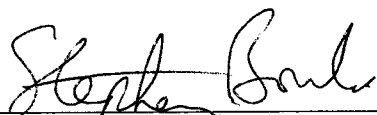


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Name of Candidate: Jeremiah D. Ford
Department of Medical and Clinical Psychology
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Thesis and Abstract Approved:



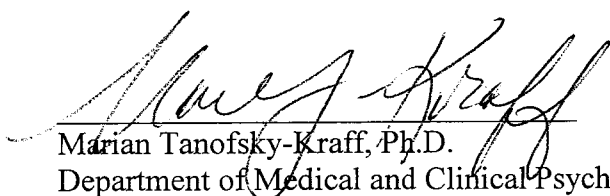
Stephen V. Bowles, Ph.D.
Department of Medical and Clinical Psychology
Thesis Advisor

22 JUN 09
Date



Michael Feuerstein, Ph.D.
Department of Medical and Clinical Psychology
Committee Member

6/22/09
Date



Marian Tanofsky-Kraff, Ph.D.
Department of Medical and Clinical Psychology
Committee Member

6/22/09
Date

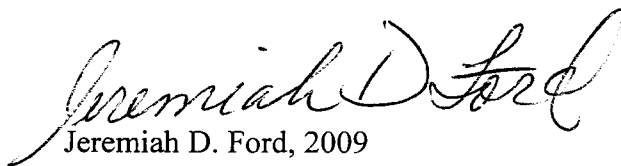
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A handwritten signature in cursive script, reading "Jeremiah D. Ford". The signature is written in dark ink and is positioned above the printed name and affiliation.

Jeremiah D. Ford, 2009

Department of Medical and Clinical Psychology
Uniformed Services University of the Health Sciences

ABSTRACT

Title of Thesis/Dissertation: Perceived Need For Help in Deployed U.S. Navy Personnel

Jeremiah D. Ford, Master of Science, 2009

Thesis directed by: Stephen V. Bowles, Ph.D.
Department of Medical and Clinical Psychology

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Running head: PERCEIVED NEED FOR HELP SEEKING

Perceived Need for Help Seeking in Deployed U.S. Navy Personnel

Jeremiah D. Ford

Department of Medical and Clinical Psychology

Uniformed Services University

Thesis submitted to the Faculty of the
Department of Medical and Clinical Psychology
of the Uniformed Services University of the Health Sciences
in partial fulfillment of the requirements for the degree of
Master of Science 2009

Dedication

This work is dedicated to my children, Haley and Logan, for their patience and understanding. Your unconditional love for your father is a beacon of light that leads to a safe harbor in dark, difficult times. Nothing makes your dad happier than coming home to your smiling faces at the end of a 13 hour day. You guys rock!

And to Sarah, wife and best friend, I dedicate this work. You are my biggest supporter; you keep me grounded in reality while, at the same time, giving me the courage to chase my dreams. Although your belief in me and your phenomenal character was often underappreciated, you have always been my anchor in the storm. A simple thank you could never do justice to the gifts that you have brought into my life, but I will try anyways...Thank you.

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Table of Contents

APPROVAL SHEET.....	i
COPYRIGHT STATEMENT.....	ii
TITLE.....	iii
ABSTRACT.....	iv
DEDICATIONS.....	v
ACKNOWLEDGEMENTS.....	vi
TABLE OF CONTENTS.....	vii
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
INTRODUCTION.....	1
Conventional Mental Health Care Utilization.....	2
Factors Predisposing Professional Help Seeking.....	5
Military Populations.....	5
United States Navy	7
Civilian Populations.....	8
Marital Status as a Predisposing Factor.....	8
Gender as a Predisposing Factor.....	10
Mental Health Symptoms as a Predisposing Factor.....	11
Prevalence of Post Traumatic Stress Disorder.....	13
Military Populations.....	13
Civilian Populations.....	16
Prevalence of Major Depressive Disorder.....	16
Military Populations.....	16
Civilian Populations.....	17
Comparing Prevalence of PTSD/MDD: Military vs. Civilian	18
Barriers to Professional Help Seeking.....	20
Military Populations.....	20
Civilian Populations.....	22
Comparing Barriers to Professional Help Seeking: Military vs. Civilian.....	23
Hypotheses.....	24
METHOD.....	26
Participants.....	26
Power Analyses.....	26
Procedure.....	27
Analysis of the Post-Deployment Health Reassessment (PDHRA).....	29
Statistical Analyses.....	32
RESULTS.....	33
DISCUSSION.....	37
REFERENCES.....	48
TABLES.....	62
FIGURES.....	64

