimally adequate care (Hoge et al., 2007; Hoge, Auchterlonie, & Milliken, 2006). Researchers and mental health specialists believe that only 30% of the individuals screening positive for PTSD following their deployment seek mental health care and receive minimally adequate follow-up treatment (including psychotherapy and pharmacology) (GAO, 2006a; GAO, 2006b; Wang et al.,

2005; Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007). Of the servicemen and women who get referrals for mental health services, only about one-half seek care for their ailments (Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007). This is largely due to a variety of existing barriers to seeking and receiving mental health services.

### **Barriers to Seeking Care**

There are many barriers to servicemen and women in the Army seeking and receiving adequate care for mental health issues. Some of these barriers are logistically institutional in nature, including the lack of adequate resources (such as mental health service providers), appointment times, deployment schedules, stringent eligibility requirements that must be met prior to receiving care, or confusion among the ranks as to how to navigate the network of available services (Hoge et al., 2004). Other barriers are, in effect, culturally institutionalized; these barriers include concerns over job security, stigma, and the perception that needing to seek care for a mental health issue is a sign of weakness. The institutional and institutionalized barriers to seeking care are described in turn below.

According to the Defense Health Board Task Force on Mental Health (2007), the DoD does not have a unified mental health program. Instead, the DoD utilizes a comprehensive array of mental health services available through MTFs, TRICARE, and local communities (Defense Health Board Task Force on Mental Health, 2007). Mental health providers operating within the DoD systems also collaborate with non-medical professionals, such as chaplains, family services specialists, civilian support groups, and

the Department of Veteran Affairs (VA) to supply additional care and services (TRICARE, 2007). The array of available services varies widely throughout the military (Defense Health Board Task Force on Mental Health, 2007), resulting in confusion as to what and where services are offered, which is itself a barrier to seeking care (Hoge et al., 2004). In recent years, both the DoD and the VA have come under congressional and public scrutiny regarding their capacity to address PTSD and TBI. Congress has directed billions of dollars to address perceived capacity constraints, whether on human resources or financial resources (RAND, 2008).

As a result, services are more widely available than in the past (Hoge et al., 2007). For active members of the military, mental health services are primarily delivered through ambulatory settings such as outpatient or community-based clinics, many of which specialize in the treatment of PTSD (TRICARE, 2007). When soldiers are deployed, however, they often lose access to mental health services, even when such services are offered in theater. Research consistently shows that only about one-third of the soldiers deployed to Iraq who screened positive for a mental health condition report receiving mental health services while in theater (U.S. Army, 2003; U.S. Army, 2005; U.S. Army, 2006a; U.S. Army, 2006b).

Changes in how the Army operates also create barriers to seeking care. In the past decade, the number of deployments has increased dramatically (Belasco, 2007; Bruner, 2006; Serafino, 2003). The Army, as the branch of the military that provides the greatest percentage of ground troops, has borne the brunt of burden of the current conflicts, in terms of most frequent deployments, killed-in-actions, and those wounded-in-action (US Army, 2008). As mentioned earlier, the intensified OPTEMPO for Army

servicemen and women means longer deployments and shorter rest and recovery times in between deployments (Belasco, 2007; Hoge et al., 2007). Current Army policy states that servicemen and women receive two years outside of combat (e.g., training and re-equipping) for every year deployed to a combat theater (U.S. Army, 2007); however, the current OPTEMPO established to meet the demands of the conflicts in the Middle East have rendered this policy unworkable (GAO, 2007). The Army reported that some combat units are spending much less time in the United States between deployments than the policy mandates (U.S. Army, 2007), and that deployment durations have extended for most units from 12 months to 15 months. The shortened duration of recovery time between deployments to hostile theaters also has a negative impact on servicemen and women's potential recovery from PTSD, depression, and TBI. Not only is the allotted down-time inadequate to allow for proper recovery, but being deployed limits the servicemen and women's access to military mental health care providers (stationed at U.S. locations) or civilian providers in the community (Hoge et al., 2007; Hoge et al., 2006).

Additionally, deployment schedules and other work demands create barriers to seeking care. For example, outpatient care in military behavioral health clinics is typically available during regular working hours (8:00 am to 5:00 pm on weekdays). Receiving care for mental health issues means that soldiers attend appointments during these hours, thereby requiring them to take time away from their standard duties and necessitating that they provide an explanation to their superiors about why they need to take time off (Hoge et al., 2004). Providing this explanation either requires disclosure of receiving mental health services, or deception on the part of the serviceman or woman to

account for his or her whereabouts. Full disclosure opens the serviceman or woman to negative stigma (Hoge et al., 2007; Hoge et al., 2006; Hoge et al., 2004).

An additional institutional barrier to providing care is the lack of sufficient numbers of mental health providers to meet the need (Department of Defense Task Force on Mental Health, 2007). The Army acknowledges that it “lacks the resources, both funding and personnel, to adequately support the psychological health of servicemen and women and their families” (Department of Defense Task Force on Mental Health, 2007 p. 41). Historically, the Army has turned to practitioners in the community to help close the service-provider gap (Hoge et al., 2004), but increasingly there is recognition that civilian mental health practitioners may not be able to provide appropriate services to members of the military (Hoge et al., 2007; RAND, 2008). Uniformed mental health professionals better understand the military culture and the associated social contexts in which servicemen and women’s mental health issues develop, are diagnosed, and should be treated. As such, they are uniquely able to make appropriate judgments about fitness for military duty, and to educate military leaders on the issues faced by the fighting force (Russell, 2007). But the Army is facing a protracted shortage of military mental health professionals, including social workers, psychologists, and psychiatrists (Russell, 2007), thereby further limiting access for those who would seek care.

While many of the barriers to seeking care result from Army policy and operations, some of the most frequently reported obstacles to seeking mental health services are attributable to a cultural taboo of doing so. Negative attitudes about mental health care or the consequences associated with receiving care are among the most challenging issues for servicemen and women, and among the most powerful barriers to

care (Hoge et al., 2004; Hoge et al., 2006). So pervasive is the fear of being stigmatized for needing or seeking care for a mental health issue that it is widely believed that soldiers are not entirely truthful about their symptoms or severity (Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007). For instance, military health officials have speculated that soldiers leaving the war zone often minimize or fail to disclose mental health symptoms during post-deployment assessment, for fear that admitting any problem could delay their return home (Sareen et al., 2007). This results in an underutilization of referrals to mental health services (GAO, 2006b), with an estimated one in five of those who meet screening criteria for PTSD being referred for follow-up evaluation. Even when soldiers seek referral to mental health services, only about one-third of them follow through to receive treatment (Grieger et al., 2007).

Soldiers frequently report being concerned that receiving treatment for a mental health condition would negatively affect their current or future occupational opportunities (such as losing the ability to gain security clearance) (Sareen et al., 2007). Sareen et al. (2007) found that more than 40% of servicemen and women in their study believed seeking care for a mental health condition could harm one's military career. Servicemen and women also have considerable concerns about the confidentiality of their medical records, many believing that mental health diagnoses and treatments are not kept confidential (Casciotti, 2007; Sareen et al., 2007). The fear of being negatively stigmatized for seeking mental health services is a pervasive and insidious barrier to treatment for PTSD, TBI, and other mental health issues.



## **Stigma**

The Department of Defense Task Force on Mental Health (2007) identified the stigma of mental illness as a significant issue preventing servicemen and women from seeking help for mental health problems. Stigma has been defined as a “negative and erroneous attitude about a person, a prejudice, or negative stereotype (Corrigan & Penn, 1999). When such negative attitudes about those who experience or receive treatment for mental health conditions are held as a cultural norm, such perceptions become a daunting barrier to seeking care.

Mental illness has been stigmatized throughout history. Although recent decades have seen progress in revealing mental illness as common and treatable, negative attitudes associated with mental health conditions remain prevalent and wide-spread in American society (Cooper, Corrigan & Watson, 2003; Corrigan & Watson, 2002; Sammons, 2005). Such stigma is manifest at many levels. In the current context, societal (or public) stigma refers to public reactions toward individuals with mental health issues or problems (Corrigan & Watson, 2002; Sammons, 2005). Individual stigma occurs when one internalizes the public’s negative perception of those suffering with mental disorders (Corrigan & Watson, 2002). Institutionalized stigma occurs when policies or practices regarding mental health issues unreasonably limit the opportunities of those with the mental health concerns (Sammons, 2005; Link et al., 1999).

Stigma often prevents individuals from seeking help for mental health problems (Wheeler, 2007). By avoiding the treatment of mental health issues, one also avoids the stigmatizing label of having a mental illness. As such, individuals who fear stigmatization are less likely to seek treatment for mental health issues (Corrigan, 2004;

Sirey et al., 2001), or to adhere to a prescribed treatment plan for mental health issues (Kessler et al., 2001). In the military, stigma is an especially pervasive barrier to seeking and receiving care for mental health issues (Hoge et al., 2006; Hoge et al., 2004; Wheeler, 2007). Stigma is considered a main factor in servicemen and women's unwillingness to seek care for mental health conditions. As such, it interferes with access to care (because individuals refuse to seek treatment), with quality of care (because individuals seek care from sources other than trained mental health professionals), and continuity of care (because individuals may not inform military medical personnel about prior mental health treatment) (Wheeler, 2007). In the military, stigma represents a critical failure of the community that prevents service members and their families from getting the help they need just when they may need it most (Hoge et al., 2007; RAND, 2008).

Evidence of stigma in the military is overwhelming. The Mental Health Advisory Team (MHAT) surveys conducted with servicemen and women deployed to Iraq and Afghanistan found that 59% of the soldiers surveyed believed they would be treated differently by leadership if they sought mental health services (OSMF-I & OTSG, 2006; Hoge et al., 2004). Servicemen and women who screened positive for PTSD or TBI symptoms were found to be twice as likely as those without such symptoms to express concerns about stigma (Hoge et al., 2004). More than half of those surveyed who met the criteria for a psychological health issue believed they would be perceived as weak by their leaders and member of their unit if they sought treatment for their issues (Hoge et al., 2004; OSMF-I & OTSG, 2006). Rowan and Campise (2006) found that those

individuals that present with the greatest need for receiving mental health services are the least likely to seek care.

Stigma itself propagates several factors that act as barriers to seeking mental health services. These include the perception that seeking mental health care will lower the confidence in or trust of the serviceman or woman, that seeking care will limit the career advancement of the serviceman or woman, and that one could be removed from his or her unit (Hoge et al., 2007; Sareen et al., 2007). In a study by Hoge et al. (2004), roughly half of the servicemen and women who had screened positive for one or more mental disorders (N = 398) expressed concerns such as appearing weak, losing comrades' confidence and respect, and being treated differently by leadership as barriers to seeking behavioral health care. More than one-third of those surveyed stated that seeking care for mental health issues would be detrimental to their careers (Hoge et al., 2004). Perceived efficacy (or lack thereof) of mental health care is also an issue. More than 25% of servicemen and women who screened positive for a mental disorder said they did not think mental health treatments were effective, citing this belief as a reason to not seek services (Hoge et al., 2004).

These concerns go the heart of Army culture that stresses strength and resiliency, along with unit cohesion, as core values (RAND, 2008). Members of the military face a huge cultural barrier to admitting that they need help of any kind (Hoge et al., 2006; Hoge et al., 2007), and fear that seeking treatment for a mental health issue is a sign of weakness (PCCWW, 2007a). Unit cohesion is considered by most military mental health experts to be the primary protective factor in preventing psychological breakdown in the ranks (Helmus & Glenn, 2005), offering support, motivation, and encouragement to team

members during stressful situations. As a rule, servicemen and women will go to great lengths to avoid being separated from their units, and often soldiers wounded in battle feel a sense of shame over having left their comrades while they convalesce (National Defense Research Institute, 1993; Helmus & Glenn, 2005).

Unit command has a notable influence on stigma associated with mental health problems, and the reaction of leadership to the diagnosis and treatment of mental health issues is paramount to soldiers' seeking care (Rowan & Campise, 2006). Adherence to seeking treatment is directly linked to command support for such services. Rowan and Campise (2006) found that soldiers referred to mental health treatment by their commanders were significantly more likely to complete their treatment regimens than those who self-referred.

Accountability to the unit is another important issue related to the stigma of seeking services, when a soldier's whereabouts must be known at all times. This requires that soldiers seeking care (whether in theater or at a CONUS or OCONUS base) be escorted to treatment sessions, undermining any sense of confidentiality in care (RAND, 2008). Also, since care is provided during regular working hours, soldiers need to leave their assigned duties to seek treatment, thereby rendering the unit "short-handed" and creating an accountability issues. When a serviceman or woman cannot perform his or her assigned duties, many questions arise among the unit, undermining trust, morale, and unit cohesion (Hoge et al., 2006; Novier, 2007). Soldiers who seek care are often accused of "malingering," or using health issues as an excuse to be relieved of duty assignments. Some in the Army would believe that soldiers seeking treatment for PTSD are "gaming the system," faking their symptoms to get out of work (Novier, 2007).

The Army has undertaken several efforts to combat stigma associated with seeking mental health services (Corrigan & Gelb, 2006; Greene-Shortridge, Britt, & Castro, 2007; Rusch, Angermeyer & Corrigan, 2005; Britt, 2000). Research has documented complex processes by which behaviors, attitudes, and beliefs can be changed (Bandura, 2006; Bandura, 1995; Prochaska, DiClemente & Norcross, 1992; Davis, 2002), each examining components of behavior or beliefs that contribute to an overall phenomenon. Currently the Army attempts to use factual information about mental disorders to reduce public stigma (Corrigan & Gelb, 2006), while promoting contact with military individuals who have overcome a mental illness as a form of social support (Greene-Shortridge, Britt, & Castro, 2007). But behavior change theory is almost completely absent from the Army's discussion on combating stigma and other barriers to soldiers' seeking of mental health services.

Inherent in any change of the culture of stigma associated with seeking care for mental health services in the military must be the belief that doing so can and will yield desired results. Social science literature uses the term *self-efficacy* to describe the belief that one has the knowledge and skill to seek a desired change, and that doing so will lead to positive outcomes (Bandura, 2006). This theoretical construct, however, is largely absent from the discussions of how to improve the seeking of mental health services in the military. While the need to combat stigma is clearly articulated, useful behavior change theories (such as Social Cognitive Theory in general, and self-efficacy particularly) are not examined or incorporated in any capacity in the Mental Health Task Force's study of recommendations for overcoming barriers to seeking mental health services (Defense Health Board Task Force on Mental Health, 2007).

## **THEORETICAL FRAMEWORK**

The purpose of this study was to assess and evaluate negative stigma as a barrier to seeking mental health services among members of the U.S. Army, and the role that self-efficacy plays in predicting the seeking of those services. To this end, the study explored the factors related to the perceived barriers to seeking mental health services within the Army cultural environment, a culture that in many ways mandates its members function in conditions anathema to their own optimal mental health. Both the skills to seek mental health services and the incentive to do so are important considerations of successfully doing so, and must be taken into account; therefore, the theoretical framework used to investigate the phenomena of interest had to include these aspects. Self-efficacy theory addresses the skills and motivations along with the expectations (both efficacy and outcome expectations) necessary to play a major role in determining behavior (Desmond & Price, 1988), and was the theory used in this study.

### **Self-Efficacy**

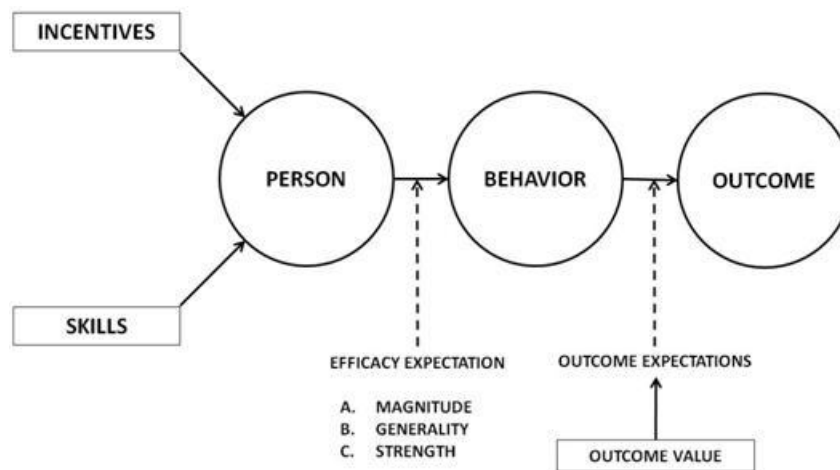
Self-efficacy is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995). Developed by Albert Bandura in 1977, self-efficacy is described as one's belief regarding his or her ability to perform a particular behavior and the belief that if the behavior is performed, it will lead to the anticipated outcome (Desmond & Price, 1988). It is a context-specific self-assessment of competence to perform a specific task within a given domain, relating to the individual's judgment of his or her capabilities to perform given actions (Bandura,

1995). This belief affects whether individuals will initiate a specific behavior and how persistent they will be in their attempts to achieve that behavior (Desmond & Price, 1988). As such, self-efficacy influences the choices an individual makes, the effort he or she puts forward in addressing challenges to behavior change, the individual's persistence to overcome the barriers faced, and how an individual feels about addressing a change or taking on a challenge (Bandura, 1995). Originally defined as a rather specific type of expectancy focused on an individual's beliefs in his or her ability to perform a specific behavior or set of behaviors required to produce an outcome, self-efficacy has been expanded to include a person's judgments of his or her capabilities to exercise control over life events (Bandura, 1989; Maddux, 1995; Sherer & Adams, 1983). In this regard, self-efficacy has been described as the ability to successfully react to stress in a variety of contexts (Jerusalem & Mittag, 1995). Research has shown that low self-efficacy expectancies are an important feature of a variety of adjustment problems, including depression, anxiety problems, substance abuse, and addictions (Bandura, 1995; Maddux & Meier, 1995; Williams, 1995).

Bandura cautions that efficacy beliefs alone will not determine the occurrence of a behavior; however, if the necessary skills and incentives are present also, efficacy expectations play a major role in determining behavior (Desmond & Price, 1988). With this caveat in mind, Bandura states that self-efficacy is the most important prerequisite for behavior change (Bandura, 1977, 1978, 1982, 1986, 1997).

## Efficacy and Outcome Expectations

Expectations are the anticipatory aspects of behavior (Bandura, 1986; Baranowski, Perry & Parcel, 2002), or behavioral antecedents (Figure 1). Personal experiences inform individuals' expectations of potential outcomes in given situations, thereby leading to anticipated results from pursuing a given course of action (Baranowski, Perry & Parcel, 2002). Anticipatory behavior helps individuals to reduce their anxiety and increase their confidence in the situations they encounter (Baranowski, Perry & Parcel, 2002).



Source: Desmond & Price, 1988

*Figure 1. Model of Self-Efficacy*

Efficacy expectations are different from outcome expectations, but both are components of self-efficacy theory (Desmond & Price, 1988). An efficacy expectation is the belief that one can execute successfully the behavior required to produce the desired outcome, while an outcome expectation is the belief that a given behavior will lead to a particular outcome (Bandura, 1977; Desmond & Price, 1988). The balance of efficacy



and outcome expectations is important, since either low efficacy expectations or low outcome expectations can impact an individual's willingness to attempt a behavior. For example, a person may believe that a behavior will produce a desired outcome, but not perceive him or herself capable of performing that behavior (i.e., high outcome expectation coupled with low efficacy expectation) and therefore not attempt the behavior (Desmond & Price, 1988). Low outcome expectations coupled with high efficacy expectations might likewise preclude a person from attempting a behavior (Desmond & Price, 1988).

Efficacy expectations vary in magnitude, generality, and strength, all of which consequently affect performance (Bandura, 1977; Desmond & Price, 1988). Magnitude refers to the difficulty level of the tasks involved and one's beliefs regarding ability to perform these tasks (Desmond & Price, 1988). The magnitude of an individual's efficacy expectation refers to whether the individual perceives he or she is able to accomplish the easiest task, or is able to master all the requisite tasks (Desmond & Price, 1988).

Generality of self-efficacy refers to whether the efficacy expectation is based on a particular behavior or experience, or if it extends to a variety of situations (Desmond & Price, 1988). The resoluteness of an individual's conviction that he or she can perform the behavior refers to the strength of the efficacy expectation (Desmond & Price, 1988).

Efficacy expectations are learned in one of four ways (or a combination of ways): (1) previous personal experiences; (2) vicarious experiences (or witnessing others in similar situations); (3) social or verbal persuasion such as testimonies or rhetoric, and; (4) emotional responses to behaviors (termed arousal) (Baranowski, Perry & Parcel, 2002; Glanz, Rimer, & Lewis, 2002; Desmond & Price, 1988). Performance accomplishments

are the most influential source of efficacy expectations because successful experiences provide tangible evidence that one can accomplish the requisite behaviors (Bandura, 1977; Desmond & Price, 1988). Vicarious experience, or observing others successfully perform a behavior, is another source of efficacy expectation in that it may cause individuals to believe they too can accomplish the task (Bandura, 1972; Bandura, 1986; Desmond & Price, 1988). Verbal persuasion, or convincing an individual that he or she is capable of performing a behavior, is another tactic which may increase an individual's level of self-efficacy (Desmond & Price, 1988). Emotional arousal, or the emotional responses to behaviors, is an indirect source of information regarding self-efficacy, both informative and motivational (Desmond & Price, 1988). Once people recognize they are aroused, they can interpret cognitively that state in any way they wish. They may perceive themselves as capable of handling the situation, thus affecting their level of self-efficacy (Desmond & Price, 1988).

Outcome expectations are the anticipatory aspects of the behavior that Bandura (1977, 1986) called antecedent determinants of behavior (Baranowski, Perry & Parcel, 2002). Outcome expectation has also been described as a person's estimate that a given behavior will lead to certain outcomes (Strecher & Rosenstock, 2002). The behavior is more likely to occur if the outcome is valued highly (Desmond & Price, 1988). Self-efficacy is frequently measured by a two-step process. Individuals are first asked if they believe themselves to be capable of performing a particular behavior, and then asked how certain they are that they could perform the behavior across different situations (Desmond & Price, 1988). Measuring self-efficacy in this way assesses strength, magnitude, and generality of one's beliefs (Desmond & Price, 1988).

## **Self-Efficacy in the Literature**

There has been considerable self-efficacy research generated since 1977 (Desmond & Price, 1988), and the literature is replete with examinations of self-efficacy theory and health behaviors (including weight control, diabetes care, overcoming addictions, exercise, smoking cessation, HIV prevention, and others) (Schwarzer & Fuchs, 1995; Schwarzer & Renner, 2000; Williams, 2010; Hwang et al., 2009; Scobbie, Wyke & Dixon, 2009). Desmond and Price (1988) recognized several important reviews of self-efficacy related to health (Lawrence & McLeroy, 1986; O'Leary, 1985; and Strecher & Rosenstock, 1986). Strecher and Rosenstock (1986) reviewed studies on self-efficacy as it related to a variety of different health behaviors, and found that self-efficacy was a consistent predictor of successful short and long term behavioral changes (Desmond & Price, 1988). O'Leary (1985) reviewed health related self-efficacy studies and concluded that assessing and enhancing individuals' perceptions of their efficacy expectations is a good predictor of health behavior change (Desmond & Price, 1988). Lawrence and McLeroy (1986) concluded that self-efficacy predicted behavior regardless of the particular health situation involved, and suggested that self-efficacy may be utilized to measure behavioral change resulting from treatment programs (Desmond & Price, 1988).

Self-efficacy is increasingly considered an important psychological resource in dealing with mental illness (Anthony 1993; Gecas 1989; Rosenfield, 1992; Rosenfield, 1997; Markowitz, 1998; Corrigan & Watson, 2002; Malin, 2002; Benight & Bandura, 2003; Cicerone & Azulay, 2007; Tsaousides et al., 2009). The role of self-efficacy in

overcoming self-stigma for mental illness has been well documented (Corrigan & Watson, 2002; Copper, Corrigan & Watson, 2003; Corrigan, 2004; Corrigan, Watson, & Barr, 2006). Davison and Strauss (1992), and Malin (2002), determined that a high degree of self-efficacy is a predictor of success in recovery from prolonged psychiatric disorders. Benight and Bandura (2003) found that perceived self-efficacy is a mediator for post-traumatic recovery across a wide range of traumas including military conflict. Ginzburg, Solomon, Dekel, & Neria, (2003) found that high perceived self-efficacy is predictive of a return to combat readiness following chronic PTSD. Cicerone and Azulay (2007) and Tsaousides et al. (2009) found that perceived self-efficacy is an important predictor of successfully returning to functionality following a diagnosis of TBI.