List of Tables

Table 1.	Frequency Distribution of Predictor Variables.....	62
Table 2.	Demographic and Illness Factors Related to Perceived Need for Help Seeking among U.S. navy Personnel.....	63

List of Figures

Figure 1.	Behavioral Model of Health Care Utilization.....	64
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Perceived Need for Help Seeking in Deployed U.S. Navy Personnel

Operation Iraqi Freedom (OIF) in Iraq and Operation Enduring Freedom (OEF) in Afghanistan represent the first prolonged ground combat operations since the Vietnam War (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004). Both operations have resulted in numerous and extended deployments as well as longer work days for armed services personnel (Clay, 2004). According to a National Security Advisory Group, nearly all combat units from the U.S. Army, U.S. Army Reserves, National Guard, and Marine Corp have been deployed in support of Operation Iraqi Freedom (OIF) and/or Operation Enduring Freedom (OEF) in the last five years (Perry, 2006). Troop rotations to OIF/OEF continue to increase. Every available combat brigade in the U.S. Army has deployed to Afghanistan or Iraq at least once and many of those brigades are on their second and third deployments. Furthermore, Marine Corp combat units are currently rotating seven months in theater with less than one year stateside before the next seven month deployment (Perry, 2006). The number and length of deployments are likely to have varied among military personnel; however, the National Security Advisory Group indicates the deployments are similar in much of the military mental health research published in 2004 through 2007 (Perry, 2006).

Recent studies of deployed military samples show an increase in prevalence of Post Traumatic Stress Disorder (PTSD) and Major Depression (MDD) with OIF/OEF returnees, compared to returnees from other armed conflicts (e.g., Gulf War), whereas mental health treatment seeking has not increased (Hoge, Toboni, Messer, Bell, et al.,

2005). Studies with civilian samples have also found that these individuals often do not seek mental health care even when experiencing significant mental distress (e.g., Amaya-Jackson, Davidson, Hughes, Swartz, Reynolds, George, et al., 1999; Koenen, Goodwin, Struening, Hellman, & Guardino, 2003). This lack of help seeking for mental health concerns has been replicated in studies with both military (e.g., Frueh, Elhai, Grubaugh, Monnier, et al., 2005; Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004) and civilian samples (e.g., Kessler, Frank, Edlund, Lin, & Leaf, 1997; Shapiro, Skinner, Kessler, VonKorff, et al., 1984). It appears that neither military nor civilian individuals tend to seek treatment or professional support for their mental health concerns. It is possible that these individuals are seeking other sources of help outside of traditional mental health care. Or perhaps other factors are contributing to this tendency to not seek mental health help in these individuals.

Conventional Mental Health Care Utilization

In the early 1970's, researchers examined utilization of health services (i.e., professional help seeking) and tried to explain individual help seeking behavior as a function of individual characteristics, societal forces, and the surrounding environment (Lohr, 1972; McKinlay, 1972; Moore, 1969). From these studies, some researchers (e.g., Anderson & Newman, 1973) have established specific determinants of health care utilization among individuals. Anderson and Newman (1973) developed a framework for health services utilization designed to take into account both societal and individual determinants.

In their behavioral model, Anderson and Newman (1973) explain that societal determinants of health care utilization are influenced by individual determinants of health care utilization both directly and through the health services system (see Figure 1). Societal determinants include advances in technologies in the health care system as well as social norms concerning utilization of health care. The health services system itself is defined by the health care resources that are available to the individual seeking help. Individual determinants include factors that predispose or enable individuals to utilize health care. For the purposes of this study, predisposing factors influencing the utilization of health care in civilian and military populations will be reviewed.

In order to better understand the individual determinants within Anderson and Newman's (1973) behavioral model of health care utilization, the following model components will be defined: predisposing component, enabling component, and illness level. The predisposing component of the individual determinant section in this behavioral model of health care utilization can be defined as the tendency of some people to utilize health services more often than others due to individual characteristics which existed prior to the onset of an illness. These predisposing factors include demographics (e.g., gender, age, marital status), social structure variables (e.g., ethnic minority, education, social status), and beliefs about treatment (e.g., being afraid of what others might think or say) (Koenen et al., 2003). The enabling component in the individual determinant section of this behavior model of health care utilization can be defined as factors which allow individuals to engage in health care utilization. Enabling factors include such things as employment status, health care insurance, and knowledge of where

to obtain help (Koenen et al., 2003). Finally, the illness level component in the individual determinant section of this behavioral model of health care utilization can simply be defined as an individual must be able to perceive an illness within themselves or the probability of an occurrence of an illness within themselves in order to utilize health care. Illness factors could include the number of physical or mental health symptoms experienced (Koenen et al., 2003). These elements of the model provide an understanding of how individual factors could influence professional help seeking for individuals entering the mental health system.

Anderson and Newman's (1973) behavioral model of health care utilization was initially designed to assess medical health care use. However, it has since been applied to mental health care use in civilian samples (Greenley, Mechanic, & Cleary, 1987; Leaf, Bruce, Tishler, Freeman, et al., 1988). Greenley and colleagues (1987) applied the behavioral model of health care utilization to individuals with mental health concerns and found that the single best predictor for using mental health services was self-reported psychological distress. This finding corresponds to the illness factors of the behavioral model of health care utilization. Greenly et al. (1987) showed that predisposing factors (e.g., gender, age, and attitude) contributed significantly to the use of mental health services. In additional research, Leaf and colleagues (1988) also found that predisposing factors (e.g., gender, age, and marital status) and illness factors (e.g., a psychiatric disorder) applied to utilization of mental health care. Thus, we see that Anderson and Newman's initial theory of health care utilization can be adapted to mental health care utilization. In the next sections, we will explore some research that discusses

predisposing factors influencing mental health care utilization in both military and civilian populations.

Factors Predisposing Professional Help Seeking

Military Populations

A limited number of studies have been conducted with active duty military personnel assessing the influence of predisposing factors on help seeking behavior (e.g., Felker, Hawkins, Dobie, Gutierrez, & McFall, 2008; Fikretoglu, Brunet, Schmitz, et al., 2006; Fikretoglu, Elhai, Liu, et al., 2009; Hoge et al., 2006). The majority of help seeking research with active duty military personnel have been conducted with Canadian forces returning from OIF/OEF (e.g., Fikretoglu, Brunet, Guay, & Pedlar, 2007; Sareen, Cox, Afifi, et al., 2007). Most U.S. studies assessing predisposing factors of treatment seeking in military personnel have done so via assessment of veteran populations (e.g., Calhoun, Bosworth, Grambow, et al., 2002; Elhai, Reeves, & Frueh, 2004; Kulka et al., 1991). However, there are a few studies that looked at factors related to help seeking in U.S. military samples.

The most current research on deployment health and mental health help seeking in U.S. military personnel was conducted by Felker and colleagues (2008) and Hoge and colleagues (2006). Felker and colleagues (2008) monitored a cohort of 296 U.S. service members deployed in support of OIF who reported to a mental health clinic during a 3-month period. These researchers found that a majority (97%) of personnel (n=286) who sought help from mental health providers met criteria for either an adjustment (33%),

depressive (32%), post-traumatic stress disorder (12%), other anxiety (13%), or alcohol disorder (10%). Felker and colleagues (2008) found that 27% of those military personnel who sought care were female, which was disproportionately higher than the percentages of women serving on active duty in U.S. Army (14.6%) and Marine Corps (6.1%) billets in 2005 (Office of the U.S. Army Deputy Chief of Staff, 2006). In another study of 222,620 Soldiers and Marines deployed in support of OIF, Hoge and colleagues (2006) found that female personnel represented around 10% of total deployed force while representing around 24% of personnel who had indicated a mental health concern. Hoge and colleagues (2006) operationalized the term mental health concern to depend upon meeting risk criteria for PTSD or depression as well as whether personnel indicated suicidal or homicidal ideations, fears of aggressive behaviors, or desire to seek help for mental health.