### **Application of Self-Efficacy Theory to the Current Study**

In the context of the current study, seeking mental health services in the face of stigma or other barriers can be considered the behavior of interest. As described below in the study methodology, components of the self-efficacy theoretical model were operationalized within the survey instrumentation. These components included outcome expectancy, skills, outcome value, verbal persuasion, and emotional arousal. The study examined the factors related to the perceived barriers to seeking mental health services within the Army cultural environment, and highlighted self-efficacy as a primary theoretical component and stigma as a primary barrier. The institution of the Army, a unique amalgam of cultural, environmental, and behavioral rules and norms, poses an interesting challenge to selecting an appropriate theoretical framework for the study. One could argue, for example, that the Army's rules and mandated requirements limit the

viability of some aspects of self-efficacy in relation to an individual's decision-making. The same could be said about efficacy and outcome expectations. It was anticipated that this study would demonstrate that having high self-efficacy for seeking mental health services leads to higher willingness to seek mental health services, regardless of the culturally-imposed limitations on decision-making. Self-efficacy offers an appropriate framework in which to examine the dynamics of care seeking behaviors, and as such was a well-suited theory for this effort. It was anticipated that the theoretical foundation of the study would not only be useful in assessing the dynamics at work, but also in providing a framework for intervention recommendations.

## **CONCLUSION**

Recent studies have documented the increased prevalence of mental health disorders such as PTSD and TBI among Army personnel, resulting in a burgeoning demand for mental health services for soldiers and their families. The increases in casualties and the associated demands that treating such injuries place on the Army medical system are largely a result of the accelerated OPTEMPO necessary to prosecute concurrent military conflicts in Afghanistan and Iraq. While the Army has in place a vast network for providing mental health services to soldiers and their dependents, a variety of barriers to seeking care exist, including strong and pervasive cultural influences such as negative stigma associated with seeking such services.

The purpose of this study was to assess and evaluate stigma associated with seeking mental health services among members of the U.S. Army, and the role self-efficacy plays in predicting the seeking of those services. Using self-efficacy as a theoretical framework, the study explored the factors related to the perceived barriers to

seeking mental health services in a culture that mandates its members function in conditions anathema to optimal mental health. The results from this study contribute to the growing research conducted on soldiers' (and their families') access to mental health services, and how they choose to avail themselves of such services. Additionally, the results from this study will provide theoretically-based recommendations for interventions to improve utilization rates for available mental health services for soldiers and their families.

## **CHAPTER III**

### **METHODOLOGY**

The purpose of this study was to assess and evaluate stigma associated with seeking mental health services among members of the U.S. Army, and examine how self-efficacy impacts the seeking of those services. The study was a secondary analysis of data collected via an online survey of 7,321 active-duty servicemen and women in 2007. The online survey was one component of a multi-method research initiative to review the Army Medical Command's (MEDCOM's) Behavioral Health Service Line with the overall objective of assessing the effectiveness and efficiency of the system and developing recommendations to improve services to servicemen and women and their families. That study included site visits to 22 military treatment facilities (MTFs) that conduct behavioral health operations, both in the United States (CONUS) and overseas (OCONUS).

This chapter describes the research design, research questions and hypotheses, sampling design, and statistical analyses that were implemented in this study, as well as study limitations and delimitations. It also includes a summary of the initial survey instrument development and original data collection efforts that generated the dataset used in this study.

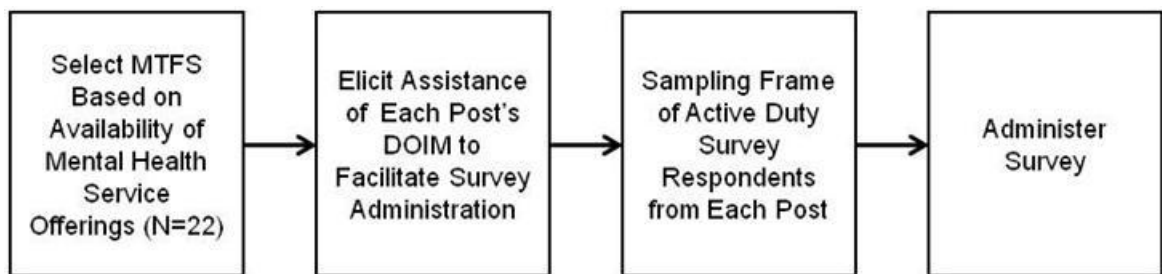
### **RESEARCH DESIGN**

This study involved a secondary analysis of survey data collected via a 53-item, cross-sectional, self-report, email-based survey (Appendix A) that was administered to more than 7,300 active-duty members of the U.S. Army (and their spouses) at 22 MTFs

worldwide. This section provides a brief description of the original study, including methodological considerations in the initial data collection and analysis, and the current research questions and hypotheses.

### **The Original Study**

The original data collection effort supported the U.S. Army's MEDCOM evaluation of its behavioral health services offerings to servicemen and women and their families. The survey was conducted using an industry-standard online email-based survey tool, and was administered to a sample of active duty personnel at the participating MTFs. The MTFs ( $N = 22$ ) were selected (from the 254 MTFs worldwide) for inclusion in the overall study based on the combination of mental health and family services offerings at those sites. Figure 2 displays the original research design.



*Figure 2. Original Study Research Design*

The original study used the following inclusion criteria for participation: any active duty member of the U.S. Army (Army, Army Reserve, and National Guard) with an active email account stationed at one of the 22 military installations (CONUS and OCONUS) that offer comprehensive mental health services. An email template with an



invitation to participate in the survey, along with follow-up reminder emails, and the link to the survey was provided to points-of-contact (POCs) at each installation. The POC was typically the Director of Information Management (DOIM) for the military post. As such, the POC had access and authorization to send the email invitation to each military personnel with an active email account.

In accordance with human subjects' protection, appropriate applications were filed with the U.S. Army's internal institutional review board (IRB) of Army MEDCOM. Adherence was kept with the rules and regulations for conducting surveys with U.S. military personnel (Appendix B). A formal request to conduct the study was made and approved (Appendix C). The survey instrument was developed specifically to contain close-ended questions, with some questions providing a space to specify "other" answers for clarification, unanticipated responses, or other unforeseen potential answers. Each potential survey participant was sent an email from the DOIM of the post to which the serviceman or woman was stationed, containing the purpose of the study, an invitation to participate in the survey, a contact number for questions or concerns, and a statement of assurance of confidentiality (Appendix D).

A statement of informed consent was included both in the email invitation and on the first page of the survey instrument. In order to proceed through the survey, respondents were required to click a box indicating they had read the consent language and were indeed giving their consent to participate in the study. Two reminder emails were prepared and mailed to potential study participants at one-week intervals as reminders to complete the survey prior to the deadline (Appendix E). To ensure higher response rates and limit respondent concerns regarding the legitimacy of the study, all

emails used in the study were sent using the U.S. Army's internal email systems, and were sent from each post's DOIM, with a signature line from that post's commanding officer. Each correspondence included the survey control number, indicating to the recipients that the survey had been authorized and approved by the U.S. Army Research Institute for the Behavioral and Social Sciences, and a statement of confidentiality.

The survey instrument made use of multiple questions from previous surveys developed by Hoge et al. (2006). Some questions were revised to improve their clarity, and members of the Army MEDCOM mental health service providers contributed to the development and review of additional questions. Several items were added to the survey to capture information on variables related to specific hypotheses and theoretical constructs (being used in the current analysis), which were generated based on Bandura's (2006) guide for creating self-efficacy scales. The informed consent process conveyed that participation in the survey was completely voluntary and anonymous, described the benefits and risks of participation, and that respondents were able to refuse questions and opt out of their participation at any time (Appendix A).

The survey instrument contained four main focus areas (Appendix A). The first focus area related to the serviceman or woman's experiences in the Army. This section of the survey included questions for each respondent on the following topics: Army component, military grade, primary Army branch, duration (or tenure) of Army service, duration of current post assignment, deployment status, and concerns about personal safety based on deployment. An additional set of similar questions was asked for the serviceman's or woman's spouse to capture family-related data via email survey.

The second section of the survey focused on the respondent's perceptions of and experiences with the mental health care services available on the post to which they were assigned at the time of the survey. A definition of "mental healthcare services" was provided in the survey to ensure respondents were clear on the meaning of this term<sup>1</sup>. This section of the survey included questions for each respondent related to the following topics: awareness of mental health services offered by the Army, perceived need to seek mental health services, care-seeking behaviors for the respondent or his or her child dependents, difficulty in seeking care, frequency of care-seeking, satisfaction with the care received, preferred options for seeking care, perceptions of reasonableness of wait times to receive care, and perceived value of the Army's mental healthcare services.

The third section of the survey focused on perceived barriers to seeking care for mental health issues. Questions in this section included: perceived obstacles to seeking care; potential improvements to barriers to care-seeking; and issues related to stigma associated with seeking care. Stigma was defined within the survey instrument to ensure that respondents were clear on the meaning of this term<sup>2</sup>. The fourth section of the survey focused on respondent demographics, their current overall health status, and component factors of self-efficacy (outcome expectancy, skills, outcome value, verbal persuasion, and emotional arousal). Demographic data collected included: age, gender, ethnicity, and educational attainment. The current health assessment items included self-reported elements: current health rating; current health compared to the previous year;

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<sup>1</sup> For the purposes of the study, the following description/definition of "mental health services" was presented to respondents: *When we ask about mental healthcare services, we are referring to services designed to promote your mental and emotional wellbeing such as handling stress, relating to other people, family relationships, substance abuse, and making decisions. Examples of such services include on-post hospital care, off-post TRICARE network providers, off-post Military One Source mental health care, on-post chaplain services for mental healthcare, your primary care physician, and so on.*

<sup>2</sup> For the purposes of the study, the following description/definition of "stigmatized" was presented to respondents: *By stigmatized, we mean feeling that you would be treated differently in a negative way by others.*

and current and previous mental health status. There are several advantages to using a self-report, email-based survey. According to Aday (1996), self-report surveys may be perceived as fostering respondent anonymity, which may yield more valid and reliable responses than surveys administered by a researcher in person. This is especially important given the sensitive nature of the research questions involved, the potential risk of stigma, and the perceived threat to career advancement for servicemen and women who seek mental health services. Online surveys are cost-effective (Tan, 2010), may reduce the magnitude of design effects (Aday, 1996), and can reach potential respondents regardless of their deployment status (i.e., deployed servicemen and women have access to email, while a mail-based survey might not reach them).

Items on self-efficacy were written based on Bandura's (2006) guide to constructing self-efficacy scales, including strategies for ensuring content validity (i.e., wording items in terms of *can dos*, etc.), and predictive and construct validation. Wording of many of the survey items was designed with self-efficacy theory in mind, to ensure the ability to assess theoretical factors in terms of their role in respondents' willingness to seek care for mental health issues.

Survey responses were collected using industry-standard encrypted protocols. Each survey response was assigned a unique numerical identifier, ensuring that neither the DOIMs nor the research team ever had access to nor knew the names or identities of the respondents. Respondents' answers to survey questions were captured directly into the study database, eliminating data entry errors, although not necessarily eliminating respondent error. Completed survey responses were downloaded from the survey tool website via an encrypted data transfer protocol, and were stored as password-protected

files. In accordance with all IRB regulations and Army survey research protocols, only the principal investigator, co-investigators, and research staff had access to the data. No hard-copy data forms or instrumentation existed during data collection for this study. The raw data were saved as password-protected and encrypted Microsoft Excel files (.xls files). Due to potential respondent error, each survey response was visually inspected to confirm completion. Missing values were assigned a common missing value code of “99” to ensure that missing data were accounted for during analysis. Data were also reviewed, or cleaned, for any potential additional anomalies that may cause confusion or misinterpretation of the respondents’ answers.

The survey instrument was pilot-tested prior to commencement of data collection activities. Pilot testing assessed the functionality of the survey tool, reading level of the survey questions, and length of time necessary to complete the survey. It also allowed for a check of face validity within the survey items, ensuring that the wording and phraseology of the questions was appropriate for the respondent population. A convenience sample of active duty servicemen and women (N = 243) assigned to Fort Lee, Virginia, served as pilot-test subjects. Based on the results of the pilot test, wording and other functional improvements were made to the survey instrument prior to commencing the study.

### **The Current Analysis**

Circumstances related to the challenges at Walter Reed Army Medical Center in the summer of 2007 resulted in the acceleration and premature completion of the original Army MEDCOM study, prior to the completion of a robust analysis of the entire dataset.

The dataset of more than 7,300 completed surveys remained largely unanalyzed, making it ripe for secondary analyses. Beyond the presentation of summary statistics, little was done with the survey responses, including no examination of the data related to servicemen and women's self-efficacy and care-seeking behavior related to seeking mental health services offered by the Army or through TRICARE. Permission was sought and received from the Army to conduct a secondary analysis on this data set, and from the University of Maryland's Institutional Review Board (Appendix F). Below is the research design and processes used to conduct this secondary analysis.

## **RESEARCH QUESTIONS AND HYPOTHESES**

### **Research Question 1**

What demographic factors predict servicemen and women's willingness to seek mental health services?

It was hypothesized that significant relationships exist between numerous demographic categories and servicemen and women's reported willingness to seek mental health services. These factors include age, gender, military rank, deployment history, tenure of service in the Army, who the care provider is, who the care seeker is, perceived barriers to seeking care, and the perceived need to seek care. Willingness to seek care was operationally defined by responses to care-seeking behavior preferences *vis à vis* responding that one would not seek care. Perceived barriers to seeking care was operationalized by means of a multi-item summated scale score for "barriers to care" generated from responses to survey items (the *barriers scale*, described below). Factors for which a statistically significant relationship to willingness to seek care was found

were controlled for in the remaining analyses. The hypothesis for this research question was:

H<sub>1</sub>: There is a statistically significant relationship between the demographic categories and servicemen and women's willingness to seek mental health services.

## **Research Question 2**

Is there an association between self-efficacy for seeking assistance for mental health issues and servicemen and women's willingness to seek mental health services?

It was hypothesized that servicemen and women with higher self-efficacy scores would be significantly more willing to avail themselves of mental health services. Self-efficacy was operationalized by means of a multi-item summated scale score for "self-efficacy" generated from responses to survey items (the *self-efficacy scale*, described below). Seeking mental health services was operationally defined as an affirmative response to items pertaining to willingness to use mental health services. Such respondents were predicted to score higher on the self-efficacy scale; the hypothesis for this research question was:

H<sub>2</sub>: There is a statistically significant relationship between self-efficacy for seeking mental health services and willingness to seek such services.

## **Research Question 3**

Is there an association between the perception of negative stigma for seeking mental health services and willingness to seek such services?

It was hypothesized that servicemen and women who report greater concern about facing stigma would report less willingness to avail themselves of mental health services than those with lower concerns about stigma. Stigma was defined for survey respondents as “being treated differently in a negative way.” It was operationalized using a multi-item summated scale score for “perceived stigma” generated from responses to survey items (the *stigma scale*, described below). Willingness was operationally defined by responses to care-seeking behavior preferences *vis à vis* responding that one would not seek care. The hypothesis for this research question was:

H<sub>3</sub>: There is a statistically significant negative relationship between perceived stigma and willingness to seek mental health services.

#### **Research Question 4**

How does self-efficacy for seeking mental health services moderate the relationship between perceived stigma and willingness to seek mental health services?

It was hypothesized that self-efficacy has a moderating affect on the relationship between perceived stigma and willingness to seek mental health services. A moderating variable is one that influences the strength of the relationship between two other variables (Baron & Kenny, 1986). Self-efficacy was imagined to affect the strength of the relationship between the independent variable “perceived stigma” and the criterion (outcome) variable “willingness to seek care.” Perceived stigma was operationalized by means of a multi-item summated scale score for “perceived stigma” generated from responses to survey items (the *stigma scale*, described below). Willingness was operationally defined by responses to care-seeking behavior preferences *vis à vis*



responding that one would not seek care. Self-efficacy was operationalized by means of a multi-item summated scale score for “self-efficacy” generated from responses to survey items (the *self-efficacy scale*, described below). The hypothesis for this research question was:

H<sub>4</sub>: Self-efficacy moderates the relationship between perceived stigma and servicemen and women’s willingness to seek mental health services.

### **Research Question 5**

What factors predict servicemen and women’s willingness to seek care for mental health issues for their children?

It was hypothesized that there is a statistically significant relationship between predictor variables and servicemen and women’s willingness to seek care for mental health issues for their children. Willingness to seek care for a child was operationally defined by responses to care-seeking behavior for children preferences *vis à vis* responding that one would not seek care such care for their child. Willingness to seek care for oneself was operationally defined by responses to care-seeking behavior for oneself *vis à vis* responding that one would not seek care. The hypothesis for this research question was:

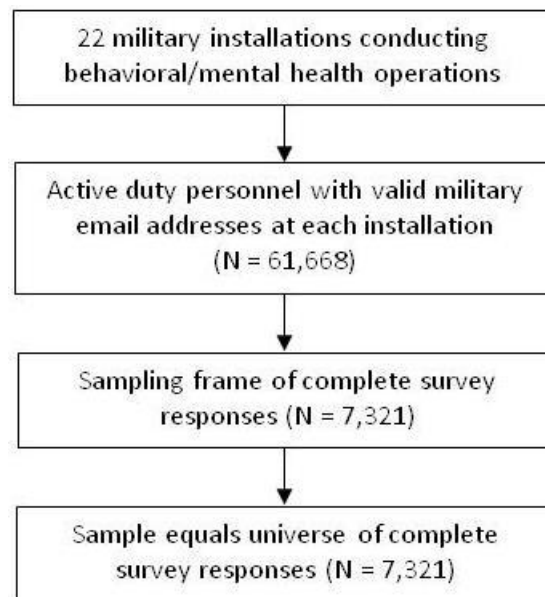
H<sub>5</sub>: There is a statistically significant difference between servicemen and women’s willingness to seek care for mental health issues for themselves and for their children.

In addition to the items addressing the research questions, the survey included questions related to deployment details and additional demographics.

## SAMPLE SELECTION

The entire set of completed responses ( $N = 7,321$ ) to the survey constituted the sample for this analysis. The sampling was drawn from the active duty personnel at the 22 MTFs ( $N = 61,668$ ), of which 7,321 completed the survey (12% response rate).

Figure 3 presents the sampling design for this study.



*Figure 3. Sampling Design*

## Power Analysis

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true (i.e., that a Type II error will not occur) (Cohen, 1988). As power increases, the chances of a Type II error decrease, so it is important that the sample size be large enough to protect against a potential Type II error.

Power analysis consists of four interdependent factors: significance criterion ( $\alpha$ ), sample size (n), effect size (ES), and power (Cohen, 1988). Sample size can be computed for a specific power level by stipulating an effect size and alpha level (Cohen, 1988). The alpha ( $\alpha$ ), or significance criterion, reflects the probability of rejecting a true null hypothesis, or committing a Type I error. The effect size reflects the degree to which the null hypothesis is false and is commonly categorized as the following: small (0.20), medium (0.50), and large (0.80) (Cohen, 1988). The estimated statistical power (with  $\alpha = .05$ ) based on sample size and effect size is presented in Table 1.

Table 1.  
*Statistical Power in Relation to Effect and Sample Size*

	Effect Size (d)		
	.20	.50	.80
Sample Size (/ group)			
40	.07	.45	.88
60	.11	.64	.98
80	.14	.78	*
100	.18	.88	
200	.37	*	
500	.80		
1000	.98		

\* Power values below this point are greater than .995.

Source: Base on Table 2.3.1 (Cohen, 1988)

According to Cohen (1988), the statistical power for a medium effect size when the sample size is 100 is 0.88. In other words, a sample size of 100 will have an 88% chance to detect a significant difference for a medium effect size. Therefore, a reference

sample of at least 100 respondents is sufficient for this study. Power values for below those represented by an asterisk ( \* ) in the table are greater than 0.995. Since all complete responses (N = 7,321) were used in this study, there was no need to conduct an *a priori* power analysis to determine sample size. Given that the survey had more than 7,300 completed responses, it was anticipated that there would be sufficient sample size in any analysis (including sub-set analyses) to ensure adequate power for the test. Although this survey analysis did not present an experimental condition, several of the study hypotheses included a test between two groups, in which one group served as the comparison group (Lipsey, 1990).

## **OPERATIONALIZING THEORETICAL CONSTRUCTS**

Several items in the survey tool were consistent with theoretical component factors of self-efficacy theory (Bandura, 1977, 1986; NCI, 2005). In the context of this study, these were examined in their relation to reported use of mental health services and the respondent's willingness to seek care to address mental health issues.

Servicemen and women's self-efficacy was operationally defined as the belief that one can successfully seek mental health services when needed, as assessed by a 5-item scale (Qs 49a-e, scores ranged from 5 to 25 with higher scores indicating greater self-efficacy). The items covered the following components of self-efficacy: outcome expectancy, skills, outcome value, verbal persuasion, and emotional arousal. Stigma was operationally defined as a scale assessing the perception of being treated negatively for seeking care and as an environmental barrier to care, and assessed by a 7-item Likert scale (Qs 43, 44, 40i, 40j, 40k, 40l, and 40o); scores ranged from 7 to 21 with higher

scores indicating a stronger belief in negative stigma. Barriers to seeking care was assessed using a 12-item Likert scale (scores ranged from 12 to 36 with higher scores indicating greater perceived barriers to seeking care), from Q40 of the survey. Table 2 summarizes the theoretical components, offering definitions and the corresponding survey items and scale scoring for each.

The study's dependent variables included willingness to seek care for one's self (WSC-S), operationally defined by responses about which care treatment providers were preferred *vis à vis* answering that the respondent "would not seek care" (Q32). Scores were binary, with 1 indicating a willingness to seek care and 2 representing a lack of willingness to seek care. Willingness to seek care for a serviceman or woman's child (WSC-C) was operationally defined by responses about which care treatment providers for children are preferred *vis à vis* answering that the respondent "would not seek care" for a child (Q34). Scores were binary, with 1 indicating a willingness to seek care for a child and 2 representing a lack of willingness to seek care for a child. Table 3 presents the operational definitions, corresponding survey items, and scale scoring for each.

## **RELIABILITY**

Reliability concerns the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials (Spector, 1992; Trochim, 2001). Stated another way, consistency found in repeated measurements of the same phenomenon is referred to as stability reliability. Although there will always be some amount of error due to chance in measuring a phenomena, the trend toward consistent results in repeated measurements of the same phenomena is reliability.

Table 2.  
*Summary of Theoretical Components, Definitions, and Scale Items*

Construct	Operational Definition	Scale Items	Interpretation
Self-Efficacy	Belief that one can successfully seek mental health services when needed	Q49a-e; 5-item-scaled 1 (strongly disagree) to 5 (strongly agree) <ul style="list-style-type: none"> <li>• If I seek mental healthcare services, I will have a positive outcome</li> <li>• If needed, I can find the mental healthcare services I need</li> <li>• I have good options for seeking mental healthcare services</li> <li>• Accessing mental healthcare services would help me during challenging times</li> <li>• I can usually handle whatever comes my way</li> </ul>	Scale score range 5 to 25, with higher score indicating greater self-efficacy ( $\alpha = .762$ )
Stigma	Perception of being treated negatively for seeking care	Q43, Q44, Q40i, Q40j, Q40k, Q40l & Q40o; 7-item-scaled 1 (less stigma) to 3 (more stigma) <ul style="list-style-type: none"> <li>• How much do you believe seeking mental healthcare services would result in you feeling stigmatized?</li> <li>• Do you believe there is more stigma associated with seeking care for members of the military or civilian communities?</li> <li>• Seeking mental health services is too embarrassing</li> <li>• Seeking mental health services would harm my career</li> <li>• Member of my unit might have less confidence in me</li> <li>• My unit leadership would treat me differently</li> <li>• I would be seen as weak</li> </ul>	Scale score range 7 to 21, with higher score indicating stronger belief in negative stigma ( $\alpha = .878$ )
Barriers to Seeking Care	Perceived or real obstacles to seeking mental health services	Q40a-h, m, n, p, q; 12-item-scaled 1 (not an obstacle) to 3 (a large obstacle) <ul style="list-style-type: none"> <li>• I don't know where to get such help</li> <li>• I don't trust mental healthcare professionals</li> <li>• I'm concerned about lack of privacy and confidentiality</li> <li>• Mental healthcare services cost too much money</li> <li>• I don't have adequate transportation to get to appointments</li> <li>• It is difficult to schedule appointments</li> <li>• It is difficult to get time off of work</li> <li>• It is difficult to get childcare</li> <li>• My leaders would blame me for the problem</li> <li>• My security clearance would be at risk</li> <li>• Mental healthcare services don't work</li> <li>• I am not in one location long enough for it to help</li> </ul>	Scale score range 12 to 36, with higher score indicating greater barriers to seeking care ( $\alpha = .823$ )

Table 3.  
*Summary of Dependent Variable Definitions and Survey Items*

Construct	Operational Definition	Survey Item	Interpretation
Willingness to Seek Care-Self	Responses re: provider preferences <i>vis à vis</i> answering “would not seek care”	Q32; binary measures of 1 (has provider preferences for seeking care) and 2 (would not seek care)	Scores are either 1 or 2, with 1 indicating willingness to seek care and 2 indicating lack of willingness to seek care
Willingness to Seek Care-Child	Responses re: provider preferences <i>vis à vis</i> answering “would not seek care”	Q34; binary measures of 1 (has provider preferences for seeking care for child) and 2 (would not seek care for child)	Scores are either 1 or 2, with 1 indicating willingness to seek care for child and 2 indicating lack of willingness to seek care for child

Additionally, internal consistency reliability is typically a measure based on the correlations between different items on the same test, assessing whether several items that purport to measure the same general constructs produce similar scores (Spector, 1992).