In an assessment of active duty Canadian military service members, Fikretoglu et al. (2006) found, using odds ratios from regression analyses, that married service members (OR = 2.7, 95% CI = 1.51-4.92) were nearly three times as likely as single service members to seek help for mental health concerns. These researchers also found that divorced/separated/widowed service members (OR = 2.2, 95% CI = 1.10-4.60) were twice as likely as were single service members to seek help for a mental health concern. In additional research, Fikretoglu and colleagues (2008) showed that significant psychological distress (OR = 7.4, 95% CI = 2.87-18.88), female gender (OR = 1.7, 95% CI = 1.20-2.34), and being married (OR = 1.8, 95% CI = 1.05-2.92) or divorced/separated (OR = 2.5, 95% CI = 1.29-4.77) were related to Canadian military personnel seeking

help. These Canadian military studies provide most of the supporting research on factors predisposing military personnel to seek mental health treatment and, therefore, serve as a useful comparison when assessing the influence of predisposing factors on help seeking in U.S. military personnel.

United States Navy

Based on current literature review, studies looking at mental disorders in the U.S. Navy focus on occurrence of mental disorders rather than predisposing factors related to perceived need to seek help for mental health. In their study of psychiatric hospitalization of Navy personnel, Booth-Kewley and Larson (2005) found that gender was associated with hospitalization for mental illness; specifically, female personnel were hospitalized more often than were male personnel. Other studies assessing factors associated with mental health in Navy personnel have found that psychological distress (i.e., high levels of anxiety) was related to demographic factors such as age, rank, and current mental health care (McNulty, 2005). These studies provide some insight into relationships between demographic factors and mental health in the U.S. Navy; however, as stated prior, these studies assessed factors associated with mental illness rather than assessing factors that predispose Navy personnel to seek help for mental health concerns. To date, there has been no research found that has assessed factors that predispose mental health help seeking in U.S. Navy personnel.

Civilian Populations

Amaya-Jackson et al. (1999) found that individuals with PTSD often do not receive mental health services, mostly due to lack of help seeking. For Major Depressive Disorder (MDD), past research indicates that individuals do not seek help for treatment of depressive episodes even though treatment options are available (e.g., Frank and Spanier, 1995; Hollon, DeRubeis, Evans, Weimer, Garvey, Grove, & Tuason, 1992). The National Comorbidity Study, over a 12-month period, found that only 21% of individuals with MDD received any form of mental health treatment (Blumenthal & Endicott, 1996). There appears to be a general lack of mental health help seeking for individuals who currently meet criteria for some mental health disorders (e.g., PTSD and MDD). What factors predispose civilian individuals to seek help for their mental health needs? Multiple studies have been conducted assessing the influence of predisposing factors on help seeking behavior in civilian samples (e.g., Amaya-Jackson et al., 1999; Jordan et al., 2004; Rabinowitz, Gross, & Feldman, 1999). These studies have found that predisposing factors of marital status, gender, and psychological distress are significant predictors of help seeking in individuals.

Marital Status as a Predisposing Factor

In terms of marital status serving as a predisposing factor in professional help seeking, past studies found that individuals who were separated or divorced were significantly more likely to seek mental health services than were married individuals (e.g., Jacobson, Regiers, & Burns, 1978; Leaf et al., 1988). More recent studies have continued to report this finding that individuals who were divorced or separated were

more likely to seek help than were married individuals (e.g., Koenen et al., 2003; Mojtabai, Olfson, & Mechanic, 2002). Marital status has been a consistently proven factor that contributes to differences in help seeking behavior within civilian populations. One theoretical explanation for the influence of marriage on help seeking is the availability of social support in the relationship.

Researchers have explored the role social support plays in terms of differences in help seeking behavior (e.g., Cepeda-Benito & Short, 1998; Cramer, 1999; Sherbourne, 1988). Sherbourne (1988) found that individuals are more likely to seek help when their available social network is impaired or ineffective. Cramer (1999) showed that individuals are more likely to seek counseling when their distress levels are high and that a significant predictor of high distress was having an impaired social network. Other studies have found that low social support is associated with a greater perceived likelihood to seek professional help for a mental health problem (Cepeda-Benito & Short, 1998; Leaf et al., 1988). These studies lend support to the possibility that individuals with disrupted social support networks may be more likely to seek mental health help than might individuals with intact social support networks. Furthermore, it is also reasonable to believe that divorced or separated individuals may have more disrupted social support networks than perhaps might individuals who are married. Therefore, it is possible that divorced or separated individuals may be more likely to seek mental health help than might individuals who are married.