The scales used in the analysis of this data were summated rating scales (Spector, 1992), the rationale for which derives from classic test theory. Classical test theory distinguishes true score from observed score, defined as: the theoretical value that each subject has on the construct or variable of interest. An observed score is the score actually derived from the measurement process (Spector, 1992). If the measurement instrument and method were flawless (perfectly reliable and valid), then the observed score and the true score would be equal to one another. According to classic test theory, however, there is always an element of error in every observed score.

Since this is the case, the observed score is actually comprised of two components: the true score and a random error of some degree. Errors of measurement are inversely related to reliability, and single observations of any phenomena are often unreliable (Spector, 1992). Combining multiple items into a scale increases the number of individual observations used to measure a construct, and in the process tends to even out the random errors associated with each observation. Therefore, by increasing the number of observations that comprise the scale, a higher degree of reliability is achieved. Higher reliability is desired to increase the confidence with which generalizations about observations can be made (Nunnally & Bernstein, 1994; Kidder, 1981; Babbie, 1998).

Descriptive statistics were used to examine central tendencies and normalcy of each item included in the scales. Given that all potential survey items of interest were ordinal in nature, basic descriptive statistics such as median, mode, and frequency could be used to identify any concerns that may have impacted data analysis. An argument was made to examine the parametric properties of the data as well, given that in some circumstances ordinal data may be analyzed as if they were interval data (Labovitz, 1972; Pelto & Pelto, 1970). An important assumption in conducting parametric analysis on ordinal data is that the researcher can reasonably claim that the measures are approximately equidistant from one another (Madrighal, 1998). Doing this allowed an examination of skewedness and variance to help facilitate the determination of reliability.

In scale construction, it is presumed that each item in the scale measures a different aspect or nuance of the overall construct. Some concern exists as to the extent to which dimensions of the scale should be examined together, and if there is redundant measurement in the items. To ensure minimal redundancy in the scale, each item was



examined by analyzing the inter-item correlations between all of each constructs' included measures. If items had low correlation scores with one another, it suggested multidimensionality in the scale (Spector, 1992). A factor analysis was conducted for each scale as necessary to determine if items cluster together or if the scales were unidimensional.

Internal consistency of the instrument was assessed using Cronbach's alpha, a method of estimating the internal consistency reliability of a given measure (Spector, 1992). Additionally, the Cronbach's alpha was calculated for each scale based on each item's contributed value to that scale. That is to say, an examination of the overall alpha level of each scale if any one item is deleted from the scale was made (to determine if alpha levels actually weaken with the removal of an item). Finally, the item-to-total correlation and the Cronbach alpha reliability tests were corroborated using a split-half reliability analysis (Spector, 1992; Trochim, 2001). With a split-half analysis, a randomly chosen half of the items should correlate highly with the other half of the items (SPSS, 1999). Since statisticians do not fully agree on how the selection of the halves impacts the analysis (Nunnally & Bernstein, 1994), this method is not considered as accurate a measure of reliability as examining alpha, but could be used as a proxy for alpha, and as a check on reliability (Madrigal, 1998). Acceptable levels of internal consistency reliability for these tests include a Cronbach's alpha coefficient of 0.70 to 0.92 (Aday, 1996), and of  $>0.60$  for split-half assessments (Murray, 1998).

## VALIDITY

Validity is the extent to which an instrument measures what it is intended to measure. The validity of an instrument is estimated in relation to the purpose for which it is being used. Cronbach (1951) stated, “one validates not a test, but an interpretation of data arising from a specified procedure,” since an instrument may be perfectly valid for measuring one phenomenon but entirely invalid for measuring another. The validity of scales used in the survey instrument is critical to collecting information on the variables that it is designed to collect as well as the population of interest. Face validity refers to how well the instrument or survey items make sense in terms of what the instrument is trying to measure (Babbie, 1998), and confirms that the measures of the phenomenon reflect the constructs of interest (Trochim, 2001; Spector, 1992). The items in this survey all had strong face validity, as determined by members of the military who participated in the development of the survey questions, and verified through pilot testing activities.

In addition to face validity, convergent and discriminant validity measures were employed on each scale. Convergent validity means that different measures of the same construct will relate strongly with one another. Discriminant validity means that measures of different constructs should relate only modestly with one another (Spector, 1992). The two types of validity were studied in relation to one another with attention given to hypothesized relationships across the compared constructs. It was anticipated that a scale would correlate more strongly with another measure of the same construct than with measures of different constructs (Spector, 1992; Nunnally & Bernstein, 1994). For this study, comparisons were made to scales constructed by Hoge, et al. (2006) (barriers to seeking care:  $\alpha = 0.87$ ; stigma:  $\alpha = 0.89$ ), Corrigan, Watson and Barr (2006)

(self-efficacy:  $\alpha = 0.83$ ), Sherer and Adams (1983) and Sherer et al. (1982) (self-efficacy reliability scores ranged from 0.78 to 0.84). Ultimately any construct should relate more strongly to itself than to another construct.

Convergent validity is said to exist if scale scores correlate strongly with alternative measures of the same construct, when two valid measures of a construct relate almost perfectly (Spector, 1992). Where no outside criteria are available, the total score itself can be used as a criterion (Bohrnstedt, 1969). Comparing the items in the scale individually to the scale score itself was employed as another assessment of convergent validity.

## **STATISTICAL ANALYSES**

Multivariate, inferential statistical analyses were computed and served a particular purpose in summarizing the data through numerical means. Data recoding and transformation were conducted to meet the data variable requirements of specific statistics. Missing values were coded appropriately when data were entered into the system. Patterns of missing data were examined to determine whether they were random or systematic. Remedies to account for missing data during analysis included case wise deletion (if necessary), or using scale score averages as a substitute for missing values. All data were entered into the Statistical Package for the Social Sciences (SPSS) software, which was used to compute all statistics manipulations and analyses. Table 4 summarizes the measurement levels of each dependent and independent variable analyzed in this study.

Table 4.  
*Measurement Levels of the Dependent and Independent Variables*

Research Question	Dependent or Main Variables	Measurement Level
1, 2, 3, 4	• Willingness to seek mental health services for self	• Categorical
5	• Willingness to seek mental health services for child	• Categorical
Research Question	Independent Variables	Measurement Level
1	• Age	• Ordinal
	• Gender	• Categorical
	• Military rank	• Ordinal
	• Deployment history	• Ordinal
	• Tenure of service in Army	• Ordinal
	• Care provider preference	• Ordinal
	• Care seeker	• Ordinal
	• Perceived barriers to seeking care	• Ordinal
	• Perceived need to seek care	• Categorical
2	• Perceived self-efficacy	• Ordinal
3	• Perceived stigma	• Ordinal
4	• Perceived stigma	• Ordinal
	• Perceived self-efficacy (moderating)	• Ordinal
5	• Willingness to seek care-self	• Categorical

### Operational Definitions of Key Variables

The following is a description of the conceptual and operational definitions of the key variables analyzed in this study. Willingness to seek mental health services (for oneself or for a child) was operationally defined by affirmative responses to items pertaining to reported willingness to use mental health services. Willingness to seek mental health services was reflected in a tally of stated preferences for seeking care as captured in items 32 (for oneself) and 34 (for one's child). Responses to items 32 and 34 were re-coded as either a negative response (i.e., "would not seek care") or positive (any combination of responses for preferences).

Perceived self-efficacy was operationally defined as agreement that seeking care will result in a positive outcome (survey item 42a), reported knowledge of available

services (survey item 42b), agreement that options for seeking care exist (survey item 42c), belief that seeking care would be beneficial (survey item 42d), and confidence in achieving positive outcomes during challenging situations (survey item 42e). Perceived stigma was operationally defined as negative consequences for seeking care (survey item 43) and as an environmental barrier to seeking care (survey item 44), along with five sub-responses to item 40 (seeking care is too embarrassing; seeking care would harm my career; my co-workers would have less confidence in me; my leaders would treat me differently; and, I would be seen as weak).

Age was operationally defined as the reported age group of the respondent at the time of providing a survey response, and was captured in survey item 52. While age is typically a ratio measurement, in this survey instrument it was captured as being within an age-range grouping. Since respondents' ages can be ordered in a meaningful way, this measurement was considered ordinal in nature. Gender was captured by survey item 50, as either male or female. Military rank was captured by survey item 2, and was considered an ordinal measurement in this study, since the order of respondents' ranks could be determined in relation to one another (although a respondent's actual rank could not be determined). Deployment history was captured by survey item 7, and was an ordinal measure. Tenure of service in the Army was an ordinal measurement in this survey, captured in survey item 5. Care provider preference was operationally defined as the rank order of preference for the source of care being offered, and was captured in survey item 32, an ordinal measurement item. Care seeker was operationally defined as the person for whom mental health services were sought, and was a nominal measurement captured in survey items 25 and 26. Perceived barriers to seeking care was

an ordinal measure, captured by survey item 40 (items a-h, m, n, p and q). Perceived need to seek care was operationally defined as an affirmative answer to item 24 in the survey. As a categorical question, the level of measurement for item 24 was nominal.

### **Specific Analysis by Research Question**

Logistic regression was used to test each hypothesis in this study. Logistic regression facilitates the examination of one or more independent variables that impact on a dichotomous outcome (i.e., the presence or absence of something) (Menard, 2002). The goal of logistic regression is to find the best fitting model to describe the relationship between a binary outcome of interest and any set of predictor variables by examining the probability of the presence of the characteristic of interest (Pampel, 2000). The logistic regression equation is as follows:

$$\text{logit}(p) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_kX_k$$

where  $p$  is the probability of the presence of the characteristic of interest. The logit transformation is defined as the logged odds:

$$\text{odds} = p / 1-p = \text{probability of presence} / \text{probability of absence}$$

For each of the research questions, the dependent variable was expressed as a dichotomous value, allowing for the calculation of an odds ratio describing the likelihood of the outcome of interest. Details of the specific analyses conducted on the data for each research question in the study follows.

## **Research Question 1**

What factors predict servicemen and women's willingness to seek mental health services?

The hypothesis for this research questions was:

H<sub>1</sub>: There is a statistically significant relationship between the demographic categories and servicemen and women's willingness to seek mental health services.

Frequencies for each variable of interest (i.e., age, gender military rank, deployment history, tenure of service in the Army, care provider, care seeker, perceived barriers to seeking care, and perceived need to seek care) were calculated and presented as descriptive of these data. A scatterplot of the data was developed to examine what trends or patterns (if any) were present in the data. Next, a bivariate correlation matrix of the scores from each of the potential factors and the outcome variable (willingness to seek care) was constructed to examine if there was a linear relationship between the variables. Pearson correlations were calculated and the squared correlation coefficients were assessed to examine the variance in the data.

A regression analysis facilitates the prediction of values for the outcome (dependent) variable of interest from one or more predictor or independent variables (Berk, 2004), and allows for determining how the value of the dependent variable changes when any one of the independent variables is altered (while the other independent variables are held fixed). The predictor variables examined included: age (A), gender (G), military rank (R), deployment history (DH), tenure of service in the Army (T), care provider preferences (CP), care seeker preferences (CS), perceived

barriers (PB), and perceived need to seek care (PN). The dependent variable was the dichotomous measure of willingness to seek care (Questions 32), depicted as WSC. The equation for the regression analysis was as follows:

$$\text{WSC} = \text{Intercept} + A + G + R + DH + T + CP + CS + PB + PN + \text{Error}$$

To test the hypothesis, a logistic regression analysis was generated and the scores from each independent variable examined as predictors of willingness to seek care. The logistic equation was then:

$$\text{logit}(p) = \text{Intercept} + A + G + R + DH + T + CP + CS + PB + PN + \text{Error}$$

## **Research Question 2**

Is there an association between self-efficacy for seeking assistance for mental health issues and servicemen and women's willingness to seek mental health services?

The hypothesis for this research question was:

H<sub>2</sub>: There is a statistically significant relationship between self-efficacy for seeking mental health services and willingness to seek such services.

Frequencies for self-efficacy and willingness to seek mental health services were calculated. A scatterplot was developed to examine what trends or patterns (if any) were present. Next, a bivariate correlation matrix of the scores for self-efficacy and willingness to seek care were constructed to examine if there was a linear relationship between the variables. Pearson correlations were calculated and the squared correlation coefficients were assessed to examine the variance in the data.



An initial regression analysis was completed as a method to predict values for the outcome variable (willingness to seek care, denoted as WSC) using self-efficacy as the predictor (or independent) variable (denoted as SE, the self-efficacy scale). The dependent variable was the dichotomous measure of willingness to seek care (Q32), making the equation for the regression analysis:

$$\text{WSC} = \text{Intercept} + \text{SE} + \text{Error}$$

To test the hypothesis for Research Question 2, a logistic regression analysis examined the significant demographic variables from Question 1 and self-efficacy as predictors of willingness to seek care. The logistic equation was as follows:

$$\text{logit}(p) = \text{Intercept} + \text{SE} + \text{Error}$$

### **Research Question 3**

Is there an association between the perception of negative stigma for seeking mental health services and willingness to seek such services?

The hypothesis for this research question was:

H<sub>3</sub>: There is a statistically significant negative relationship between perceived stigma and willingness to seek mental health services.

As in Question 2, frequencies for each variable of interest (perceived stigma and willingness to seek mental health services) were calculated and presented as descriptive of the data for Research Question 3. A scatterplot was developed to examine what trends or patterns (if any) were present in the data. Next, a bivariate correlation matrix of the scores for stigma and willingness to seek care was constructed to examine if there was a

linear relationship between the variables. Pearson correlations were calculated and the squared correlation coefficients were assessed to examine the variance in the data, including the potential correlation between stigma and self-efficacy.

An initial logistic regression analysis was completed as a method to predict values for the outcome variable (willingness to seek care, denoted as WSC) using perceived stigma and demographics as the predictor (or independent) variables (denoted as PS, the stigma scale). The dependent variable was the dichotomous measure of willingness to seek care (32), making the equation for the regression analysis:

$$\text{WSC} = \text{Intercept} + \text{PS} + \text{Error}$$

To test the hypothesis for Research Question 3, a logistic regression analysis examined the significant demographic variables from Question 1 and perceived stigma as a predictor of willingness to seek care. The logistic equation was as follows:

$$\text{logit}(p) = \text{Intercept} + \text{PS} + \text{Error}$$

#### **Research Question 4**

How does self-efficacy for seeking mental health services moderate the relationship between perceived stigma and willingness to seek mental health services?

The hypothesis for this research questions was:

H<sub>4</sub>: Self-efficacy moderates the relationship between perceived stigma and servicemen and women's willingness to seek mental health services.

Frequencies for each variable of interest (perceived stigma, self-efficacy, and willingness to seek mental health services) were calculated and presented as descriptive

of the data for Research Question 4. A scatterplot was developed to examine what trends or patterns (if any) were present in the data. Next, a bivariate correlation matrix of the scores for stigma, self-efficacy, and willingness to seek care was constructed to examine if there was a linear relationship between the variables. Pearson correlations were calculated and the squared correlation coefficients assessed to examine the variance in the data, including the potential correlation between stigma and self-efficacy.

Self-efficacy would be considered to have a moderating effect on the relationship between stigma and willingness to seek care if one of two interactions were found: (1) a cross-over interaction (the relationship between stigma and willingness to seek care changes based on the presence or absence of self-efficacy); or, (2) the relationship between stigma and willingness to seek care is substantially reduced rather than being reversed (Baron & Kenny, 1986). Since stigma and self-efficacy are both ordinal measures in this study, Baron and Kenny (1986) suggested that the independent variable (stigma) be dichotomized if a linear relationship is anticipated (i.e., an increase in self-efficacy has a gradual and steady change in the effect stigma has on willingness to seek care. Baron and Kenny (1986) said assuming this linear relationship is appropriate. This linear hypothesis was tested by adding the product of the moderator and the dichotomous independent variable to the regression equation (Cohen & Cohen, 1983; Cleary & Kessler, 1982; Kenny, Kashy & Bolger, 1998). The measure of the effect of the independent variable is a regression co-efficient.

An initial logistic regression analysis was completed as a method to predict values for the outcome variable (willingness to seek care, denoted as WSC) using perceived stigma (denoted PS, the stigma scale) as the independent variable and self-efficacy

(denoted SE, the self-efficacy scale) as the moderating variable. The dependent variable was the ordinal measure of willingness to seek care (denoted WSC, the dichotomized responses to item 32), making the equation for the regression analysis:

$$WSC = \text{Intercept} + PS + SE + PS(SE) + \text{Error}$$

To test the hypothesis for Research Question 4, a logistic regression analysis examined the moderating effect self-efficacy has on perceived stigma's relationship to willingness to seek care, controlling for the significant predictors found in Question 1. The logistic equation was as follows:

$$\text{logit}(p) = \text{Intercept} + PS + SE + PS(SE) + \text{Error}$$

### **Research Question 5**

What factors predict servicemen and women's willingness to seek care for mental health issues for their children?

The hypothesis for this research questions was:

H<sub>5</sub>: There is a statistically significant relationship between predictor variables and servicemen and women's willingness to seek care for mental health issues for their children.

Frequencies for each variable of interest (i.e., willingness to seek care for one's self, various demographic variables, and willingness to seek care for one's children) were calculated and presented as descriptive of these data. A scatterplot of the data was developed to examine what trends or patterns (if any) were present in the data. Next, a bivariate correlation matrix of the scores from each of the potential factors and the

outcome variable (willingness to seek care for a child) was constructed to examine if there was a linear relationship between the variables. Pearson correlations were calculated and the squared correlation coefficients assessed to examine the variance in the data.

An initial logistic regression analysis was completed as a method to predict values for the outcome variable (willingness to seek care for one's children, denoted as WSC-C) using willingness to seek care for one's self and demographics as the predictor (or independent) variables (denoted as WSC-S, item 32). The dependent variable was the dichotomous measure of willingness to seek care for one's children (dichotomized item 34), making the equation for the regression analysis:

$$\text{WSC-C} = \text{Intercept} + \text{WSC-S} + \text{Error}$$

To test the hypothesis for Research Question 5, a logistic regression analysis examined willingness to seek care for one's self and other predictors of willingness to seek care for one's children. The logistic equation was as follows:

$$\text{logit}(p) = \text{Intercept} + \text{WSC-S} + \text{Error}$$

For all regression models, the stepwise method was selected to enter predictor variables into the model. This was based on the relatively large sample size, the theoretical considerations in the study design, and the desire to find the most parsimonious models possible. Results were validated using a split-half analysis with predictor variables being selected using the enter method (Brace, Kemp, & Snelga, 2006).

To determine if any of the predictor variables were highly correlated, a test of multicollinearity was conducted. The adjusted  $R^2$  (or variance) was calculated to account for any larger proportion of variance in the dependent variable. The standardized Beta, which estimates the strength that the predictor variables have on the outcome variable, was also calculated. A probability-plot (p-plot) was generated to check for homoscedasticity in the data and to ensure that the homoscedasticity assumption (i.e., that there is finite variance in the data set) was not violated (Nunnally & Bernstein, 1994).

In addition to these statistical calculations, complete descriptions of the survey results for each variable are provided. Further, data are summarized in tables and in some cases figures to display alternate views of the survey results. Table 5 summarizes the planned statistical analyses according to each research question.

## **LIMITATIONS AND DELIMITATIONS**

There were several limitations to the study design and methodology proposed for this analysis. Several of these were related to the original data collection effort, and as a result constitute limitations in this analysis. First, the cross-sectional survey design lacked the ability to demonstrate causality of the behaviors or events of interest. The self-reported responses to the original survey also created some concern about potential respondent biases, such as social desirability, selection, and recall biases. The cross-sectional design may also have impacted the generalizability of the study results, since findings may not be applicable to other populations that exhibit with similar primary characteristics. Limiting the sampling of potential respondents to Army posts that offer mental health services may further limit the generalizability of results (although frequent

Table 5.  
*Planned Statistical Analyses by Research Question*

Research Question	Dependent Variable	Independent Variables	Specific Tests or Computations
1	Willingness to Seek Care	<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Military Rank</li> <li>• Deployment History</li> <li>• Tenure of Service</li> <li>• Care Provider Preferences</li> <li>• Care Seeker Preferences</li> <li>• Perceived Barriers</li> <li>• Perceived Need to Seek Care</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Correlations</li> <li>• Multiple regression</li> <li>• Logistic regression</li> </ul>
2	Willingness to Seek Care	<ul style="list-style-type: none"> <li>• Self-efficacy</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Correlations</li> <li>• Multiple regression</li> <li>• Logistic regression</li> </ul>
3	Willingness to Seek Care	<ul style="list-style-type: none"> <li>• Stigma</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Correlations</li> <li>• Multiple regression</li> <li>• Logistic regression</li> </ul>
4	Willingness to Seek Care	<ul style="list-style-type: none"> <li>• Stigma</li> <li>• Self-efficacy (moderating)</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Correlations</li> <li>• Multiple regression</li> <li>• Logistic regression</li> </ul>
5	Willingness to Seek Care for Children	<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Military Rank</li> <li>• Deployment History</li> <li>• Tenure of Service</li> <li>• Care Provider Preferences</li> <li>• Care Seeker Preferences</li> <li>• Perceived Barriers</li> <li>• Perceived Need to Seek Care</li> <li>• Willingness to Seek Care for Self</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Correlations</li> <li>• Multiple regression</li> <li>• Logistic regression</li> </ul>

and near-certain deployment and location reassignments found in military service

diminish this concern since servicemen and women will likely be assigned to a post with

comprehensive mental health services during their tenure in the Army) (Hoge, 2006). Additionally, the Army is culturally different from most other environments or work sites. Theoretical components such as self-efficacy may be somewhat limited in their explanatory power given that the Army mandates certain behaviors and limits many elements of free will in decision-making processes. While this may be a concern, understanding the role the self-efficacy plays in seeking mental health services has the potential to influence training and interventions to help servicemen and women overcome their concerns of being stigmatized for doing so. Finally, as a secondary analysis of data collected as part of a previous study, this study does not allow for tailoring or refining of questions that could otherwise be useful for honing the instrumentation.

There were several delimitations to the original data collection effort, which are presented here for continuity and to provide a clear picture of challenges overcome in securing the data for analysis. The first delimitation involved gaining the cooperation of the DOIMs at each military post, to serve as trusted agents (to both the researcher and the study participants) to ensure the surveys were administered with fidelity to the research plan. Second, the survey instrument was constructed to help the Army understand the value of “building” mental health services offerings compared to “buying” such services in the communities surrounding each military post. Answering this question was addressed elsewhere (Novier, 2007) and so not covered in this analysis. Likewise, interclass correlations and post-specific sub-analyses were not considered in the current study. Third, the psychometrics for the instrumentation (including item reliability and validity) were established as part of the initial study for which the data were collected. Likewise, the subscales used for capturing the phenomena of interest were based on



theoretical underpinnings and have been shown to be reliable and valid. Finally, actual care-seeking for oneself or one's child was not captured in the survey questionnaire, and therefore is not covered in this secondary analysis. It is anticipated that the results of this study will provide the Army with information that may help in the establishment of interventions to help both reduce stigma associated with seeking mental health services, and provide evidence-based strategies for encouraging treatment for mental health issues and overcoming barriers to seeking such care.

## **CHAPTER IV**

### **RESULTS**

Overall, the findings of this study indicate that stigma is the primary barrier to a serviceman or woman's willingness to seek care for himself or herself, and for seeking care for one's children. Self-efficacy moderates the relationship, with the effects of stigma being stronger for those with high self-efficacy than for those with low self-efficacy. This chapter presents a description of the data, including scale construction, and the results of the logistic regression analyses for each hypothesis in the study.

#### **DESCRIPTION OF THE DATA**

All data were drawn from the U.S. Army Medical Command's (MEDCOM's) Behavioral Health Service Line assessment survey, conducted in 2007. The sample consisted of 7,321 active-duty servicemen and women in the Army, Army Reserve, or National Guard. A response rate of 12% was achieved (7,321 responses out of 61,668 surveys sent). Respondents were allowed to opt out of answering any item they did not want to answer, therefore N sizes vary. The 53-item survey included demographic and background variables such as age, gender, military rank, deployment history, and tenure of service in the Army. Variables measuring respondents' care provider preferences, their perceived barriers to seeking care, and their perceived need to seek care were also examined. Whether the care sought was for an adult or a child was also explored. Additionally, scales for perceived barriers to seeking care, perceived stigma for seeking care (defined as the feeling of being treated differently in a negative way) and perceived

self-efficacy for seeking care were constructed. Willingness to seek care for oneself, and willingness to seek care for one's children complete the variables of interest for this study. Each scale's psychometric properties are described below.

## **Demographics**

The majority of respondents were career soldiers, most having served ten years or longer in the Army (>10 years of service = 58.7%) (Table 5). Another 15% had served more than 6 years but fewer than 10. Approximately 64% of respondents were enlisted soldiers, with more than one quarter of these holding a rank of Sergeant First Class or higher. Approximately one half of the responding officers held a rank of Major or higher. Respondents' ages ranged from "under 18" years old to "40 or over." Three fourths of respondents were 30 years old or older, and nearly three-quarters (74.5%) were male.

About two-thirds of respondents reported having been deployed to a hostile environment, with about half of those reporting being deployed in the year previous to completing the survey (i.e., 2006). Nearly half indicated having felt at some point that their lives were in immediate danger as a result of deployment. Twenty-one percent reported never having been deployed. Approximately 26% of respondents reported having been deployed for a year or less, and 4.4% reported having been deployed for more than six years over the course of their careers in the Army.

Table 6 presents the demographic data for the entire sample, as well as the demographic differences between respondents willing to seek mental health

Table 6.  
*Sociodemographic Characteristics of Survey Respondents by Willingness to Seek Care for Oneself (WSC-S) or for a Child (WSC-C)*

Total <sup>x</sup>	Total, N (%)	WSC-S, N (%)	WSC-C, N (%)	<i>p</i> <sup>a</sup>
	7321 (100)	5676 (77.5)	6844 (93.5)	.000
Age				<i>ns</i>
Under 18	2 (0.00)	1 (0.00)	1 (0.00)	
18-19	27 (0.40)	20 (0.40)	26 (0.40)	
20-24	529 (8.3)	367 (7.5)	491 (8.3)	
25-29	1046 (16.4)	763 (15.6)	989 (16.6)	
30-39	2651 (41.5)	2046 (41.9)	2452 (41.3)	
40 or older	2129 (33.3)	1683 (34.5)	1982 (33.4)	
Gender				<i>ns</i>
Male	4745 (74.5)	3644 (74.8)	4414 (74.5)	
Female	1625 (25.5)	1225 (25.2)	1513 (25.5)	
Rank <sup>x</sup>				.007
E1-E4: Private, Corporal, or Spclst	826 (11.4)	610 (10.9)	769 (11.3)	
E5-E6: Sergeant or Staff Sergeant	1907 (26.3)	1479 (26.3)	1784 (26.3)	
E7-E9: Sgt 1 <sup>st</sup> Class, MSgt., SgtMaj	1911 (26.4)	1495 (26.6)	1757 (25.9)	
WO1-WO5: Warrant Officer	265 (3.7)	196 (3.5)	251 (3.7)	
O1-O3: Lieutenant or Captain	1177 (16.2)	916 (16.3)	1122 (16.6)	
O4-O9: Major or higher rank	1163 (16.0)	926 (16.5)	1095 (16.2)	
Deployment History <sup>x</sup>				.000
Never been deployed	1528 (20.9)	1195 (21.1)	1437 (21.0)	
< 6 months	532 (7.3)	422 (7.4)	505 (7.4)	
6 months to 1 year	1383 (18.9)	1084 (19.1)	1295 (19.0)	
> 1 year but < 2 years	1616 (22.1)	1251 (22.1)	1521 (22.3)	
> 2 year but < 4 years	1513 (20.7)	1165 (20.6)	1400 (20.5)	
> 4 year but < 6 years	413 (5.7)	316 (5.6)	389 (5.7)	
> 6 year but < 10 years	243 (3.3)	174 (3.1)	211 (3.1)	
> 10 years	81 (1.1)	61 (1.1)	74 (1.1)	
Tenure in Army <sup>x</sup>				.003
< 6 months	50 (0.7)	37 (0.7)	48 (0.7)	
6 months to 1 year	99 (1.4)	81 (1.4)	94 (1.4)	
> 1 year but < 2 years	301 (4.1)	231 (4.1)	285 (4.2)	
> 2 years but < 4 years	846 (11.6)	649 (11.5)	806 (11.8)	
> 4 years but < 6 years	654 (9.0)	498 (8.8)	612 (9.0)	
> 6 years but < 10 years	1068 (14.6)	828 (14.6)	1021 (15.0)	
> 10 years but < 20 years	3019 (41.4)	2347 (41.5)	2795 (41.0)	
> 20 years	1260 (17.3)	984 (17.4)	1161 (17.0)	

<sup>a</sup>*p* values were derived from the  $\chi^2$  test for WSC-S and WSC-C.

<sup>x</sup>Significant difference between WSC-S and WSC-C.

services for themselves and those willing to seek care for their children. Statistically significant differences between those willing to seek care for themselves and their

children were found by rank, deployment history, and tenure in the army. Sergeants and Sergeant Majors differed significantly from Lieutenants or Captains, with lower-ranking respondents reporting being significantly less willingness to seek care for children than the higher-ranking respondents ( $p < .01$ ). Respondents who had been deployed more than 6 but less than 10 years were significantly different from all other deployment duration categories, with respondents reporting significantly more willingness to seek care for children than to seek care for oneself ( $p < .001$ ). Respondents who had been in the Army for more than 6 but less than 10 years were significantly less likely to seek care for children than those who had been in the Army 10 years or longer ( $p < .01$ ). Again, on average, respondents with higher rank, longer tenure in the Army, and longer deployment histories were more likely to be willing to seek care for children even when they would not seek care for themselves.

### **Seeking of Mental Health Services**

Approximately 78% of respondents reported being willing to seek mental health services for themselves ( $n = 5,676$ ), while nearly 94% ( $n = 6,844$ ) reported being willing to seek mental health services for their children (Table 6). Thirteen percent ( $n = 953$ ) reported having a perceived need to seek mental health services in the year preceding their completion of the survey. Ten percent ( $n = 699$ ) reported having sought mental health services for themselves in the past year, while 3.5% reported seeking mental health services for a child in that time; 1.3% reported having sought care both for themselves and a child ( $n = 91$ ).

About 80% of respondents ( $n = 5,047$ ) believed seeking mental healthcare would result in feeling stigmatized (i.e., being treated differently in a negative way). A majority (61%,  $n = 3,886$ ) also believed that stigma resulting from seeking mental healthcare was greater in the military community than in civilian populations. Table 7 presents the frequencies and percentages for these variables.

Table 7.  
*Frequencies (Percentages) of Perceived Need to Seek Mental Health (MH) Services, Stigma, and Willingness to Seek Care*

	Total, N (%)	$p^a$
Perceived Need to Seek MH Services <sup>b</sup>		.000
Yes	953 (13.4)	
No	6172 (86.6)	
Stigma for Seeking MH Services <sup>c</sup>		.000
I Will Feel Stigmatized if I Seek MH Services		
Do Not Believe	1331 (20.9)	
Somewhat Believe	2702 (42.4)	
Strongly Believe	2345 (36.8)	
Degree of Stigma for Seeking MH Services (Army vs. Civilian Population)		.000
More Stigma for Those in the Civilian Population	248 (3.9)	
About the Same	2241 (35.2)	
More Stigma for Those in the Army Population	3886 (61.0)	
Willingness to Seek Care—Self <sup>d</sup>		.000
Would Seek Care for Self	5676 (77.5)	
Would Not Seek Care for Self	1645 (22.5)	
Willingness to Seek Care—Child <sup>e</sup>		.000
Would Seek Care of a Child	6939 (94.8)	
Would Not Seek Care for a Child	382 (5.2)	

<sup>a</sup>p values were derived from the  $\chi^2$  test for Goodness of Fit.

<sup>b</sup>Perceived Need was defined as personally believing or having a mental health profession recommend seeking mental health services.

<sup>c</sup>Stigma was defined as feeling you would be treated differently and in a negative way.

<sup>d</sup>Willingness to Seek Care—Self was defined as not reporting that one would not seek care for oneself.

<sup>e</sup>Willingness to Seek Care—Child defined as not reporting that one would not seek care for one's children.

## Perceived Barriers to Seeking Mental Health Services

Respondents' perceived barriers to seeking mental health services were captured using 12 items in the survey instrument. These items comprised the barriers to seeking care scale developed by Hoge (2006) and Hoge, et al. (2007). When examined individually, the most important barriers identified by respondents related to concerns about loss of privacy, and fear or losing one's security clearance (Table 8). Of somewhat less concern were logistical barriers, such as knowing where to seek help, difficulties with transportation, finding child care, and frequent relocation challenges in the Army. Beliefs in the effectiveness of mental health services (such as belief that mental health services are beneficial) did not appear to factor importantly in the perception of barriers to care.

Table 8.  
*Frequencies (Percents) of Reported Perceived Barriers to Seeking Care for Oneself (WSC-S)*

	N (%)			<i>p</i> <sup>a</sup>
	No Obstacle	Small Obstacle	Large Obstacle	
Perceived Barriers				
Don't Know Where to Get Help	3615 (78.7)	732 (15.9)	248 (5.4)	.000
Don't Trust MH Professionals	2965 (57.9)	1418 (27.7)	741 (14.5)	.000
Lack of Privacy / Confidentiality	1949 (35.1)	1580 (28.4)	2025 (36.5)	.000
Too Costly	2826 (61.7)	992 (21.6)	765 (16.7)	.000
Difficult to Find Transportation	3673 (86.0)	411 (9.6)	186 (4.4)	.000
Difficult to Schedule	2374 (44.9)	1844 (34.9)	1069 (20.2)	.000
Difficult to Get Time Off Work	2513 (46.4)	1734 (32.0)	1165 (21.5)	.000
Difficult to Find Child Care	2340 (61.5)	973 (25.6)	492 (12.9)	.000
Leadership Would Blame Me for Problem	2877 (54.7)	1370 (26.1)	1010 (19.2)	.000
Risk of Losing Security Clearance	1840 (34.9)	1462 (27.7)	1971 (37.4)	.000
MH Services Don't Work	3172 (66.7)	1133 (23.8)	449 (9.4)	.000
Relocate Too Frequently to Follow Care	3316 (72.4)	920 (20.1)	341 (7.5)	.000
Regiment				

<sup>a</sup>p values were derived from the  $\chi^2$  test for Goodness of Fit.

## Care Provider Preferences

Respondents were asked where they would prefer to seek care for mental health services should they need to, choosing a first, second and third option in order of preference (Table 9). Provider preferences were rank-ordered following a weighting for preference order (three points for 1<sup>st</sup> preference, two points for 2<sup>nd</sup> preference, and one point for 3<sup>rd</sup> preference). Seeking care at an on-post clinic was the most frequently selected care provider option (preference score = 9,350;  $n = 4,159$ ), followed by seeking care from an off-post TRICARE provider (preference score = 5,587;  $n = 2,913$ ), and from an on-post chaplain or religious leader (preference score = 5,552;  $n = 2,710$ ). Seeking care from an off-post religious leader was the least popular choice for seeking care.

Table 9.  
*Frequencies (Percentages) of Care Provider Preferences by Willingness to Seek Care for Oneself (WSC-S)*

	N (%)		
	1 <sup>st</sup> Choice ( $n = 5808$ ) <sup>a</sup>	2 <sup>nd</sup> Choice ( $n = 5881$ ) <sup>a</sup>	3 <sup>rd</sup> Choice ( $n = 5216$ ) <sup>a</sup>
Care Provider			
On Post Clinic	2067 (35.6)	1057 (18.0)	1035 (19.8)
Off Post TRICARE	664 (11.4)	1346 (22.9)	903 (17.3)
On Post Chaplin	902 (15.5)	1038 (17.7)	770 (14.8)
Primary Care Provider	663 (11.4)	744 (12.7)	649 (12.4)
Off Post Civilian MH Care Provider	634 (10.9)	566 (9.6)	575 (11.0)
Off Post ONESOURCE	355 (6.1)	671 (9.2)	894 (17.1)
Off Post Religious Leader	523 (9.0)	459 (7.8)	390 (7.5)

<sup>a</sup>Respondents could answer up to three choices for preference of care provider, but they could also opt to make fewer than three selections, and “would not seek care” was an option that was not followed by other selections. 1645 respondents reported that they “would not seek care.”

## Self-Efficacy

Respondents answered five items related to elements of self-efficacy for seeking mental health services. A small majority of respondents reported they either agreed or



strongly agreed that seeking mental health services would result in positive outcomes (55.2%,  $n = 3,509$ ), while large majorities indicated agreement that they would be able to find care (78.6%,  $n = 4,984$ ), that good care options existed for them (65.5%,  $n = 4,137$ ), that seeking mental health services would be helpful in challenging times (61.5%,  $n = 3,892$ ), and that they can handle challenges they face (84.1%,  $n = 5,318$ ) (Table 10).

### SCALE CONSTRUCTION

Several summative scales were created for data analysis. These included the perceived barriers scale (12 items); self-efficacy scale (5 items); and, perceived stigma scale (7 items). Each scale and its psychometric properties is described below.

The perceived barriers scale was constructed using 12 items related to barriers to seeking mental health services (item 40a-h, m, n, p and q on the survey questionnaire). These items have been used to report on and understand barriers to seeking mental health services elsewhere in the literature (Hoge, et al., 2006). Hoge and colleagues (2006) reported an internal reliability score of  $\alpha = 0.87$  for these items in constructing the summated scale. In this study, the barrier scale had high internal consistency reliability ( $\alpha = 0.823$ ) and high inter-item correlations among all items. The scale showed no relevant improvement or deterioration when examined for each item's contributed value. Guttman's split-half reliability analysis ( $r = 0.843$ ) corroborates the high internal reliability of the scale's Cronbach  $\alpha$  score.

The self-efficacy scale was constructed using five questionnaire sub-items of Item 44. Summated scales for self-efficacy for seeking mental health services have been reported by Corrigan, Watson and Barr (2006) ( $\alpha = 0.83$ ) and Sherer and Adams

Table 10.  
*Frequencies (Percents) for Self-Efficacy Scale Items*

	N (%)	<i>p</i> <sup>a</sup>
Self-Efficacy Items		
If I Seek MH Services, I Will Have a Positive Outcome ( <i>n</i> = 6352)		.000
Strongly Disagree	185 (2.9)	
Somewhat Disagree	293 (4.6)	
Neither Agree nor Disagree	2365 (37.2)	
Somewhat Agree	2300 (31.4)	
Strongly Agree	1209 (19.0)	
I Can Find the MH Services I Need ( <i>n</i> = 6339)		.000
Strongly Disagree	113 (1.8)	
Somewhat Disagree	260 (4.1)	
Neither Agree nor Disagree	982 (15.5)	
Somewhat Agree	2467 (38.9)	
Strongly Agree	2517 (39.7)	
I Have Good Options for Seeking MH Services ( <i>n</i> = 6319)		.000
Strongly Disagree	223 (3.5)	
Somewhat Disagree	436 (6.9)	
Neither Agree nor Disagree	1523 (24.1)	
Somewhat Agree	2289 (36.2)	
Strongly Agree	1848 (29.2)	
Seeking MH Services Would be Helpful in Challenging Times ( <i>n</i> = 6324)		.000
Strongly Disagree	163 (2.6)	
Somewhat Disagree	306 (4.8)	
Neither Agree nor Disagree	1963 (31.0)	
Somewhat Agree	2305 (36.4)	
Strongly Agree	1587 (25.1)	
I Can Usually Handle Whatever Comes my Way ( <i>n</i> = 6321)		.000
Strongly Disagree	50 (0.8)	
Somewhat Disagree	151 (2.4)	
Neither Agree nor Disagree	802 (12.7)	
Somewhat Agree	2179 (34.5)	
Strongly Agree	3139 (49.7)	

<sup>a</sup>*p* values were derived from the  $\chi^2$  test for Goodness of Fit.

(1983) and Adams, and Sherer et al. (1982) ( $\alpha$  range = 0.78 — 0.84). In the present study, internal consistency on the self-efficacy scale was ( $\alpha$  = 0.762) with high inter-item correlations (ranging from .137 to .694). Guttman's split-half reliability analysis was  $r$  = 0.667.

The perceived stigma scale was constructed using seven questionnaire items: Items 43 and 44 of the survey, and Items *i, j, k, l*, and *o* of survey Item 40. Summated scale scores for stigma related to seeking mental health services in the military has been reported by Hoge (2006) ( $\alpha = 0.89$ ). In this study, the stigma scale had high internal consistency reliability ( $\alpha = 0.878$ ) and high inter-item correlations (ranging from .215 to .715). The scale showed no relevant improvement or deterioration when examined for each item's contributed value. Guttman's split-half reliability analysis ( $r = 0.809$ ) corroborates the high internal reliability of the scale's Cronbach  $\alpha$  score.

## **RESEARCH QUESTION 1**

Research Question 1 was "What factors predict servicemen and women's willingness to seek mental health services?" It was hypothesized that statistically significant relationships exist between numerous demographic categories and willingness to seek care. The factors examined in this question included: age, gender, military rank, deployment history, tenure of service in the Army, who the care provider is, who the care seeker is, perceived barriers to seeking care, and the perceived need to seek care.

The bivariate correlation matrix of the scores from each potential factor and the outcome variable (willingness to seek care for self) was constructed (Table 11). Pearson correlations were calculated and the squared correlation coefficients were assessed to examine variance in the data. Since a regression analysis was used to answer this research question, building the regression model began with examining each predictor variable to determine which were at least moderately associated with the dependent variable. In fitting the logistic regression model, the estimated coefficients, their standard

Table 11.

*Correlation Matrix of Predictors for Research Question 1<sup>a</sup>*

	Age	Gender	Rank	Deployed	Tenure	Provider	Seeker	Barriers	Need	Stigma	SE	WSC-S
Age	1	-.172	.382	.284	.661	-.004 <sup>c</sup>	.009 <sup>c</sup>	-.060	-.053	-.016 <sup>c</sup>	.077	.068
Gender	-.172	1	-.072	-.282	-.220	.081	.028 <sup>b</sup>	.053	.085	.048	-.009	-.015 <sup>c</sup>
Rank	.382	-.072	1	.070	.235	.032 <sup>b</sup>	-.062	-.026 <sup>b</sup>	-.098	.045	.032	.026 <sup>b</sup>
Deployed	.284	-.282	.070	1	.419	-.003 <sup>c</sup>	.044	.033	.037	.043	-.015 <sup>c</sup>	-.024 <sup>b</sup>
Tenure	.661	-.220	.235	.419	1	-.014 <sup>c</sup>	.045	-.050	-.040	-.016 <sup>c</sup>	.035	.009 <sup>c</sup>
Provider	-.004 <sup>c</sup>	.081	.032 <sup>b</sup>	-.003 <sup>c</sup>	-.014 <sup>c</sup>	1	-.045	.108	-.055	.114	-.126	-.055
Seeker	.009 <sup>c</sup>	.028 <sup>b</sup>	-.062	.044	.045	-.045	1	.009 <sup>c</sup>	.433	-.015 <sup>c</sup>	.056	.061
Barriers	-.079	.046	-.066	.026 <sup>b</sup>	-.064	.097	.025 <sup>b</sup>	1	.063	.652	-.282	-.125
Need	-.053	.085	-.098	.037	-.040	-.055	.433	.057	1	.043	.073	-.002 <sup>c</sup>
Stigma	-.016 <sup>c</sup>	.048	.045	.043	-.016 <sup>c</sup>	.114	-.015 <sup>c</sup>	.858	.043	1	-.194	-.153
SE	.083	-.018 <sup>c</sup>	.043	-.019 <sup>c</sup>	.039	-.120	.010 <sup>c</sup>	-.282	.034	-.199	1	.208
WSC-Self	.068	-.015 <sup>c</sup>	.026 <sup>b</sup>	-.024 <sup>b</sup>	.009 <sup>c</sup>	-.055	.061	-.148	-.002 <sup>c</sup>	-.153	.207	1

<sup>a</sup>All coefficients are significant at the  $p \leq 0.01$  level (2-tailed), unless otherwise noted.<sup>b</sup>Coefficients are significant at the  $p \leq 0.05$  level (2 tailed).<sup>c</sup>Coefficients are non-significant.

errors and the likelihood ratio test were examined. Those variables whose p-value was  $< 0.25$  were selected to use in fitting an initial regression model. This step resulted in tenure in the Army (Wald statistic = 0.612,  $p = .434$ ) and perceived need to seek care (Wald statistic = 0.040,  $p = .841$ ) being dropped from the model, while all other variables were selected for inclusion in the next step.

Next, the included variables were fit into a multiple logistic regression model, using the Wald statistic to verify the importance of each variable in the equation. The coefficients of each variable in the model were compared to the coefficients from the models that contained each variable separately. Variables that were not significant were removed, and the model was reexamined, checking for a change in significance from the previous model. Since the significance did not change, it was confirmed that the deleted variables were not important to the model. This iterative process resulted in gender, rank, and who the care seeker was being eliminated from the model, and established age (A) (Wald statistic = 30.407,  $p = .000$ ), deployment history (DH) (Wald statistic = 3.733,  $p = .050$ ), care provider preference (CP) (Wald statistic = 9.538,  $p = .002$ ), and perceived barriers (PB) (Wald statistic = 31.201,  $p = .000$ ) as the important variables in the predictive equation (Table 12). The pseudo  $R^2$  for the model was 0.027.

To identify any potentially confounding variables, those variables eliminated from the original model were added again to the new model, to assess any joint significance with those variables that were not selected. No confounders were found, so the model was determined to be the preliminary main effects model for the predictors on willingness to seek care. Additionally, no interaction effects were found in the model.

Table 12.  
*Variables in the Logistic Regression Model for Research Question 1*

	$\beta$	S.E.	Wald	df	Sig	OR (95% CI)
Age	.241	.044	30.407	1	.000	1.272 (1.168, 1.386)
Deployment History	-.047	.025	3.733	1	.048	0.954 (0.909, 0.999)
Care Provider Preference	-.060	.019	9.538	1	.002	0.942 (0.906, 0.978)
Barriers	-.049	.009	31.201	1	.000	0.952 (0.936, 0.969)
Constant	1.969	.280	49.286	1	.000	7.164

The relationship was determined to be sufficiently linear to not violate the assumption of linearity. The final logistic regression equation was:

$$\text{logit}(p) = \text{Intercept} + A + DH + CP + PB + \text{Error}$$

or

$$\text{logit}(p) = 1.969 + .241A - .047DH - .060CP - .049PB$$

Odds ratios were calculated for each significant variable, and are as follows (with 95% confidence intervals): Age (OR = 1.272; 95% CI = 1.168, 1.386;  $p = .000$ ); Deployment History (OR = 0.954; 95% CI = .909, .999);  $p = .048$ ; Care Provider Preference (OR = 0.942; 95% CI = .906, .978;  $p = .002$ ); and, Barriers (OR = 0.952; 95% CI = .936, .969;  $p = .000$ ). Therefore, the odds of a respondent's willingness to seek care increase 27.2% for each incremental increase in age, holding all else constant. Respondents' odds of being willing to seek care decrease for each increase in deployment history (4.6% decrease), care provider preference (5.8% decrease), and barriers to seeking care (6.4% decrease), holding all else constant.

## RESEARCH QUESTION 2

Research Question 2 was “Is there an association between self-efficacy for seeking assistance for mental health issues and servicemen and women’s willingness to seek mental health services?” and hypothesized that servicemen and women with higher self-efficacy scores will be significantly more willing to seek mental health services than those with lower scores. Self-efficacy was assessed using the self-efficacy scale, with higher scores indicating higher self-efficacy for seeking mental health services. Predictive factors found to be statistically significant in Research Question 1 (age, deployment history, care provider preference, and perceived barriers) were controlled for in the analysis.

Item frequencies and percentages for each factor were calculated and the bivariate correlations of the scores for each covariate and the outcome variable (willingness to seek care for self) were examined. Self-efficacy has a statistically significant positive (yet relatively weak) correlation with willingness to seek care ( $r = .208, p = .000$ ). Correlations for the covariates were all statistically significant, but weak (Table 10). Pearson correlations were assessed to examine variance in the data. Building the regression model began with examining each predictor variable to determine which were at least moderately associated with the dependent variable. The estimated coefficients, their standard errors and the likelihood ratio test were examined to fit the logistic regression model. Those variables whose p-value was  $< 0.25$  were selected to use in an initial examination of fit for the regression model, which resulted in all of the variables of interest being included in the preliminary model.

Next, the included variables were fit into a multiple logistic regression model, using the Wald statistic to verify the importance of each variable in the multiple equation. The coefficients of each variable in the multiple model were compared to the coefficients from the models that contained only each variable separately. Variables that did not appear important were removed, and the model was reexamined, checking for a change in significance from the previous model. This step resulted in duration history (Wald statistic = 3.058,  $p = .080$ ) being removed from the model. The iterative process established self-efficacy (Wald statistic = 51.465,  $p = .000$ ), age (Wald statistic = 21.239,  $p = .000$ ), care provider preference (Wald statistic = 5.728,  $p = .017$ ), and perceived barriers (Wald statistic = 13.587,  $p = .000$ ) as the important variables in the predictive equation (Table 13). The pseudo  $R^2$  for the model was 0.042.

Table 13.  
*Variables in the Logistic Regression Model for Research Question 2*

	$\beta$	S.E.	Wald	df	Sig	OR (95% CI)
Self-Efficacy	.088	.012	51.465	1	.000	1.091 (1.066, 1.118)
Age	.191	.041	21.239	1	.000	1.211 (1.116, 1.313)
Care Provider Preference	-.047	.020	5.728	1	.017	0.954 (0.918, 0.992)
Barriers	-.034	.009	13.587	1	.000	0.966 (0.949, 0.984)
Constant	.007	.391	0.000	1	.986	1.007

To identify any potentially confounding variables, those variables eliminated from the original model were added again to the new model, to assess any joint significance with those variables that were not selected. No confounders were found, so the model was determined to be the preliminary main effects model for these predictors on willingness to seek care. The model was examined to determine if any interaction effects



existed, testing self-efficacy, perceived barriers, and care provider preference for interaction. No significant interaction effects were found in the model. The relationship was determined to be sufficiently linear to not violate the assumption of linearity. The final logistic regression equation was:

$$\text{logit}(p) = \text{Intercept} + \text{SE} + \text{A} + \text{CP} + \text{PB} + \text{Error}$$

or

$$\text{logit}(p) = 0.007 + .088\text{SE} + .191\text{A} - .047\text{CP} - .034\text{PB}$$

Odds ratios were calculated for each significant variable, and are as follows (with 95% confidence intervals): Self-Efficacy (OR = 1.091; 95% CI = 1.066, 1.118,  $p = .000$ ); Age (OR = 1.211; 95% CI = 1.116, 1.313;  $p = .000$ ); Care Provider Preference (OR = 0.954; 95% CI = .918, .992;  $p = .017$ ); and, Perceived Barriers (OR = 0.966; 95% CI = .949, .984;  $p = .000$ ). Therefore, the odds of a respondent's willingness to seek care increased 9.1% for each incremental increase in self-efficacy, and 21.1% for each incremental increase in age, holding all else constant. Respondents' odds of being willing to seek care decreased for each increase in care provider preference (4.6% decrease) and barriers to seeking care (3.4% decrease), holding all else constant.

### **RESEARCH QUESTION 3**

Research Question 3 was "Is there an association between the perception of negative stigma for seeking mental health services and willingness to seek such services?" It was hypothesized that there is a statistically significant negative

relationship between perceived stigma and servicemen and women's willingness to seek mental health services. Perceived stigma was assessed using the stigma scale, with higher scores indicating higher perceived stigma for seeking mental health services. Predictive factors found to be statistically significant in Research Question 1 (age, deployment history, care provider preference, and perceived barriers) were controlled for in the Research Question 3 analysis.

Item frequencies and percentages for each factor were calculated and the bivariate correlations of the scores for each covariate and the outcome variable (willingness to seek care for self) were examined. Stigma has a statistically significant negative (yet relatively weak) correlation with willingness to seek care ( $r = -.153, p = .000$ ).

Correlations for the covariates were all statistically significant (Table 10). The Pearson correlations were determined and the squared correlation coefficients were assessed to examine variance in the data. Building the regression model began with examining each predictor variable to determine which were at least moderately associated with willingness to seek care. In fitting the logistic regression model, the estimated coefficients, their standard errors and the likelihood ratio test were examined, and those variables whose p-value was  $< 0.25$  in this initial review were selected to use in fitting a preliminary regression model.

Next, the included variables were fit into a multiple logistic regression model, using the Wald statistic to verify the importance of each variable in the multiple equation. The coefficients of each variable in the multiple model were compared to the coefficients from the models that contained only each variable separately. Variables that did not appear important were removed, and the model was reexamined, checking for a change in

significance from the previous model. This step resulted in deployment history (Wald statistic = 3.426,  $p = .064$ ) and perceived barriers (Wald statistic = 2.385,  $p = .122$ ) being removed from the model. Since stigma and perceived barriers correlated so highly ( $r = .652$ ), it was not surprising to see perceived barriers drop from the model. The iterative process established stigma (Wald statistic = 47.770,  $p = .000$ ), age (Wald statistic = 30.549,  $p = .000$ ), and care provider preference (Wald statistic = 8.025,  $p = .005$ ) as the important variables in the predictive equation (Table 14). The pseudo  $R^2$  for the model was 0.031.

Table 14.  
*Variables in the Logistic Regression Model for Research Question 3*

	$\beta$	S.E.	Wald	df	Sig	OR (95% CI)
Stigma	-.074	.011	47.770	1	.000	0.929 (0.909, 0.948)
Age	.228	.041	30.549	1	.000	1.256 (1.158, 1.362)
Care Provider Preference	-.055	.020	8.025	1	.005	0.946 (0.911, 0.983)
Constant	2.000	.263	57.831	1	.986	7.390

To identify any potentially confounding variables, those variables eliminated from the original model were added again to the new model, to assess any joint significance with those variables that were not selected. No confounders were found, so the model was determined to be the preliminary main effects model for these predictors on willingness to seek care. The model was examined to determine if any interaction effects existed, testing stigma and care provider preference for interaction. No significant interaction effects were found in the model. The relationship was determined to be

sufficiently linear to not violate the assumption of linearity. The final logistic regression equation was:

$$\text{logit}(p) = \text{Intercept} + \text{Stigma} + A + \text{CP} + \text{Error}$$

or

$$\text{logit}(p) = 2.00 - .074\text{Stigma} + .228A - .055\text{CP}$$

Odds ratios were calculated for each significant variable, and are as follows (with 95% confidence intervals): Stigma (OR = 0.929; 95% CI = .909, .948,  $p = .000$ ); Age (OR = 1.256; 95% CI = 1.158, 1.362;  $p = .000$ ); and Care Provider Preference (OR = 0.946; 95% CI = .911, .983;  $p = .005$ ). Therefore, the odds of a respondent's willingness to seek care decreases 7.1% for each incremental increase in stigma, and 5.4% for each incremental increase in care provider preference (i.e., moving from most-preferred care provider choice to less-preferred choices in rank order), holding all else constant. Respondents' odds of being willing to seek care increased 25.6% for each increase in age, holding all else constant.

#### **RESEARCH QUESTION 4**

Research Question 4 was "How does self-efficacy for seeking mental health services moderate the relationship between perceived stigma and willingness to seek mental health services?" Perceived stigma was assessed using the stigma scale, with higher scores indicating higher perceived stigma for seeking mental health services. Self-efficacy was assessed using the self-efficacy scale, with higher scores indicating higher

self-efficacy for seeking mental health services. Predictive factors found to be statistically significant in Research Question 1 (age, deployment history, and care provider preference) were controlled for in the Research Question 4 analysis. The perceived barriers variable was dropped from Research Question 4, given its high correlation with the stigma variable.

To fit the regression model, item frequencies and percentages for each factor were calculated and the bivariate correlations of the scores for each covariate and willingness to seek care for oneself were examined. As mentioned earlier, stigma has a statistically significant negative correlation with willingness to seek care ( $r = -.153, p = .000$ ), and self-efficacy has a statistically significant positive correlation with willingness to seek care ( $r = .208, p = .000$ ). Correlations for the covariates were all statistically significant, but weak (Table 10), including the correlation between stigma and self-efficacy ( $r = -.199, p = .000$ ). As in Research Question 3 above, the Pearson correlations and the squared correlation coefficients were examined to assess variance in the data. Each predictor variable that was at least moderately associated with willingness to seek care was examined to initially fit the variables into the logistic regression model. As before, those variables whose p-value was  $< 0.25$  were selected to use in fitting an initial regression model, resulting in all of the variables of interest being included in the preliminary model.

Next, the included variables were fit into a multiple logistic regression model, using the Wald statistic to verify the importance of each variable in the multiple equation. The coefficients of each variable in the multiple model were compared to the coefficients from the models that contained only each variable separately. Variables that did not

contribute significantly to the model were removed, and the model was reexamined, using the Wald test to check for a change in significance from the previous model.

This step resulted in deployment history (Wald statistic = 2.807,  $p = .094$ ) being removed from the model. The iterative process established stigma (Wald statistic = 32.821,  $p = .000$ ), age (Wald statistic = 23.796,  $p = .000$ ), care provider preference (Wald statistic = 4.177,  $p = .041$ ), and self-efficacy (Wald statistic = 54.309,  $p = .000$ ) as the important variables in the predictive equation.

To identify any potentially confounding variables, those variables eliminated from the original model were added again to the new model, to assess any joint significance with those variables that were not selected. No confounders were found, so the model was determined to be the preliminary main effects model for these predictors on willingness to seek care, as follows:

$$\text{logit}(p) = \text{Intercept} + A + CP + \text{Stigma} + SE + \text{Error}$$

or

$$\text{logit}(p) = .175 + .203A - .040CP - .064\text{Stigma} + .089SE$$

Odds ratios were calculated for each significant variable, and are as follows (with 95% confidence intervals): Age (OR = 1.225; 95% CI = 1.129, 1.329;  $p = .000$ ); Care Provider Preference (OR = 0.960; 95% CI = .924, .998;  $p = .041$ ); Stigma (OR = 0.940; 95% CI = .920, .960,  $p = .000$ ); and, Self-Efficacy (OR = 1.093; 95% CI = 1.067, 1.119,  $p = .000$ ). Therefore, in the main effects model, the odds of a respondent's willingness to seek care increases 22.5% for each incremental increase in age and 9.3% for each

incremental increase in self-efficacy, holding all else constant. Respondents' odds of being willing to seek care decrease 4.0% for each incremental increase in care provider preference and 6.0% for each incremental increase in stigma, holding all else constant.

The model was examined to determine if any interaction effects existed, testing self-efficacy for moderating effects on stigma's relationship to willingness to seek care. To test for two-way interaction (or the relationship between an independent variable and dependent variable moderated by a third variable), a logistic regression including an interaction term (the product of the independent variable and the moderating variable—Stigma\*SE) was run. For ease of interpretation, each value for stigma and self-efficacy was re-coded as dichotomous variables (with 0 = low stigma and 1 = high stigma, and 0 = high self-efficacy and 1 = low self-efficacy) using the mean for each score as the cut point. The interaction term is the product of these two variables. With the interaction variable added, the equation of the line became:

$$\text{logit}(p) = \text{Intercept} + A + CP + \text{Stigma} + SE + \text{Stigma} * SE + \text{Error}$$

or

$$\text{logit}(p) = .847 + .212A - .047CP - .312\text{Stigma} + .586SE - .171\text{Stigma} * SE$$

When examining the variables in the equation (Table 15), the product term (Stigma\*SE) should be significant in order for the interaction to be interpretable (SPSS, 1999). The Wald statistic for the interaction term was 4.781 ( $p = .043$ ), with an odds ratio of 1.187. The stigma coefficient represents the main effect for low stigma (the 0 category). The effect for low stigma is -.483, while the effect for high stigma is (-.483) +

Table 15.

*Variables in the Logistic Regression Model with Interaction Effects for Research Question 4*

	$\beta$	S.E.	Wald	df	Sig	OR (95% CI)
Age	.212	.041	26.246	1	.000	1.236 (1.140, 1.340)
Care Provider Preference	-.047	.020	5.713	1	.017	0.954 (0.918, 0.992)
Self-Efficacy (SE)	-.586	.124	22.434	1	.000	0.557 (0.437, 0.709)
Stigma	-.483	.114	17.804	1	.000	0.617 (0.493, 0.772)
SE*Stigma	.185	.116	4.781	1	.043	1.187 (1.109, 1.633)
Constant	1.433	.226	40.171	1	.000	4.191

.171, or -.312. The self-efficacy coefficient represents the main effect for high self-efficacy (the 0 category). The effect for high self-efficacy is -.586, while the effect for low self-efficacy is  $(-.586) + .171$ , or -.415.

To conduct the interpretation of the interaction or moderating term, values were inserted into the regression equation. The modes for both the age (5) and care provider preferences (1) were inserted for these variables. The resulting equations became:

$$\text{STIGMA}_{\text{high}}, \text{SE}_{\text{low}}: \text{WSC} = 1.427 + .212(5) - .045(1) - .483(1) - .415(1) = 1.544$$

$$\text{STIGMA}_{\text{low}}, \text{SE}_{\text{low}}: \text{WSC} = 1.427 + .212(5) - .045(1) - .483(0) - .586(1) = 1.856$$

$$\text{STIGMA}_{\text{high}}, \text{SE}_{\text{high}}: \text{WSC} = 1.427 + .212(5) - .045(1) - .483(1) - .415(0) = 1.959$$

$$\text{STIGMA}_{\text{low}}, \text{SE}_{\text{high}}: \text{WSC} = 1.427 + .212(5) - .045(1) - .483(0) - .586(0) = 2.442$$



Odds ratios were calculated by using the  $\beta$  score as the exponent for  $e$  (the base of the natural logarithm, 2.7182818). Using stigma as the focus variable, the analysis shows that the negative effects of stigma on willingness to seek care are greater when self-efficacy is high ( $OR_{SElow} = .617, p = .000$ ;  $OR_{SEhigh} = .732, p = .000$ ). Using self-efficacy as the focus variable, the analysis shows that the positive effects of self-efficacy on willingness to seek care are greater when stigma is low ( $OR_{STIGMAlow} = .557, p = .000$ ;  $OR_{STIGMAhigh} = .660, p = .000$ ). The findings also show that for both high and low stigma, higher self-efficacy scores result in higher willingness to seek care for mental health services. Furthermore, higher stigma results in lower willingness to seek care when self-efficacy is low (Figure 4). While higher self-efficacy improves respondents' willingness to seek care, it is clear that stigma has a greater effect on those with high self-efficacy than it has on those with low self-efficacy (who were already less likely to be willing to seek care).

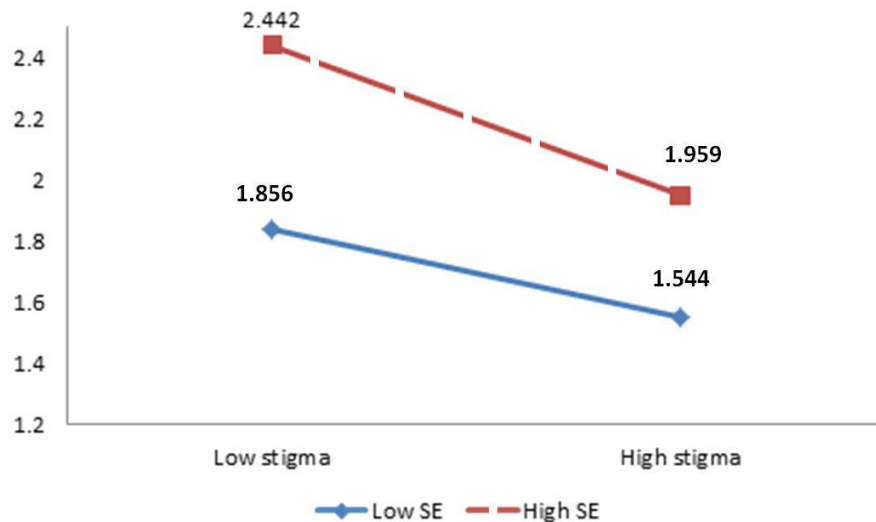


Figure 4. Interaction Effect between Self-Efficacy and Stigma

## RESEARCH QUESTION 5

Research Question 5 was “What factors predict servicemen and women’s willingness to seek care for mental health issues for their children?” The hypothesis was that there is a statistically significant relationship between predictor variables and servicemen and women’s willingness to seek care for mental health issues for their children. Willingness to seek care for oneself (denoted WCS-S) and willingness to seek care for one’s children (denoted WSC-C) were coded as dichotomous variables, with 1 = willing to seek care and 0 = not willing to seek care. Predictive factors found to have statistically significant differences in the description of the data (rank, deployment history, and tenure in the Army), and in Research Question 1 (age, care provider preference, and perceived barriers) were controlled for in the analysis.

Item frequencies and percentages for each factor were calculated and the bivariate correlations of the scores for each covariate and the outcome variable (willingness to seek care for one’s child) were examined (Table 16). Willingness to seek care for oneself has a statistically significant moderately strong correlation with willingness to seek care for a child ( $r = .269, p = .000$ ). Correlations for age, provider preference, care seeker, and perceived need were not statistically significant. Correlations for all other covariates were statistically significant, but quite weak. Pearson correlations were calculated and the squared correlation coefficients were assessed to examine variance in the data. Since a regression analysis was used to answer this research question, building the regression model began with examining each predictor variable to determine which were at least moderately associated with the dependent variable. In fitting the logistic regression

Table 16.

*Correlation Matrix of Predictors for Research Question 5<sup>a</sup>*

	Age	Rank	Deployed	Tenure	Provider	Seeker	Barriers	Need	Stigma	SE	WSC-S	WSC-C
Age	1	.382	.284	.661	-.004 <sup>c</sup>	.009 <sup>c</sup>	-.060	-.053	-.016 <sup>c</sup>	.077	.068	-.008 <sup>c</sup>
Rank	.382	1	.070	.235	.032 <sup>b</sup>	-.062	-.026 <sup>b</sup>	-.098	.045	.032	.026 <sup>b</sup>	.025 <sup>b</sup>
Deployed	.284	.070	1	.419	-.003 <sup>c</sup>	.044	.033	.037	.043	-.015 <sup>c</sup>	-.024 <sup>b</sup>	-.034
Tenure	.661	.235	.419	1	-.014 <sup>c</sup>	.045	-.050	-.040	-.016 <sup>c</sup>	.035	.009 <sup>c</sup>	-.042
Provider	-.004 <sup>c</sup>	.032 <sup>b</sup>	-.003 <sup>c</sup>	-.014 <sup>c</sup>	1	-.045	.108	-.055	.114	-.126	-.055	.011 <sup>c</sup>
Seeker	.009 <sup>c</sup>	-.062	.044	.045	-.045	1	.009 <sup>c</sup>	.433	-.015 <sup>c</sup>	.056	.061	.018 <sup>c</sup>
Barriers	-.079	-.066	.026 <sup>b</sup>	-.064	.097	.025 <sup>b</sup>	1	.063	.652	-.282	-.125	-.059
Need	-.053	-.098	.037	-.040	-.055	.433	.057	1	.043	.073	-.002 <sup>c</sup>	.009 <sup>c</sup>
Stigma	-.016 <sup>c</sup>	.045	.043	-.016 <sup>c</sup>	.114	-.015 <sup>c</sup>	.858	.043	1	-.194	-.153	-.056
SE	.083	.043	-.019 <sup>c</sup>	.039	-.120	.056	-.282	.034	-.199	1	.208	.132
WSC-S	.068	.026 <sup>b</sup>	-.024 <sup>b</sup>	.009 <sup>c</sup>	-.055	.061	-.148	.002 <sup>c</sup>	-.153	.207	1	.269
WSC-C	-.008 <sup>c</sup>	.025 <sup>b</sup>	-.034	-.042	.011 <sup>c</sup>	.018 <sup>c</sup>	-.079	.009 <sup>c</sup>	-.056	.125	.269	1

<sup>a</sup>All coefficients are significant at the  $p \leq 0.01$  level (2-tailed), unless otherwise noted.

<sup>b</sup>Coefficients are significant at the  $p \leq 0.05$  level (2 tailed).

<sup>c</sup>Coefficients are non-significant.

model, the estimated coefficients, their standard errors and the likelihood ratio test were examined. Those variables whose p-value was  $< 0.25$  were selected to use in fitting an initial regression model. This step resulted in deployment history being dropped from the initial model.

Next, the included variables were fit into a multiple logistic regression model, using the Wald statistic to verify the importance of each variable in the multiple equation. The coefficients of each variable in the multiple model were compared to the coefficients from the models that contained only each variable separately. Variables that did not appear important were removed, and the model was reexamined, checking for a change in significance from the previous model. This step resulted in stigma (Wald statistic = 1.863,  $p = .172$ ) being removed from the model, while establishing rank (Wald statistic = 7.561,  $p = .006$ ), tenure in the Army (Wald statistic = 17.563,  $p = .000$ ), perceived barriers (Wald statistic = 4.292,  $p = .038$ ), self-efficacy (Wald statistic = 18.628,  $p = .000$ ), and willingness to seek care for oneself (Wald statistic = 539.098,  $p = .000$ ), as the important variables in the predictive equation (Table 17). The pseudo  $R^2$  for the model was 0.226.

Table 17.  
*Variables in the Logistic Regression Model for Research Question 5*

	$\beta$	S.E.	Wald	df	Sig	OR (95% CI)
Rank	.094	.034	7.561	1	.006	1.098 (1.027, 1.174)
Tenure	-.160	.038	17.563	1	.000	0.852 (0.790, 0.918)
Barriers	-.026	.013	4.292	1	.038	0.974 (0.950, 0.999)
Self-Efficacy	.070	.016	18.628	1	.000	1.073 (1.039, 1.108)
WSC-Self	2.479	.107	539.098	1	.000	11.932 (9.679, 14.710)
Constant	.734	.512	2.052	1	.152	2.084

To identify any potentially confounding variables, those variables eliminated from the original model were added again to the new model, to assess any joint significance with those variables that were not selected. No confounders were found, so the model was determined to be the preliminary main effects model for these predictors on willingness to seek care for a child. The model was examined to determine if any interaction effects existed, testing rank and tenure, perceived barriers and stigma, and perceived barriers and willingness to seek care for oneself for statistically significant interaction effects. None were found. The relationship was determined to be sufficiently linear to not violate the assumption of linearity. The final logistic regression equation was:

$$\text{logit}(p) = \text{Intercept} + R + T + PB + SE + WSC-S + \text{Error}$$

or

$$\text{logit}(p) = .734 + .094R - .160T - .026PB + .070SE + 2.479WSC-S$$

Odds ratios were calculated for each significant variable, and are as follows (with 95% confidence intervals): Rank (OR = 1.098; 95% CI = 1.027, 1.174;  $p = .006$ ); Tenure (OR = 0.852; 95% CI = .790, .918;  $p = .000$ ); Perceived Barriers (OR = 0.974; 95% CI = .950, .999;  $p = .038$ ); Self-Efficacy (OR = 1.073; 95% CI = 1.039, 1.108;  $p = .000$ ); and Willingness to Seek Care—Self (OR = 11.932; 95% CI = 9.679, 14.710;  $p = .000$ ). Therefore, the odds of a respondent's willingness to seek care for a child increases 9.8% for each incremental increase in rank, 7.3% for each increase in self-efficacy, and 1193.2% if one is willing to seek care for oneself, holding all else constant. The odds of

a respondent's willingness to seek care for a child decrease 14.8% for each incremental increase in tenure in the Army, and 2.6% for each incremental increase in perceived barriers, holding all else constant.

## **SUMMARY**

This chapter presented a description of the data, including scale construction, and the results of the logistic regression analyses for each hypothesis in the study, as well as the overall findings of the study. Stigma is the primary barrier to a serviceman or woman's willingness to seek care for himself or herself, and for seeking care for one's children. Self-efficacy moderates the relationship between stigma and willingness to seek care, with the effects of stigma being stronger for those with high self-efficacy than for those with low self-efficacy.

## **CHAPTER V**

### **DISCUSSION**

This study assessed and evaluated stigma associated with seeking mental health services among members of the U.S. Army, and examined the role of self-efficacy in predicting the willingness to seek those services. More specifically, the study examined the predictive factors of servicemen and women's willingness to seek mental health services, the extent to which self-efficacy impacts service members' willingness to seek such care, the impact of perceived negative stigma associated with seeking mental health services, and the moderating effect of self-efficacy on the relationship between stigma and a soldier's willingness to seek mental health services. Finally, predictors of a service member's willingness to seek care for his or her child were examined.

Findings from this study add to the growing research on overcoming stigma as a barrier to seeking mental health services for members of the U.S. Army. They also add to the research on the impact and benefits of using self-efficacy as an important component of behavior change, in this case choosing to seek mental health services in an environment not conducive to doing so. The results inform evidence-based suggestions for developing strategies and interventions the Army could employ to assist their servicemen and women in overcoming negative stigma associated with seeking mental health services and for improving access to and use of mental health services offered by the Army.

The significance of the research findings are discussed in this chapter, as are the study limitations, the implications of the findings for health promotion practice, and recommendations for future research.

## **SAMPLE**

All data were drawn from the U.S. Army Medical Command's (MEDCOM's) Behavioral Health Service Line assessment survey, conducted in 2007. The sample consisted of 7,321 active-duty servicemen and women in the Army, Army Reserve, or National Guard. The sample size met the requirements for statistical power analysis. A post-hoc power analysis revealed that the observed statistical power ranged from 0.999000 to 1 for all tests and analyses in the study. The ample statistical power resulted in even small differences achieving statistical significance, prompting the question of statistical versus practical significance in the study results. Most of the odds ratios calculated in the study demonstrated relatively modest, although statistically significant, differences. Calculations for pseudo  $R^2$ s for each test confirm that only a small proportion of the explanatory variance is accounted for in the logistic regression models. With such robust statistical power, several challenges to interpretation exist. First, the statistical significance of the findings may be more an artifact of the sample size than meaningful or practical differences in the phenomenon being measured.

Considerable care should be taken in interpreting and drawing conclusions from the findings of this study so as not to mistakenly inflate the meaning of the results. One potential way to account for the ample observed statistical power is to adjust the p-values throughout to increase the threshold necessary to achieve statistical significance. Two



approaches would be appropriate: (1) adopting a higher standard for statistical significance (i.e.,  $p < 0.01$  rather than the traditional  $p < 0.05$  standard used in the social sciences, or (2) calculating and adopting the Bonferroni adjustment by dividing the traditional  $p$  value of  $p < 0.05$  by the number of statistical tests to establish the significance level. For example, a study with 20 tests (such as this one) could set the significance level at  $0.05 / 20 = 0.0025$  to account for the robust power (Nunnally & Bernstein, 1994; Cohen, 1998).

Additionally, caution should be taken in generalizing the findings from this study due to other sampling considerations. This study sample skewed older than the Army's current population. Because the age of respondents skewed older for the sample than for the Army as a whole, generalizations made from this study should be tending toward older service members. Roughly 75% of respondents in this study reported being 30 years old or older. The average age for a soldier is currently less than 25 years old; although this age is increasing as the Army is admitting older initial enrollees. Additionally, the sample skewed slightly higher for women than is typically found in the Army, so generalizations made from this study should also take this into account. A sensitivity analysis was conducted to examine how different values of the independent variables impacted willingness to seek care given the assumption that the sample more closely mirrored the overall Army population (i.e., younger, fewer females, more enlisted soldiers rather than officers, etc.). Several predictors shown to be significant in analysis using the study sample became non-significant during the sensitivity analysis. These included: deployment history, tenure in the Army, and care provider preference. Stigma, self-efficacy, and perceived barriers all remained significant predictors of willingness to

seek care in the sensitivity analysis, although each of their strengths of association was reduced from the original study findings. This suggests that at least some of the significant findings of the study likely an artifact of the large sample size and ample study power, and caution is recommended in generalizing the study results to the Army population on the whole.

## **SIGNIFICANT FINDINGS**

### **Factors Predicting Willingness to Seek Care for Mental Health Issues**

The first research question was, “What factors predict servicemen and women’s willingness to seek mental health services?” and examined several key variables, including: age, gender, military rank, deployment history, tenure of service in the Army, care provider preferences, care seeker preferences, perceived barriers to seeking care, and the perceived need to seek care. Age and gender were not significant predictors of a difference in willingness to seek care for oneself or for children, but rank, deployment history, and tenure in the army all were. Sergeants and Sergeant Majors differed significantly from Lieutenants or Captains, with lower-ranking respondents reporting being significantly less willing to seek care for mental health services. Respondents who had been deployed more than six but less than 10 years were significantly different from all other deployment duration categories. Additionally, respondents whose tenure in the Army was more than six but less than ten years were significantly less likely to seek care for mental health services than those who had been in the Army ten years or longer.

These findings suggest that differences associated with tenure in the Army and a respondent's achieved rank may represent important intervention opportunities to address a lack of willingness to seek care. These deployment, tenure, and rank categories align with key professional development stages and milestones. The results suggest that soldiers on the cusp of major promotions or making a determination to stay in the Army until they reach retirement age may be less likely to seek mental health services than the soldiers in other tenure or rank categories.

When comparing willingness to seek care for oneself and willingness to seek care for one's children, several differences existed among respondents in these same tenure and rank categories. On average, respondents with higher rank, longer tenure in the Army, and longer deployment histories reported they would be more willing to seek care for a child, even in situations when they would not seek care for themselves. Enlisted soldiers who had achieved the highest ranks (those of Sergeant 1<sup>st</sup> Class, Master Sergeant, or Sergeant Major) were the least likely of all respondents to report willingness to seek care for a child. Achievement of these ranks is closely correlated with a soldier's tenure in the Army (a tenure of >6 but <10 years), the tenure category also least likely to seek care for a child. This suggests that soldiers at these ranks and tenures in their career may feel more vulnerable to negative outcomes associated with seeking mental health services and may be more sensitive to the stigma attached to doing so.

Nearly 80% of respondents reported being willing to seek mental health services for themselves, and nearly 95% reported being willing to seek mental health services for a child (Table 5). These percentages are very high, much higher than found in the general civilian population. While reported rates of willingness to seek mental health

services vary widely in the literature, experts agree that individuals are more likely to report willingness to seek care than to actually seek care (Wang et al., 2005; Hollon et al., 2005; Cooper, Corrigan, & Watson, 2003), and that stating a willingness to seek care does not translate to the actual seeking of care (Cooper, Corrigan, & Watson, 2003; Institute of Medicine, 2007). Caution should therefore be taken when considering the high reported rate of willingness to seek care in the study, as the high rate of reported willingness to seek care seems to convey high social desirability in responses and an informed conditioning to responding favorably to such questions.

Regardless of whether or not willingness to seek care was over-emphasized in the study subjects answers, respondents believe that seeking care for mental health needs will result in their feeling stigmatized, and that the stigma associated with seeking mental health services in the Army is greater than it is for civilians who need to seek such services. Of the individual items that are included in the barriers to seeking care scale, those barriers that relate to stigma were reported as the strongest and most significant. These include feeling embarrassment for seeking care, losing the confidence that one's peers and leadership have in them, being seen as weak, and harming one's career. Logistical barriers, such as finding transportation to an appointment or arranging for child care, were less important. This finding is interesting in that the Army has spent time and resources attempting to overcome traditional logistical barriers (Hoge et al., 2004) as a way to increase the use of mental health services. This data suggests that future efforts to overcome barriers to seeking care will be best spent on continued efforts to combat stigma and increase self-efficacy for seeking such services.

When examined collectively in the predictive equation, age, deployment history, care provider preference, and perceived barriers all contributed significantly to the model, with respondents' willingness to seek care for themselves increasing with age, and decreasing with longer deployment history, lower preference for the available care provider, and increased scores on the perceived barriers scale. While the age, care provider preference, and perceived barrier results are relatively intuitive (i.e., willingness to seek care would decrease if you could not go to your care provider of choice, and willingness to seek care would be reduced if one felt the barriers to doing so were high), the deployment history result is especially interesting. These data suggest that the more times a soldier is deployed or the longer the duration of a soldier's deployment, the less likely he or she would be to seek care. The literature clearly shows that soldiers who have more frequently deployed to hostile areas are much more likely receive a diagnosis of PTSD or TBI, or have a related mental health need. Therefore, these data suggest that respondents who may have increased need to seek such services are increasingly less willing to do so.

### **Self-Efficacy for Seeking Mental Health Services**

The second research question was, "Is there an association between self-efficacy for seeking assistance for mental health issues and servicemen and women's willingness to seek mental health services?" Variables determined to be statistically significant predictors of willingness to seek care in Research Question 1 were controlled for in Question 2. The self-efficacy scale scores were used to fit the logistic regression equation.

While the self-efficacy scale had an internal reliability score ( $\alpha = 0.762$ ) that was on par with self-efficacy scale scores reported in the literature, it should be noted that this self-efficacy scale was constructed from only five instrument items, and represented a truncated version of self-efficacy scales used in other projects. This represents a limitation in the study in several ways. First, using fewer scale items negatively impacts the overall reliability of the scale itself, while also limiting the nuance and specificity of individual components that add to the scale. Secondly, and perhaps more importantly, using a truncated scale does not allow for a direct comparison of validity to fit these results neatly into the body of work on the impacts of self-efficacy found in the literature.

As a secondary analysis, this limitation was unavoidable, in that the data collection instrument had been set for the original study and the data had already been collected. Principal investigators from Army MEDCOM determined that removing five items from the self-efficacy scale would reduce respondent burden and instrument length, and that such an adjustment was worth whatever might be lost from comparability to existing research. This resulted in a less-than-ideal self-efficacy construct in the current study; however, care was taken to ensure that the items used to construct the self-efficacy scale in this study comported to the theoretical constructs of self-efficacy. Specifically, the scale items addressed outcome expectations, and the magnitude, generality and strength of the efficacy expectations. Also addressed were skills, outcome value, verbal persuasion, and emotional arousal. This attention to the theoretical elements of self-efficacy helped to ensure robustness and validity in the self-efficacy scale despite the reduction in scale component items.

Therefore, despite the limitations, the self-efficacy scale was a statistically significant predictor of servicemen and women's willingness to seek mental health services. The model returned an odds ratio of 1.091 for self-efficacy, meaning that the odds of a respondent's willingness to seek care increase 9.1% for each incremental increase in his or her self-efficacy score when holding the other significant predicting variables constant. This suggests that the Army should look to the scientific behavior-change literature to identify best-practices on improving self-efficacy, to inform the development of interventions to improve self-efficacy for seeking mental health services as a means of overcoming barriers to doing so.

### **Perceived Stigma's Impact on Willingness to Seek Mental Health Services**

The third research question asked, "Is there an association between the perception of negative stigma for with seeking mental health services and willingness to seek such services?" Variables determined to be statistically significant predictors of willingness to seek care in Research Question 1 were controlled for in Question 3. The stigma scale scores were used to fit the logistic regression equation. The stigma scale had a very strong internal reliability score ( $\alpha = 0.878$ ) that was comparable to other stigma scores found in the literature.

Stigma was negatively correlated with willingness to seek care for mental health services, with an odds ratio of 0.929 when fit into the logistic regression model with the other significant predictor variables. This means that for every increase in a respondent's stigma score, a respondent's willingness to seek care decreases 7.1%, holding all else constant. It is interesting to note that when fitting both stigma and perceived barriers as

predictors into the logistic regression model, perceived barriers drop out of the equation as non-significant. Stigma correlated highly with the perceived barriers scale scores ( $r = .652$ ), demonstrating that stigma is a major component in the barriers to willingness to seek care. Several of the components of the perceived barriers scale related to issues and elements of stigma, so it is not surprising that these measures correlated so highly. The data suggest that stigma itself is the major barrier to willingness to seek mental health services.

This finding supports the myriad findings in other studies that discussed stigma as the most pervasive barrier to seeking mental health services, especially for members of the armed services. The individual items that comprised the stigma scale for this study corroborate findings in other studies cited in the literature. Nearly 80% of respondents either believed or strongly believed that they would feel stigmatized for seeking mental health services, and more than 61% reported believing that there is more stigma associated with seeking mental health services for members of the military than for those in the civilian population. These numbers suggest that despite efforts to overcome stigma for seeking mental health services, and the purveyance of many mental health service offerings, stigma remains functionally institutionalized in the Army. According to Hoge et al. (2007), stigma represents a critical failure of the Army that prevents service members and their families from getting the help they need just when they may need it most. When such negative attitudes about those who experience or receive treatment for mental health conditions are held as a cultural norm, such perceptions become a daunting barrier to seeking care.



### **Interactions of Self-Efficacy and Stigma on Willingness to Seek Care**

The fourth research question asked, “How does self-efficacy for seeking mental health services moderate the relationship between perceived stigma and willingness to seek mental health services?” Perceived stigma was assessed using the stigma scale, with higher scores indicating higher perceived stigma for seeking mental health services. Self-efficacy was assessed using the self-efficacy scale, with higher scores indicating higher self-efficacy for seeking mental health services. Predictive factors found to be statistically significant in Research Question 1 (age, deployment history, and care provider preference) were controlled for in the Research Question 4 analysis. Additionally, an interaction term (Stigma\*SE) was introduced to the logistic regression equation to test for moderating impacts of self-efficacy on stigma, and determining that self-efficacy is a moderating variable on the relationship between stigma and willingness to seek care.

Figure 5 depicts the interaction effect between self-efficacy and stigma, and the impact of the interaction on willingness to seek care. In this model, willingness to seek care for mental health services is represented by the sum of the estimated coefficients ( $\beta$ s) with values of zero for age and care provider preference. Written in equation form, the equation for willingness to seek care becomes:

$$WSC-S = \beta_0 + \beta_{SE} + \beta_{STIG} + \beta_A + \beta_{CP} + \beta_{SE*STIG}$$

$\beta_0$  is equal to the log odds of the willingness to seek care among those with low self-efficacy in low stigma events, with all other variables equaling zero.  $\beta_{SE}$  is the difference

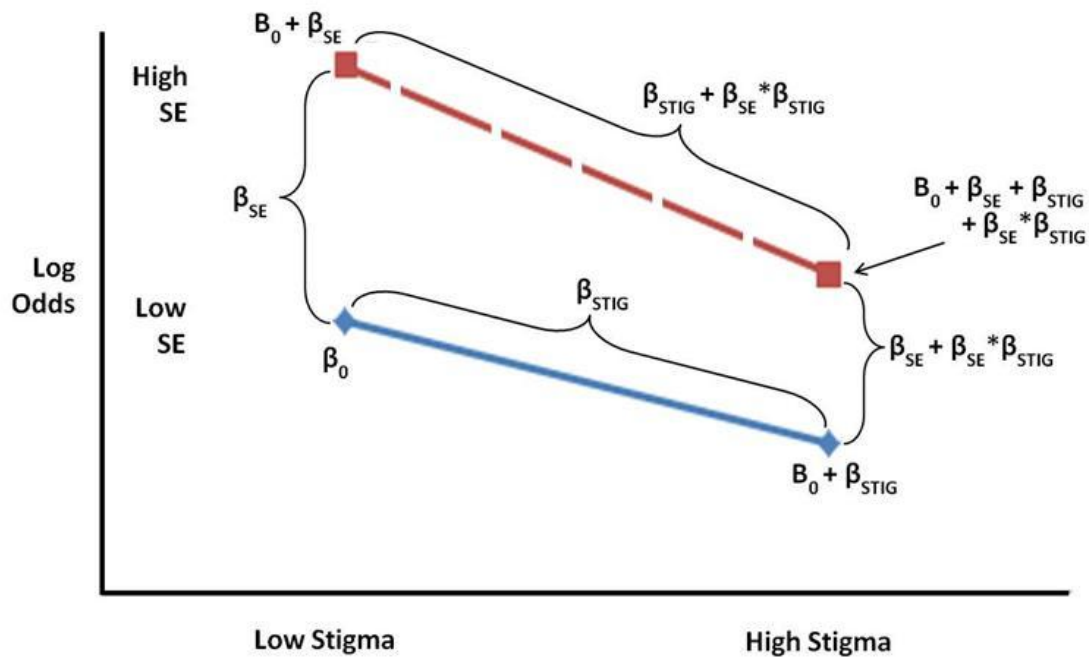


Figure 5. Interaction Effect of Self-Efficacy and Stigma on Willingness to Seek Care

in log odds between high and low stigma observations in low stigma events, with all other variables held constant.  $\beta_{STIG}$  equals the difference in log odds between high and low stigma events for low self-efficacy respondents, with all other variables held constant. Finally,  $\beta_{SE*STIG}$  is equal to the difference between high and low self-efficacy events and high and low stigma events, with all other variables held constant. It is clear that having high self-efficacy leads to a higher likelihood of willingness to seek care, regardless of the stigma level. When stigma is low, having high self-efficacy increases the likeliness of willingness to seek care. Even when self-efficacy is low, if stigma is also low then the willingness to seek care is improved upon when compared to the high stigma situation.

As could be anticipated, the best situation for willingness to seek care is the combination of low stigma and high self-efficacy, and the worst is when stigma is high

and self-efficacy low. High stigma reduces the willingness to seek care for both high and low self-efficacy respondents. This reduction is less pronounced when self-efficacy is already low, suggesting that those with low self-efficacy were already less inclined to seek care for mental health services.

It is interesting to note that high stigma diminished the benefit of self-efficacy considerably, demonstrating that stigma has a more powerful effect on those with high self-efficacy than on those with low self-efficacy. High stigma reduces the substantial magnitude of change that self-efficacy has on willingness to seek care. This reinforces the notion that stigma is the most powerful barrier to willingness to seek care, and demonstrates that while high self-efficacy can improve the odds of a respondent being willing to seek care, it only can counter the negative effects of stigma so much. This suggests that efforts to reduce stigma should be accompanied by concurrent efforts to improve self-efficacy for seeking mental health services.

### **Factors Predicting Willingness to Seek Care for a Child**

The final research question asked, “What factors predict servicemen and women’s willingness to seek care for mental health issues for their children?” Approximately 78% of respondents reported that they would be willing to seek mental health services for themselves, and nearly 94% reported being willing to seek mental health services for a child (Table 6). Comparisons between those willing to seek care only for themselves and those who would be willing to seek care both for themselves and for a child were made for several variables including age, gender, military rank, deployment history, and tenure in the Army. Neither age nor gender was statistically significant between the two groups.

Rank, deployment history and tenure in the Army all had statistically significant differences between the groups, with enlisted soldiers who had achieved higher ranks being less willing to seek mental health services for a child. This result correlated strongly with respondents' deployment history and their tenure in the Army. As mentioned earlier, these deployment, tenure, and rank categories align with key professional development stages and milestones.

The results suggest that soldiers who are about to attain their highest possible rank, and those making a determination to stay in the Army until they reach retirement age, may be less likely to seek mental health services, either for themselves or for children, than the soldiers in other rank or tenure categories. It appears that as soldiers advance in their careers and near their terminal ranks (those of Sergeant 1<sup>st</sup> Class, Master Sergeant, or Sergeant Major for enlisted servicemembers or Colonel or higher for the officer corps), their willingness to seek care either for themselves or for their children decreases. This suggests that soldiers at these ranks and tenures in their career may feel more vulnerable to negative outcomes associated with seeking mental health services, including the negative stigma that could arise from their child or children seeking mental health services.

## **IMPLICATIONS OF FINDINGS**

There are several important implications of this study's findings. First, the study supports other research on the topic that has shown negative stigma associated with seeking mental health services to be the primary barrier for seeking such services. The Army has long recognized this as a major challenge to assisting soldiers and their

families in overcoming mental health challenges. The Army has made numerous and considerable efforts to educate and enculturate (i.e., convey norms through experience, observation or modeling, and instruction) soldiers at all levels about the characteristics and impacts of mental health disorders such as PTSD and TBI. These efforts attempt to socialize the idea that soldiers are highly susceptible to developing mental health issues (Corrigan & Gelb, 2006). Normalizing the risk of developing mental health issues has been a major strategy to combat stigma for seeking mental health services in the Army (Corrigan & Gelb, 2006; Greene-Shortridge, Britt, & Castro, 2007). While these efforts have improved the understanding of the issues and consequences of stigma in the Army ranks, there has been little movement on overcoming the perception that soldiers will be stigmatized for seeking such care (Hoge, 2006; RAND, 2008). That is, although servicemen and women know and understand that seeking mental health services should not be a stigmatizing activity, they nonetheless believe they will be stigmatized for seeking such care. To this end, the findings of this study demonstrate that despite attention being placed on the issue of stigma for seeking mental health services, knowledge alone has not altered perceptions of this issue.

Second, this study demonstrates that although there are many barriers to seeking mental health services for servicemen and women, those barriers associated with negative stigma are most impactful. Barriers based on logistics (such as finding transportation, child care, and getting time off of work) do factor into consideration, but are viewed as considerably less important than the barriers that result from negative stigma. While the Army has marshaled resources and built services to overcome the logistical barriers to seeking care, it appears that such efforts do not address the most important challenges

soldiers face when seeking such care. While efforts to reduce logistical barriers should not be forgone, this study suggests that more progress in increasing servicemen and women's willingness to seek care would be achieved by focusing on tactics and strategies to overcome negative stigma by increasing self-efficacy associated with seeking care.

Third, this study suggests that being able to see one's preferred care provider makes a difference in servicemen and women's willingness to seek care. When care can be sought on the military base to which the soldier is assigned, willingness to seek care is highest. It is unclear whether this is a matter of convenience or some other reason. For example, while servicemen and women may face stigma for seeking care on-post, doing so may represent less of a risk of being stigmatized than seeking care off-post. Seeking care off-post would require arranging for more time away from work than seeking care on-post. It would also require arranging for transportation to and from the appointment, navigating a healthcare system that may be less familiar to the care seeker, and other potential challenges that would not be faced if seeking care on-post. Soldiers may be weighing the pros of convenience with the cons of being "found out" and dealing with the relative stigma in such situations. Any anonymity or protection from stigma gained by seeking care off-post (and potentially outside of the TRICARE system) may be lost or undermined by the myriad logistical requirements of leaving base to seek care. Additionally, chaplains and religious leaders on-post are considered the third most favored source for seeking care. They should be considered a gateway to helping servicemen and women enter the mental health services arena, and should be made aware of this study's findings.

Fourth, this study strongly suggests that stigma is highest for servicemen and women at certain points in their careers, especially as they attain higher ranks or are making determinations to remain in the Army as a career option. The Army should use this information to design targeted trainings of those recently promoted (or those nearing promotion) as a way to both help them combat their beliefs that seeking mental health services is a career-limiting endeavor, and prepare them to help others who would fall under their command authority following their promotion.

Fifth, this study demonstrates that self-efficacy may be an effective moderator of the relationship between stigma and a serviceman or woman's willingness to seek care for mental health needs. The literature review found that very little has been done by the Army to consider what role behavior change interventions (shown to be effective in other settings) have on reducing stigma for seeking mental health services. Past studies mentioning self-efficacy did not explore its role in moderating the impact stigma has on seeking mental health services. The results of this study provide strong evidence that self-efficacy should be an important element in the Army's efforts to overcome stigma for seeking mental health services.

Sixth, this study clearly demonstrates that there is a difference between servicemen and women's willingness to seek care for themselves for a mental health issue, and their willingness to seek care for a child who needs such services. In most cases, servicemen and women who reported that they would not seek care for themselves said they would, however, seek care for a child with such needs. It is interesting to note that stigma dropped out of the equation as a predictor of willingness to seek care for a child, suggesting that concerns related to being stigmatized for having a family member

in need of mental health services, respondents indicate that these concerns do not trump the need to seek care for a child. Respondents who would not seek care for themselves but would for a child seem to be conveying a stronger sense of responsibility for caring for the needs of a child than for addressing their own needs. The Army should capitalize on this sense of responsibility as an intervention or interaction point in helping servicemen and women recognize and act upon their own needs to seek mental health services.

The results of this study should be disseminated to Army MEDCOM leadership as well as to mental health service providers in the Army (including clergy) and in allied health provider settings (i.e., Military OneSource practitioners in communities with a high concentration of active or retired military personnel). These leaders and practitioners will benefit from learning these results as they work to develop new interventions to combat stigma for seeking mental health services. Soldiers and their families will benefit, too. The results also present an opportunity to adjust existing intervention strategies and improve outcomes related to combating stigma associated with seeking mental health services. Increasing awareness of the role self-efficacy for seeking mental health services plays in overcoming stigma provides an entirely new and as of yet untapped range of opportunities to advance the efforts of combating stigma for seeking such services. These include education to build and strengthen components of strong self-efficacy for seeking mental health services, as well as heightened awareness and sensitivity among military leaders to the pressing need for soldiers with mental health issues to seek and receive the care they need. Examining the scientific literature for best-practices for applying self-efficacy interventions to affect behavior change is warranted



to inform potential applications for self-efficacy development in the Army. Examples include: student motivations for self-regulated learning (Schunk & Ertmer, 2000), coping with HIV (Bandura, 1990), smoking cessation and avoiding relapse (Condiotte & Lichtenstein, 1981), and others.

## **LIMITATIONS**

There were several limitations to this study that should be acknowledged. Several of these limitations relate to the original study and the fact that this study is a secondary data analysis. First, as a secondary analysis, the limitations inherent in the data set could only marginally be addressed, as the survey responses had been collected earlier and no opportunity to seek clarification on ambiguous answers existed. This study did not allow for tailoring or refining of questions that could otherwise be useful for honing the instrumentation. This limitation was mitigated to some extent due to the researcher's involvement in the initial study, in so far as complete and accurate documentation (e.g., access to the original code book, instrumentation, etc.) was readily available.

Political and practical considerations factored into the research design and execution. Factors that stemmed from restraints and parameters placed on the Army leadership initially charged with collecting this data prevented the study of some topics of interest and avenues of inquiry that might have been important to gaining fuller and richer understanding. The Army Principal Investigator made several decisions about instrumentation and methodology which have implications in this analysis (such as choosing to remove some items from a well-established summative scale on self-efficacy). While such decisions and limitations impact what "might have been," they

reflect a reality found in conducting research in restrictive settings. Such restrictions impact what can ultimately be learned from this data set; however, this concern should neither supersede, nor diminish, the important learnings obtained from this analysis.

The cross-sectional survey design did not allow for causality of the behaviors or events of interest to be determined. The cross-sectional design may also have impacted the generalizability of the original study, and subsequently this analysis as well, since findings may not be applicable to other populations that exhibit similar primary characteristics. That the data were collected as self-reported responses to the original survey question raises some concerns about potential respondent biases, such as social desirability, selection, and recall biases. Limiting the sampling of potential respondents to those assigned to Army posts that offer mental health services may further limit the generalizability of results. Also, the response rate of 12% can be considered low, generating a potential concern of non-response bias. This concern was mitigated by the large sample size and the statistical power achieved. The statistical power itself, however, is another potential limitation to interpreting the results. While results were significant in most cases, the calculated odds ratios were quite modest, representing relatively small changes. There is the concern that the statistically significant differences in the data do not represent practical significance but are primarily an artifact of robust power in the test. A post-hoc power analysis resulted in statistical power in most tests between 0.999900 and 1.00000. Results, therefore, should be considered carefully and not overstated.

While reliability for the constructed summary scales was high for all measures (and is comparable to reliability scores for similar measures found in other studies),

several challenges to assessing the study's validity existed. Although the survey items and pilot study results suggested high face validity, convergent validity was more difficult to determine, especially given that two scale constructions (self-efficacy and stigma) may have been inconsistent with the scale constructions of criterion studies. Although convergent validity in this study seems high, it is difficult to have complete confidence in this result since the scales being compared do not comprise identical component items. Scale construction for perceived barriers in this study was identical to the constructs in criterion studies (Hoge et al., 2004; Hoge, Auchterlonie, & Milliken, 2006), but as mentioned above, changes to the self-efficacy and stigma scales were enacted by the Army Principal Investigator. These changes could cast doubt on the convergent validity of the study. To mitigate this concern, the total score for each scale substituted for a *bona fide* criterion measure (Bohrnstedt, 1969), allowing for the comparison of the items in the scale individually to further assess convergent validity.

Another concern relates to the unique nature of the Army as a culture and a place of employment. The Army is culturally different from most other environments or work sites, especially in regard to placing oneself in harm's way and exposing oneself to great personal risk in the execution of one's tasks. Furthermore, service in the Army (especially when soldiers are deployed) results in long periods of separation from one's family and traditional means of social support, adding to the stresses on mental wellness. Soldiers almost never have the option to refuse to follow orders or execute assignments that place them in high-risk situations, and in situations that could have negative impacts on their mental wellness (Hoge, Auchterlonie, & Milliken, 2006). Theoretical components such as self-efficacy may be somewhat limited in their explanatory power

given that the Army mandates certain behaviors and limits many elements of free will in decision-making processes. While this may be a concern, understanding the role that self-efficacy plays in seeking mental health services within an Army setting is crucial to the development of interventions to help servicemen and women overcome their perception that they will be stigmatized for seeking care.

Despite these limitations, it is anticipated that the results of this study will provide the Army with information that may help them to establish interventions to reduce stigma associated with seeking mental health services. This study can also inform evidence-based strategies for encouraging treatment for mental health issues and overcoming barriers to seeking care.

### **RECOMMENDATIONS FOR FUTURE STUDY**

The findings of this secondary analysis suggest the following recommendations for future research. First, the data analyzed for this study focused on respondents' self-reporting of their willingness to seek care (for themselves or for their children), but did not allow for a determination of the perceived stigma and self-efficacy for those who actually sought care for mental health issues, and their outcomes for having done so. Future research should explore the impacts of self-efficacy on actual care-seeking behaviors rather than simply on the behavioral intent of being willing to seek care. Conducting research in which pre-intervention self-efficacy scores are established prior to a study subject's seeking mental health services and monitoring for improvements in mental health status is warranted. Likewise, the Army's efforts to combat stigma should be carefully monitored and evaluated to demonstrate the impact such efforts have.

Second, future research to specifically test the hypothesis that soldiers' willingness to seek care decreases as they reach certain career milestones (especially for enlisted soldiers with longer career durations) should be considered, as verification of such a phenomenon could lead to targeted or tailored interventions for soldiers in such circumstances. Future investigation of the underlying reasons for provider preferences is also warranted as such findings can inform the Army's offerings of mental health services and strategies to improve efficiency and utilization of such offerings.

Additionally, future research should be conducted into understanding how stigma for seeking mental health services in the Army compares to other issues, behaviors, or conditions that have been stigmatized, both in and out of the Army. Strategies for reducing stigma for seeking mental health services can be informed by understanding the diminished stigmatization of other social and behavioral phenomena. For example, many situations, beliefs or practices that once carried tremendous stigma are now much less stigmatized. These include gender roles in occupation or employment (i.e., male nurses, stay-at-home dads, and female soldiers), interracial dating or marriage, gay and lesbian relationships, out-of-wedlock parenthood or single parenthood, and certain health issues (i.e., HIV/AIDS and cancer) to name just a few. Likewise, behaviors and practices that were once accepted as commonplace have over the years become stigmatizing, such as drunk driving, corporal punishment in the home and in schools, racism and sexism, and smoking.

The Army should look to its own experiences with acknowledging the inclusion of openly gay servicemen and women (i.e., the repeal of "Don't Ask, Don't Tell" in recent months) to gain insights into changing social norms and overcoming

institutionalized stigma. How did homosexuality go from being a means of exclusion to a legal non-issue over the past 20 years? How do cultural changes outside of the Army impact policy decisions within the Army? To what extent does policy inside the Army need to keep pace with cultural norms outside of their ranks?

The data used in this analysis were collected at a time when the Nation was approaching nearly seven years of continuous armed conflict, and the pressures on the fighting force brought on by increased OPTEMPO and more frequent and longer lasting deployments were at unprecedented highs (Tan, 2010; Belasco, 2007). Future research into whether the attitudes and beliefs described in this analysis hold in less-stressful times may be warranted. Is the Army more susceptible to culture change or attitudinal shifts during peace time? Do the pressures of maintaining and engaging a ready fighting force perpetuate the status quo and inhibit cultural change or policy adjustments? Future research should look into the magnitude of stigmatization for certain types of mental health services. Are there types of mental health issues that are more- or less-stigmatized in the Army, and does such stigmatization change by rank and role in the service?

Finally, more research is needed to study the extent to which soldiers' concerns related to being stigmatized for seeking mental health services reflect actual outcomes. For example, are the concerns and perceptions soldiers feel about being stigmatized for seeking mental health services actually borne out in reality? That is, is there evidence that seeking mental health services either for oneself, or for one's family, is indeed career-limiting or ending? Understanding this could be an important element in a comprehensive strategy for combating stigma for seeking mental health services.

## CONCLUSION

This study assessed and evaluated aspects of stigma associated with seeking mental health services among members of the U.S. Army, and explored the role that self-efficacy plays in predicting the seeking of those services. It also sought to explore and understand the factors which predict servicemen and women's willingness to seek mental health services for themselves vis-à-vis their children in an environment where perceived stigmatization of those who seek such services is high. Negative stigma associated with seeking mental health services undermines servicemen and women's access to such services and their efforts to seek the care they require, either for themselves or for their families. Stigma, a "negative and erroneous attitude about a person, a prejudice, or negative stereotype" (Corrigan & Penn, 1999) was found to be the primary barrier to servicemen and women's willingness to seek care for themselves or for a child. Self-efficacy, the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995), was found to moderate the relationship between stigma and willingness to seek mental health services.

Having high self-efficacy leads to a higher likelihood of willingness to seek care, regardless of the stigma level. When stigma is low, having high self-efficacy increases the likelihood of willingness to seek care. Even when self-efficacy is low, if stigma is also low then the willingness to seek care is improved upon when compared to the high stigma situation. High stigma reduces the willingness to seek care for both high and low self-efficacy respondents. This demonstrates that while high self-efficacy can improve the odds of a respondent being willing to seek care, it only can counter the powerful negative effects of stigma so much.

The threat to the psychological health of our servicemen and women, and the associated impacts on their families, is among the highest costs that the Nation incurs by putting our servicemen and women in harm's way. Helping them receive the care they need to heal psychological wounds must be an imperative for our soldiers, and should be of the highest concern for the Nation's population, who enjoy the freedoms and benefits derived from the service and sacrifice of our servicemen and women. The results of this study will provide information pertinent to developing strategies and interventions to assist servicemen and women (and their families) in overcoming negative stigma associated with seeking mental health services, and for improving the access to and use of mental health services offered by the Army.



## **APPENDICES**

- A. Survey Instrument
- B. Procedures for Obtaining Approval for a Survey of U.S. Army Personnel
- C. Application Packet of Survey Request
- D. Introductory Study Language Sent to Potential Study Participants
- E. Reminder Email Messages for Potential Study Participants
- F. University of Maryland IRB Approval

## APPENDIX A: SURVEY INSTRUMENT

### **Active Duty Survey**

#### Army Behavioral Health Survey

Dear Member of the Armed Services Community:

As a member of the Armed Services community, you deserve to get the highest quality health care services when you need them, from providers whom you trust. One way we can help continually improve these services is to find out your impressions of the care available to you or that you are currently receiving.

The Army is conducting a survey about your impressions of the mental healthcare services available to you or that you receive. We would greatly appreciate you taking the time (about 15-20 minutes) to fill out this questionnaire. All information you provide will be held in confidence by the Army and is protected by the Privacy Act. Your help is voluntary, and your decision to participate or not to participate will have no effect on your career, your benefits, or the benefits of your family.

BearingPoint, Inc. is the consulting firm working with us to carry out this survey. If you have any problems completing the survey or have other questions about the survey, please don't hesitate to call BearingPoint at 703.747.3664.

Thank you for your help with this important survey.

MR. Thresher  
MEDCOM Chief of Staff

## **ARMY BEHAVIORAL HEALTH SYSTEM ASSESSMENT**

CONTRACT NO. GS23F9796H

ORDER NO: W81K04-06-F-0005

Public Services

**SURVEY APPROVAL AUTHORITY:** U.S. Army Research Institute for the Behavioral and Social Sciences

**SURVEY CONTROL NUMBER:** DAPE-ARI-AO-07-04A, B, C, etc.

**RCS:** MILPC-3

### **Section 1**

This first section asks general questions about your or your spouse's experience in the Army. Please answer the following questions as honestly as you can. Keep in mind that there are no right or wrong answers and your responses are completely anonymous and confidential

#### **Q1. Please select the Army component which best describes you:**

- |                   |                 |
|-------------------|-----------------|
| Active Army       | 1               |
| Active Reserve    | 2               |
| National Guard    | 3               |
| Retiree           | 4 (TERMINATE)   |
| Spouse of soldier | 5 (SKIP TO Q12) |
| Civilian/Non-Army | 6 (TERMINATE)   |
| Other (Specify)   | 8 (TERMINATE)   |

#### **Q2. What is your current military grade?**

- |  |   |
|--|---|
| E1-E4: Private, Corporal, or Specialist                | 1 |
| E5-E6: Sgt or Staff Sgt                                | 2 |
| E7-E9: Sgt 1st Class, Master Sgt/1st Sgt, or Sgt Major | 3 |
| WO1-WO5: Warrant Officer                               | 4 |
| O1-O3: Lieutenant or Captain                           | 5 |
| O4-O9: Major or higher rank                            | 6 |
| Refused (DNR)  | 9 |

#### **Q3. Please select your primary Army Branch from the drop down menu below:**

- |                                |    |
|--------------------------------|----|
| Army Aviation                  | 01 |
| Branch Orientation             | 02 |
| Chaplains                      | 03 |
| Chemical Corps                 | 04 |
| Engineers                      | 05 |
| Field Artillery                | 06 |
| Finance                        | 07 |
| Special Forces                 | 08 |
| Infantry                       | 09 |
| Intelligence                   | 10 |
| Judge Advocate General's Corps | 11 |
| Medical Services               | 12 |
| Military Police                | 13 |
| Ordnance                       | 14 |
| Quartermaster                  | 15 |
| Signal Corps                   | 16 |
| Transportation                 | 17 |
| Not Sure                       | 98 |
| Refused (DNR)                  | 99 |

**Q4. What is your Area of Concentration (AOC) or Military Occupational Specialty (MOS)?**

Please only use the three character code, for example 14E or 92M.

\_\_\_\_\_ (Please Specify)

**Q5. How long have you been an active member of the Army? (Reservists: only include periods of active duty.)**

Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years but less than twenty years	7
More than twenty years	8
Refused (DNR)	9

**Q6. How long have you been at your current post, excluding temporary assignments off-post? (Temporary assignments may include family leave, deployment, etc.)**

Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years	7
Refused (DNR)	9

**Q7. How much time have you spent deployed, whether in the United States (for example on Katrina response) or overseas?**

I have never been deployed	8
Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years	7
Refused (DNR)	9

**Q8. Has your unit notified you that you will be deployed?**

Yes	1
No	2
Refused (DNR)	9

**Q9. Have you ever felt that your life was in immediate danger as a result of deployment?**

Yes	1
No	2
Refused (DNR)	9

**Q10. In the last 12 months, were you deployed in a hostile operational environment?**

Yes	1
No	2
Refused (DNR)	9

**Q11. Have you EVER been deployed in a hostile operational environment?**

Yes	1 (SKIP TO Q23)
No	2 (SKIP TO Q23)
Refused (DNR)	9 (SKIP TO Q23)

**Q12. Please select the Army component to which your spouse belongs:**

Active Army	1
Army Reserve	2
National Guard	3
Refused (DNR)	9

**Q13. What is your spouse's current military grade?**

E1-E4: Private, Corporal, or Specialist	1
E5-E6: Sgt or Staff Sgt	2
E7-E9: Sgt 1st Class, Master Sgt/1st Sgt, or Sgt Major	3
WO1-WO5: Warrant Officer	4
O1-O3: Lieutenant or Captain	5
O4-O9: Major or higher rank	6
Not sure	8
Refused (DNR)	9

**Q14. Please select your spouse's primary Army Branch from the drop down menu below:**

Army Aviation	01
Branch Orientation	02
Chaplains	03
Chemical Corps	04
Engineers	05
Field Artillery	06
Finance	07
Special Forces	08
Infantry	09
Intelligence	10
Judge Advocate General's Corps	11
Medical Services	12
Military Police	13
Ordnance	14
Quartermaster	15
Signal Corps	16
Transportation	17
Not Sure	98
Refused (DNR)	99

**Q15. What is your spouse's Area of Concentration (AOC) or Military Occupational Specialty (MOS)?**

Please only use the three character code, for example 14E or 92M.

\_\_\_\_\_ (Please Specify)

**Q16. How long has your spouse been an active member of the Army? (If your spouse is a reservist, please only include periods of active duty.)**

Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years but less than twenty years	7
More than twenty years	8
Not sure	98
Refused (DNR)	99

**Q17. How long has your spouse been at his or her current post, excluding temporary assignments off-post? (Temporary assignments may include family leave, deployment, etc.)**

Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years	7
Not sure	8
Refused (DNR)	9

**Q18. How much time has your spouse spent deployed and away from you, whether in the United States (for example on Katrina response) or overseas?**

My spouse has never been deployed	8
Less than six months	1
Six months to a year	2
More than one but less than two years	3
More than two but less than four years	4
More than four but less than six years	5
More than six but less than ten years	6
More than ten years	7
Not sure	98
Refused (DNR)	99

**Q19. Has your spouse's unit notified him or her that he or she will be deployed?**

Yes	1
No	2
Refused (DNR)	9

**Q20. Have you ever felt that your spouse's life was in immediate danger as a result of deployment?**

Yes	1
No	2
Refused (DNR)	9

**Q21. In the last 12 months, was your spouse deployed in a hostile operational environment?**

Yes	1
No	2
Refused (DNR)	9

**Q22. Has your spouse EVER been deployed in a hostile operational environment?**

Yes	1
No	2
Refused (DNR)	9

**Section 2**

This next section is about your perceptions of and experiences with the mental health care services available on your base. Please answer the following questions as honestly as you can. Keep in mind that there are no right or wrong answers and your responses are completely anonymous and confidential.

When we ask about mental healthcare services, we are referring to services designed to promote your mental and emotional wellbeing such as handling stress, relating to other people, family relationships, substance abuse, and making decisions. Examples of such services include on-post hospital care, off-post TRICARE network providers, off-post Military One Source mental health care, on-post chaplain services for mental healthcare, your primary care physician, and so on.

**Q23. The Army offers a variety of health care services to help its members and their families. Before starting this survey, how aware were you (if at all) of the following services?**

*Individual Mental Health Counseling Services*  
*Family Counseling Services*  
*Child and Adolescent Counseling Services*  
*Alcohol and Drug Counseling Services*

Very aware	1
Somewhat aware	2
Not at all aware	3
Refused (DNR)	9

**Q24. In the last twelve months, did you or a health care provider think you needed to seek mental health care services?**

Yes	1
No	2
Refused (DNR)	9

**Q25. In the last twelve months, did you seek mental healthcare services for yourself at your present base?**

Yes	1
No	2
Refused (DNR)	9

**Q26. In the last twelve months, did you seek mental healthcare services for your child at your present base?**

Yes	1
No	2
Refused (DNR)	9

**Q27. In the last twelve months, did you seek marital or family counseling at your present base?**

Yes	1
No	2
Refused (DNR)	9

**Q28. IF YOU SOUGHT MENTAL HEALTHCARE SERVICES IN THE LAST TWELVE MONTHS (answered yes to any of the previous three questions), how much of a problem (if any) was it for you to obtain mental healthcare services at your present base?**

A big problem	3
A small problem	2
Not a problem	1
I did not seek services	8
Refused (DNR)	9

**Q29. In the last twelve months, how many times did you see a mental healthcare provider while assigned to your present base?**

None	0 (SKIP TO Q32)
1	1
2-3	2
4-5	3
6-10	4
11 or more	5
Refused(DNR)	9

**Q30. In the last twelve months, how satisfied were you with the mental healthcare services that you obtained from each of the following while assigned to your present base?**

*On-post hospital or clinic mental health care*  
*Off-post TRICARE network mental healthcare provider*  
*Off-post Military One Source mental healthcare*  
*On-post Chaplain services for mental healthcare*  
*My primary on-post care provider (physician, physician's assistant, or nurse practitioner)*  
*Off-post religious leader for mental healthcare (pastor, priest, rabbi, imam, etc.)*  
*Off-post civilian healthcare provider*  
*Other*

Very satisfied	5
Somewhat satisfied	4
Neither satisfied nor dissatisfied	3
Somewhat dissatisfied	2
Very dissatisfied	1
Does not apply to me	8
Refused (DNR)	9

**Q31. If you answered "Other" to the above question, please describe the service(s) here:**

\_\_\_\_\_ (Please Specify)

**Q32. If you needed mental healthcare services for yourself right now, from which of the following sources would you be most likely to seek care? Please rank your first three choices, where (1) is your first choice, (2) is your second choice and (3) is your third choice.**

On-post hospital or clinic  
 Off-post TRICARE network provider  
 Off-post Military One Source mental health care  
 On-post chaplain services for mental health care  
 My primary on-post care provider (physician, physician's assistant, or nurse practitioner)  
 Off-post religions leader for mental health care (pastor, priest, rabbi, imam, etc.)  
 Off-post civilian health care provider  
 I would not seek care  
 Other



**Q33. If you answered "Other" to the above question, please describe the service(s) here:**

\_\_\_\_\_ (Please Specify)

**Q34. If you needed mental healthcare services for your child right now, from which of the following sources would you be most likely to seek care? Please rank your first three choices, where (1) is your first choice, (2) is your second choice and (3) is your third choice.**

On-post hospital or clinic  
Off-post TRICARE network provider  
Off-post Military One Source mental healthcare  
On-post chaplain services for mental healthcare  
My primary on-post care provider (physician, physician's assistant, or nurse practitioner)  
Off-post religious leader for mental healthcare (pastor, priest, rabbi, imam, etc.)  
Off-post civilian healthcare provider  
I would not seek care  
I do not have any children  
Other

**Q35. If you answered "Other" to the above question, please describe the service(s) here:**

\_\_\_\_\_ (Please Specify)

**Q36. If you needed mental healthcare services for marital or family counseling right now, from which of the following sources would you be most likely to seek care? Please rank your first three choices, where (1) is your first choice, (2) is your second choice and (3) is your third choice.**

On-post hospital or clinic  
Off-post TRICARE network provider  
Off-post Military One Source mental healthcare  
On-post chaplain services for mental healthcare  
My primary on-post care provider (physician, physician's assistant, or nurse practitioner)  
Off-post religious leader for mental healthcare (pastor, priest, rabbi, imam, etc.)  
Off-post civilian healthcare provider  
I would not seek care  
I am not currently married  
Other

**Q37. If you answered "Other" to the above question, please describe the service(s) here:**

\_\_\_\_\_ (Please Specify)

**Q38. What would you consider to be the longest acceptable wait time for an initial non-emergency mental health care appointment?**

1 day	1
Up to 3 days	2
Up to 7 days	3
Up to 14 days	4
Up to 28 days	5
More than 28 days	6
Refused (DNR)	9

**Q39. In terms of the Army's mission and goals, how valuable, if at all, do you think it is for the Army to provide each of the following mental healthcare services?**

*Individual Mental Health Counseling Services*  
*Child and Adolescent Counseling Services*  
*Alcohol and Drug Counseling Services*  
*Family Counseling Services*

Very valuable	1
Somewhat valuable	2
Not at all valuable	3
No opinion	4
Refused (DNR)	9

### Section 3

The following set of questions will help the Army identify ways to better meet the needs of soldiers and their families in obtaining mental health care services. Remember, answer the following questions as honestly as you can. Keep in mind that there are no right or wrong answers and your responses are completely anonymous and confidential

**Q40. Sometimes people who want to access mental health care services encounter obstacles to getting those services. Rate each of the possible concerns that might affect your decision to receive mental healthcare services or were concerns to you when you sought mental healthcare services in the past.**

*I don't know where to get such help.*

*I don't trust mental healthcare professionals.*

*I'm concerned about lack of privacy and/or confidentiality.*

*Mental healthcare services cost too much money.*

*I don't have adequate transportation to get to appointments.*

*It is difficult to schedule appointments.*

*It is difficult to get time off work.*

*It is difficult to get child care.*

*It is too embarrassing.*

*It would harm my career.*

*Members of my unit or co-workers might have less confidence in me.*

*My unit leadership or managers may treat me differently.*

*My leaders would blame me for the problem.*

*My security clearance would be at risk.*

*I would be seen as weak.*

*Mental healthcare services don't work.*

*I am not in one location long enough for it to help.*

A large obstacle	3
A small obstacle	2
Not an obstacle	1
Does not apply	8
Refused (DNR)	9

**Q41. How helpful, if at all, do you believe that the following would be in seeking mental health care services from the Army if you needed them?**

*More evening hours*  
*More morning hours*  
*More weekend hours*  
*Better policy for approved time away from work to seek treatment*  
*A waiting room where others do not know I am seeking mental healthcare services*  
*Faster appointment scheduling*  
*More assurance of confidentiality*  
*Higher quality mental healthcare providers*  
*A better understanding of the services available*  
*Assistance with transportation to appointments*  
*Assistance with child care*  
*Other*

Very helpful	3
Somewhat helpful	2
Not helpful	1
Does not apply	8
Refused (DNR)	9

**Q42. If you answered "Other" to the above question, please describe the service(s) here:**

\_\_\_\_\_ (Please Specify)

**Q43. How much, if at all, do you believe that seeking mental healthcare services would result in you feeling stigmatized? By stigmatized, we mean feeling that you would be treated differently in a negative way by others.**

Strongly believe	3
Somewhat believe	2
Not at all believe	1
Refused (DNR)	9

**Q44. Do you believe there is more stigma associated with seeking mental healthcare services in the military community, the civilian community, or do you believe it's about the same for both? By stigmatized, we mean feeling that you would be treated differently in a negative way by others.**

More stigma for those in the military community	3
About the same	2
More stigma for those in the civilian community	1
Refused (DNR)	9

#### **Section 4**

This last set of questions looks for information about your general level of health as well as some basic background information. Again, please be as honest as possible. The information you provide will be kept completely anonymous and confidential.

**Q45. In general, how would you rate your overall health now?**

Excellent	5
Very Good	4
Good	3
Fair	2
Poor	1
Refused (DNR)	9

**Q46. Compared to one year ago, how would you rate your health in general now?**

Much better now than one year ago	5
Somewhat better now than one year ago	4
About the same as one year ago	3
Somewhat worse now than one year ago	2
Much worse now than one year ago	1
Refused (DNR)	9

**Q47. In general, how would you rate your overall mental health now?**

Excellent	5
Very Good	4
Good	3
Fair	2
Poor	1
Refused (DNR)	9

**Q48. Compared to one year ago, how would you rate your mental health in general now?**

Much better now than one year ago	5
Somewhat better now than one year ago	4
About the same as one year ago	3
Somewhat worse now than one year ago	2
Much worse now than one year ago	1
Refused (DNR)	9

**Q49. Please indicate to what extent you agree or disagree with the following statements.**

*If I seek mental health care services, I will have a positive outcome.*

*If needed, I can find the mental health care services that I need.*

*I have good options for seeking mental health care services.*

*Accessing mental health care services would help me during challenging times.*

*I can usually handle whatever comes my way.*

Strongly agree	5
Somewhat agree	4
Neither agree nor disagree	3
Somewhat disagree	2
Strongly disagree	1
Refused (DNR)	9

**Q50. What is your gender?**

Male	1
Female	2
Refused (DNR)	9

**Q51. What is the highest grade or level of school that you have completed?**

Less than high school graduate or GED	1
GED	2
High School Diploma	3
College graduate	4
Post Graduate Degree / Professional Degree	5
Refused (DNR)	9

**Q52. What is your age now?**

Under 18	1
18-19	2
20-24	3
25-29	4
30-39	5
40 or older	6
Refused (DNR)	9

**Q53. What is your racial or ethnic background? Please feel free to select one or more of the following:**

Caucasian / White	1
African American	2
Hispanic	3
Asian / Pacific Islander	4
Other (Please Specify)	5
Refused (DNR)	9

Your feedback has been very helpful. We appreciate you taking the time to share your thoughts and opinions with us. To submit your responses, please click on the "Done" link below.

## APPENDIX B: PROCEDURES FOR OBTAINING APPROVAL FOR A SURVEY OF U.S. ARMY PERSONNEL

### Obtaining Approval for a Survey of U.S. Army Personnel

**Attitude and Opinion Survey:** A survey is a systematic data collection, using face-to-face or telephonic interviews, or self-administered questionnaires (including web surveys), from a sample of 10 or more persons as individuals or representatives of agencies (44 USC § 3502). The questionnaires or interview protocols contain identical questions about attitudes, opinions, behaviors, and related demographic information. The results of the survey will be used to assess and guide current and planned Army policies, programs, and services.

#### **Applicability:**

1. All attitude and opinion surveys of Army personnel conducted in two or more major commands (Army Commands, Army Service Component Commands, or Direct Reporting Units, see Figure 1) must be approved by Army Research Institute (ARI) prior to administration, in agreement with (IAW) AR 600-46 (Attitude and Opinion Survey Program). (For this guidance, “Major Subordinate Commands” are not considered as major commands.) Requests for survey approval from ARI shall be forwarded to ARI (Data Audit & Policy Enforcement (DAPE)-DAPE-ARI-Policy Statement) (PS), must provide the information outlined in Figure 2.
2. Attitude and opinion surveys conducted within a single command (e.g., division, brigade, battalion, company/detachment) must be approved by the unit commander.
3. Attitude and opinion surveys of military members conducted in two or more DoD Components (Services) must be approved by the Defense Manpower Data Center, IAW DODI 1100.13 (Surveys of DoD Personnel).
4. Surveys also must be submitted to the appropriate Human Use Committee.

**Standards:** A survey will be approved only if—

- (1) The need for information warrants the expenditure of resources associated with survey development, administration, and analysis.
- (2) The survey is designed without bias to produce reliable and valid information while imposing minimum burden on respondents and supporting organizations.
- (3) Survey design, content, and administration protect the anonymity and respect the personal rights and privacy of individuals selected as respondents. Surveys will avoid offensive or degrading topics. Responses will not be personally identified with the respondents without consent, nor made a part of their personnel files. (The governing Institutional Review Board will assist in making this determination.)
- (4) Justification is furnished to support the need for all questions in the survey.
- (5) The type of information required is suitable for survey methodology.
- (6) The occurrence of events has caused previously collected information to become suspect in terms of accuracy or completeness, or sufficient time has passed to warrant the collection of trend data.
- (7) Information does not exist in other forms or cannot be obtained through other sources.
- (8) When requested by ARI, proponents must obtain a Report Control Symbol (RCS) from their agency. Usually, the RCS for ARI’s surveys will be assigned.

#### **Examples:**

1. Assuming the planned survey of Army personnel will be conducted in two or more major commands, the following surveys are examples that would require ARI review and approval:
  - *Survey of Army Families*
  - *Inspector General (IG) Supervisors Survey*
  - *Army Leadership Assessment Survey*
  - *Army War College Alumni Survey*
  - *Medical Specialist Corps Survey*
  - *Human Relations Survey*

2. The following survey and types of surveys are examples that would not require ARI review and approval:

- *Survey of the 173<sup>rd</sup> Stryker Brigade Combat Team*

<b>Army Commands</b> Forces Command (FORSCOM) Training and Doctrine Command (TRADOC) Army Materiel Command (AMC) (INSCOM)  (CIDC) <b>Army Service Component Commands</b> (USACE) USARCENT (Third Army) USARNORTH (Fifth Army) USARSOUTH (Sixth Army) USAREUR (Seventh Army) (USARC) USARPAC (United States Army Pacific) Eighth United States Army (EUSA) United States Army Special Operations Command (USASOC) Surface Deployment and Distribution Command (SDDC) Space and Missile Defense Command (SMDC)	<b>Direct Reporting Units</b> Network Command (NETCOM) Medical Command (MEDCOM) Intelligence and Security Command  Criminal Investigation Division Command  United States Army Corps of Engineers  Military District of Washington (MDW) Army Test and Evaluation Command (ATEC) United States Military Academy (USMA) United States Army Reserve Command  Acquisition Support Center Installation Management Command (IMCOM)
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**Figure 1. Major Army command structure**

<ol style="list-style-type: none"> <li>1. Title of survey.</li> <li>2. Name of sponsoring organization or office.</li> <li>3. Name, title, mailing address, telephone number, email address of senior project officer(s).</li> <li>4. Proposed schedule for survey instrument completion, survey administration, data analysis, final report.</li> <li>5. Identification of the Internet site for a web survey (for compliance with AR 25-2, Chapter 5).</li> <li>6. Name of Institutional Review Board (name of agency, IRB chair).</li> <li>7. Justification for survey request. (Reason why data are needed, specific objectives and how data will be used.)</li> <li>8. Background research. (Description of the planning, coordination, and staffing of the survey. Include any applicable military or civilian references.)</li> <li>9. Target population. (Description and size of total population and any subgroups to be used in analysis.)</li> <li>10. Sample. (Description and size of sample and any subgroups to be used in analysis, type of sample, selection procedures and rationale, degree of over-sampling for non-response.)</li> <li>11. Data analysis. (Manner of data processing, plan of statistical analysis, statistical procedures to be used, and justification for each, and description of the expected interaction of the major variables. If scales or indexes are to be formed, provide a detailed statement on how items will be combined.)</li> <li>12. Administration procedures. (Method of data collection and justification, estimated frequency and duration, command effort required, time required for respondent to complete the survey, expected schedule of events.)</li> <li>13. Draft of the survey instrument, letters of instruction to respondents, and Privacy Act Statement.</li> <li>14. Planned distribution of survey results.</li> </ol>
---

**Figure 2. Information requirements for requesting survey approval**

- Clinical Investigations
- Command Climate Surveys (within a command)
- Customer Satisfaction Surveys

It is recommended that Clinical Investigations include only those attitude and opinion questions that are directly related to the health and treatment matters.

**Survey Control Number**

ARI authorization of all approved attitude and opinion surveys will be indicated by a survey control number (SCN). The series will change each fiscal year. The SCN will be on the first page of the instrument or web site in the following format:

SURVEY APPROVAL AUTHORITY: U.S. ARMY RESEARCH INSTITUTE FOR THE  
BEHAVIORAL AND SOCIAL SCIENCES

SURVEY CONTROL NUMBER: DAPE-ARI-AO-xx-xx

RCS: xxxxxx

**Submit Request to:**

Army Personnel Survey Office  
U.S. Army Research Institute for the Behavioral and Social Sciences  
2511 Jefferson Davis Highway (U.S.P.S. mail)  
2530 Crystal Drive, 4<sup>th</sup> Floor  
Arlington, VA 22202-3926  
(703) 602-7858/7877, DSN 332-7858/7877  
ARI\_APSO@hqda.army.mil



APPENDIX C: APPLICATION PACKET FOR SURVEY REQUEST

**REQUEST FOR APPROVAL TO SURVEY  
DEPARTMENT OF THE ARMY PERSONNEL**

**THE ARMY PERSONNEL SURVEY PROGRAM  
(AR 600-46)**

TO: U.S. Army Research Institute Date  
Submitted: **29 Sept 2006**  
ATTN: DAPE-ARI-PS  
2511 Jefferson Davis Highway **Date**  
**Approved/Disapproved:** Approved 10 Oct 2006  
Arlington, VA 22202-3926  
DSN: 332-7858  
Commercial: (703) 602-7858  
**E-mail: ARI\_APSO@hqda.army.mil**

**Army Behavioral Health Utilization and Satisfaction Survey**

**NAME OF MILITARY SPONSORING ORGANIZATION OR OFFICE:**  
HQ MEDCOM

**POINT OF CONTACT:** COL Reginald W. Howard

**MAILING ADDRESS:** HQ MEDCOM  
Directorate of Health Policy & Services  
ATTN: MCHO-CL-H (C, BH)  
2050 Worth Road, Suite 10  
Ft. Sam Houston, TX 78234-6010

**TELEPHONE:** Commercial: DSN:

**EMAIL ADDRESS:** Reginald.Howard2@amedd.army.mil

**PROPOSED SCHEDULE:**

**Survey Instrument Completion Date:** 3 October 2006  
**Survey Administration Dates:** 16 October 2006 – 10 January 2007  
**Data Analysis Dates:** 31 January 2007  
**Final Report Date:** 6 February 2007

**JUSTIFICATION FOR SURVEY REQUEST:**

**O Describe the general purpose of the survey.** *To obtain information from leaders, soldiers and their spouses, and Behavioral Health providers in regards to satisfaction with behavioral healthcare to*

*improve the effectiveness and efficiencies of behavioral health services provided by the Army's Active Component BH service line CONUS & OCONUS.*

**O      List the specific objectives being addressed by the survey.** *1) Determine the amount of stigma affecting utilization of BH services for Soldiers & spouses; 2) Are BH services currently being provided adequate?; 3) Identify barriers and any gaps in BH services.*

**O      Describe how the survey results will be used.** *The results will be used to provide recommendations aimed at improving the effectiveness and efficiencies of Behavioral Health Services provided by the Army's Active Component.*

#### **BACKGROUND RESEARCH:**

**O      Describe the planning and coordination of the survey, with a focus on what Army organizations/offices have been contacted concerning related research.**

*Planning for the survey began in the Office of the Surgeon General (OTSG) with a memorandum for Commanders of Medical Treatment Facilities. This memorandum directed to 20 MTFs informed them of the survey and other activities aimed at improving BH services.*

**O      Describe the most recent relevant research, if any. Identify any publications, articles, and/or papers reviewed. Include both military and civilian sources.**

*This initiative is follow-on to the work of the Mental Health Advisory Teams in Iraq and Afghanistan. This initiative is aimed at improving the BH services provided to Soldiers & their family members in CONUS & OCONUS. The findings of the MHAT have been reviewed as well as the following articles: 1) "Combat Duty in Iraq & Afghanistan, Mental Health Problems, & Barriers to Care", New England Journal of Medicine, Volume 351:12-22, July 1, 2004. 2) "Counseling Services for Military Personnel & Their Families, 2003, Counseling & Human Development.*

#### **TARGET POPULATION:**

**O      Describe the population on which the survey will focus.**

*The survey will focus on Army Active Duty Soldiers & their spouses at 20 selected medical treatment facilities' catchment areas.*

**O      Provide the estimated size of the target population.**

*The size of the target population will vary depending on the site. Twenty Army Medical Department units will be utilized. These include: Ft. Benning, GA; Ft. Lee, VA; Ft. Riley, KS; Ft. Polk, LA; Ft. Carson, CO; Madigan Army Medical Center, WA; Ft. Jackson, SC; Ft. Stewart, GA; Ft. McCoy, WI; Ft. Drum, NY; Ft. Benning, GA; Ft. Riley, KS; Ft. Bragg, NC; Ft. Bliss, TX; Ft. Irwin, CA; Ft. Wainwright, AK; Ft. Richardson, AK; Landstuhl, GE; Vincenza, Italy; 121 Hospital, ROK.*

#### **SAMPLE:**

**O      Describe the rationale and procedures for selecting the survey sample (provide justification for sampling within subgroups, if proposed.)**

*The survey will be distributed electronically to soldiers at each of the 20 MTFs in the study using installation distribution lists provided by the MTF. As we do not have access to the individual email addresses which comprise the list, we will be sending the survey to the entire population of soldiers.*

*The survey of army spouses will be conducted over the phone through a random sample of spouses. The random sample will allow us to make statistically valid generalizations to the population of army spouses at the 20 selected MTFs.*

**O Provide the suggested size of the final obtained sample subgroups and total and the desired sampling error. (Indicate over-sampling for anticipated non-response.)**

*We anticipate a response rate of 25-33% of the soldiers surveyed. The size of this population varies depending on the site, see above. We will seek a sample of 30-50 army spouses per MTF, for a total of 600-1,000 total completed army spouse surveys.*

**ADMINISTRATION:** Describe method of data collection, command effort required (to include administration time), and time required for a respondent to complete survey.

*An on-line survey tool will be utilized for soldiers. This tool will merely require that soldiers have access to the Internet and any standard web browser. Army spouses will be called at the telephone number provided by the MTF. Time required to complete the survey is approximately 15-20 minutes per respondent.*

**INSTRUMENT:** Attach draft of survey instrument, Memorandum of Instruction to administrators, and Privacy Act Statement (if applicable).

*Please see attached.*

**DATA ANALYSIS PLAN:** Describe manner of data processing and statistical procedures to be used.

*We will use Stata to process the data and conduct the analysis. Analytic procedures used will include univariate, bivariate, and multivariate techniques. These will include t-tests, ANOVA analysis and regression.*

## **Request and Permission to Use Data Set**

[REDACTED]

From: Koeppl, Pat [mailto:pat.koeppl@bearingpoint.com]

Sent: Friday, March 28, 2008 3:51 PM

To: Howard, Reginald W COL MEDCOM HQ

Cc: Ursone, Richard

Subject: RE: Request to Review Army BH Data Set (UNCLASSIFIED)

Thank you Sir. I'll keep you informed every step of the way. I truly appreciate this opportunity. I hope you have a great weekend,

PK

Patrick Koeppl

Senior Manager, Social Marketing & Applied Research Team

BearingPoint  
Management & Technology Consultants  
1676 International Drive | McLean, VA 22102

T 703.747.8341 | C 240.460.9407 | Home Office 814.764.3364

www.bearingpoint.com

[REDACTED]  
From: Howard, Reginald W COL MEDCOM HQ  
[mailto:Reginald.Howard2@amedd.army.mil]  
Sent: Friday, March 28, 2008 4:48 PM  
To: Koepl, Pat  
Cc: Ursone, Richard  
Subject: RE: Request to Review Army BH Data Set (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

We share the study frequently and don't believe there is anything in it that is harmful to the military...as always we would appreciate any courtesy copies you can provide after the project is finished.... Permission granted...

Good luck.

COL Reginald W. Howard  
Chief, Behavioral Health Division  
USA MEDCOM

[REDACTED]  
From: Koepl, Pat [mailto:pat.koepl@bearingpoint.com]  
Sent: Friday, March 28, 2008 3:39 PM  
To: Howard, Reginald W COL MEDCOM HQ  
Cc: Ursone, Richard  
Subject: Request to Review Army BH Data Set

Hello Col. Howard,

I am writing to request permission to run some additional analyses on the survey data we collected during the Army BH study last year. As you may remember from our discussions at the time, I am completing my dissertation at the University of Maryland at the School of Public Health. During the BH study we did together, I became very much vested in the subject matter and have been very concerned about the issues facing soldiers returning from Iraq and the challenges they face. I made a decision at that time to pursue

studying these issues as my dissertation topic and have discussed this with my dissertation advisor. He believes that it would make an excellent dissertation topic and is very much supportive of my pursuing it. I believe that further examining the data we collected during this study could offer excellent insights that cannot be gleaned anywhere else. I am especially interested in further exploring the issues of self-efficacy that we built into the survey data-while we conducted the original preliminary analysis. I believe that more understanding can be gained in looking more closely at this data.

As you know, data sets are often used for "secondary analyses" to gain additional understanding than those for which the data was originally collected. With your permission, I'd like to run additional analyses on some of this data as a component of completing my dissertation. This would not be work for BearingPoint, but rather for the pursuit of my degree, and there would be no costs whatsoever to the Army as I will do this analysis on my own time. I pledge to ensure that any review I undertake adheres to the strictest protections of personal or identifiable data (i.e., I would not use any identifiable data), and would be more than happy to share whatever outcomes I find with you and your team.

Thank you for your consideration of this request. I am very excited about the possibility of learning as much as I can about how soldiers seek and receive the care they need and deserve. I believe that the additional potential insights in this data may be helpful in pursuing such understanding. Please feel free to call or email me with any questions regarding this request. Thank you.

Sincerely,

PK

A handwritten signature in dark blue ink, appearing to read 'PKoepl', with a stylized, flowing script.

Patrick Koepl  
Senior Manager, Social Marketing & Applied Research Team

BearingPoint  
Management & Technology Consultants  
1676 International Drive | McLean, VA 22102

T 703.747.8341 | C 240.460.9407 | Home Office 814.764.3364

APPENDIX D: INTRODUCTORY STUDY LANGUAGE SENT TO POTENTIAL  
SURVEY PARTICIPANTS

**The First Email:**

SUBJECT: Please participate in an online Army Healthcare Survey

Dear Member of the Armed Services Community:

As a member of the Armed Services community, you deserve the highest quality healthcare services when you need them, from providers whom you trust. The Army is conducting a survey about your impressions of the mental healthcare services available to you or that you receive. If you are a member of the Army, Army Reserve, or National Guard, we would greatly appreciate you taking the time (about 15-20 minutes) to fill out this online questionnaire. You can access the survey by clicking on the following link:

Click here to take the survey. [← INSERT AS LINK HERE](#)

All information you provide will be held in confidence by the Army and is protected by the Privacy Act. Your help is voluntary, and your decision to participate or not to participate will have no effect on your career, your benefits, or the benefits of your family. BearingPoint Inc. is the consulting firm working with us to carry out this survey. If you have any problems completing the survey or have other questions about the survey, please do not hesitate to call BearingPoint at 703.747.4011.

Thank you in advance for your help with this important survey.

<Contact Name>

Senior Manager, BearingPoint  
army-survey@bearingpoint.com

SURVEY APPROVAL AUTHORITY: U.S. ARMY RESEARCH INSTITUTE FOR  
THE BEHAVIORAL AND SOCIAL SCIENCES SURVEY CONTROL NUMBER:  
DAPE-ARI-AO-07-04A, B, C  
RCS: MILPC-3

APPENDIX E: REMINDER EMAIL MESSAGES FOR POTENTIAL SURVEY  
PARTICIPANTS

**First Reminder Email:**

SUBJECT: REMINDER - Please participate in an online Army Healthcare Survey

Dear Member of the Armed Services Community:

On [INSERT DATE OF ORIGINAL EMAIL], we sent you a link to a survey the Army is conducting to improve the healthcare services it provides to you. If you are a member of the Army, Army Reserve, or National Guard, we would greatly appreciate you taking the time (about 15-20 minutes) to fill out this online questionnaire. You can access the survey by clicking on the following link:

Click here to take the survey. [← INSERT AS LINK HERE](#)

All information you provide will be held in confidence by the Army and is protected by the Privacy Act. Your help is voluntary, and your decision to participate or not to participate will have no effect on your career, your benefits, or the benefits of your family. BearingPoint Inc. is the consulting firm working with us to carry out this survey. If you have any problems completing the survey or have other questions about the survey, please do not hesitate to call BearingPoint at 703.747.4011.

Thank you in advance for your help with this important project.

<Contact Name>

Senior Manager, BearingPoint  
army-survey@bearingpoint.com

SURVEY APPROVAL AUTHORITY: U.S. ARMY RESEARCH INSTITUTE FOR  
THE BEHAVIORAL AND SOCIAL SCIENCES SURVEY CONTROL NUMBER:  
DAPE-ARI-AO-07-04A, B, C  
RCS: MILPC-3

**Second Reminder Email:**

SUBJECT: FINAL REMINDER - Please participate in an online Army Healthcare Survey

Dear Member of the Armed Services Community

Last week, we sent you a link to a survey the Army is conducting to improve the healthcare services it provides to you. This is your FINAL REMINDER - The survey will close at [ENTER CLOSING TIME AND DATE]. If you are a member of the Army,

Army Reserve, or National Guard, we would greatly appreciate you taking the time (about 15-20 minutes) to fill out this online questionnaire. You can access the survey clicking on the following link:

Click here to take the survey. [← INSERT AS LINK HERE](#)

All information you provide will be held in confidence by the Army and is protected by the Privacy Act. Your help is voluntary, and your decision to participate or not to participate will have no effect on your career, your benefits, or the benefits of your family. BearingPoint Inc. is the consulting firm working with us to carry out this survey. If you have any problems completing the survey or have other questions about the survey, please do not hesitate to call BearingPoint at 703.747.4011.

Thank you in advance for your help with this important project.

<Contact Name>  
Senior Manager, BearingPoint  
army-survey@bearingpoint.com

SURVEY APPROVAL AUTHORITY: U.S. ARMY RESEARCH INSTITUTE FOR  
THE BEHAVIORAL AND SOCIAL SCIENCES SURVEY CONTROL NUMBER:  
DAPE-ARI-AO-07-04A, B, C  
RCS: MILPC-3



## APPENDIX F: UNIVERSITY OF MARYLAND IRB APPROVAL

**From:** University of Maryland IRB [<mailto:no-reply@umresearch.umd.edu>]

**To:** Robert S. Gold

**Subject:** IRB Protocol Approval



### Initial Application Approval

---

To: Principal Investigator, Dr. Robert S. Gold, Behavioral and Community Health

Student, Patrick T. Koepl, Behavioral and Community Health

From: James M. Hagberg

IRB Co-Chair

University of Maryland College Park

Re: IRB Protocol: 12-0110 - Self-Efficacy and Stigma in Seeking Mental Health Services in the US Army

Approval Date: February 22, 2012

Expiration Date: February 22, 2015

Application: Initial

Review Path: Exempt

---

The University of Maryland, College Park Institutional Review Board (IRB) Office approved your Initial IRB Application. This transaction was approved in accordance with the University's IRB policies and procedures and 45 CFR 46, the Federal Policy for the Protection of Human Subjects. Please reference the above-cited IRB Protocol number in any future communications with our office regarding this research.

**Recruitment/Consent:** For research requiring written informed consent, the IRB-approved and stamped informed consent document will be sent via mail. The IRB approval expiration date has been stamped on the informed consent document. Please note that research participants must sign a stamped version of the informed consent form and receive a copy.

**Continuing Review:** If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, beyond the expiration

date of this protocol, you must [submit a Renewal Application](#) to the IRB Office 45 days prior to the expiration date. If IRB Approval of your protocol expires, all human subject research activities including enrollment of new subjects, data collection and analysis of identifiable, private information must cease until the Renewal Application is approved. If work on the human subject portion of your project is complete and you wish to close the protocol, please [submit a Closure Report](#) to [irb@umd.edu](mailto:irb@umd.edu).

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1204 Marie Mount Hall  
College Park, MD 20742-5125  
TEL 301.405.4212  
FAX 301.314.1475  
[irb@umd.edu](mailto:irb@umd.edu)  
<http://www.umresearch.umd.edu/IRB>

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