Gender as a Predisposing Factor

In terms of individuals' gender serving as a predisposing factor in professional help seeking, Greenley and colleagues (1987) found that women were significantly more likely than were men to seek help for mental health concerns. Other studies also confirmed that females were more likely to seek treatment for mental health than were males (Leaf et al., 1988). More recently, Rabinowitz and colleagues (1999) showed a trend toward significance that females indicated a higher perceived need for mental health care than did their male counterpart. Mojtabai, Olfson, and Mechanic (2002) found that perceived need for professional mental health care was higher in women than it was in men. Other researchers have found that, as a whole, men used fewer mental health resources than did women in areas such as substance abuse, stress, and depression (e.g., Andrews, Issakidis, & Carter, 2001; Husaini, Moore, & Cain, 1994; Wills & DePaulo, 1991) even though men are at higher risk for developing substance abuse problems, committing suicide, and acting out in violence (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

One possible theoretical explanation for disparity in mental health help seeking between men and women is that of gender role conflict (Berger, Levant, McMillan, Kelleher, & Sellers, 2005; Good & Wood, 1995; Rochlen, Land, & Wong, 2004). Gender role conflict is a psychological state in which the masculine or feminine gender roles have negative consequences on those individuals who try to stay within those roles (O'Neil, Helms, Gable, David, & Wrightsman, 1986). Stated in another way, many in American society define behavior of the masculine role as counter to behaviors

associated with the feminine role, including seeking help for emotional or mental problems (O'Neil, 1981). Researchers show that men tend to seek professional counseling far less than do women because psychological help seeking is incongruent with their traditional masculine ideology (e.g., Addis & Mahalik, 2003; Courtenay, 2000a, 2000b; Lane & Addis, 2005). Still others have proposed explanations for gender effects in help seeking that integrate gender role conflict into models of planned behavior (e.g., Smith, Tran, & Thompson, 2008) and mediation models such as self-stigma or culture (e.g., Pederson & Vogel, 2007; Shin, 2002; Vogel, Wade, & Hackler, 2007). The last 25 years of research in this area seem to support gender role conflict as a significant driving force behind gender differences in help seeking behavior.

Mental Health Symptoms as a Predisposing Factor

In terms of mental health issues serving as predisposing factors to professional help seeking, Leaf and colleagues (1988) using the Diagnostic Interview Schedule (DIS) found that individuals with diagnosable symptoms of psychiatric illnesses, including major depression and alcohol dependence, were more likely to seek professional mental health care than those individuals without psychiatric illnesses. Koenen and colleagues (2003) found that individuals who were diagnosed with post traumatic stress disorder and/or major depression were more likely to seek treatment than were individuals not diagnosed. Other researchers have also found presence of mental health disorders, including major depression, posttraumatic stress disorder, and substance use disorders, to be correlated to a perceived need for professional mental health care in individuals (Mojtobai et al., 2002).

Based on this past research individuals currently experiencing mental health issues (i.e., meeting criteria for a psychiatric disorder) may be more likely to seek mental health care than individuals who are not currently experiencing mental health issues. The studies used in support of mental health issues as a predisposing factor in help seeking (e.g., Leaf et al., 1988; Koenen et al., 2003; Mojtabai et al., 2002) are all supported by the illness level component of Anderson and Newman's (1973) behavioral model of health care utilization. In review, the illness level component may be defined as an individual must be able to perceive a mental illness or the possibility of a mental illness in order to utilize health care. Therefore, it may be more likely that individuals with current symptoms of a psychiatric illness would seek help because they are more self-aware of their illness and/or they are negatively impacted by that illness. We have looked into the question of why some individuals, in both military and civilian populations tend to seek help for mental health concerns whereas other individuals do not. In military populations, researchers show that marital status and psychiatric illness factor in help seeking (e.g., Fikretoglu et al., 2006; Calhoun et al., 2002; Kulka et al., 1991). In civilian populations, researchers have also found that marital status and psychiatric illness as well as gender factor into help seeking (e.g., Koenen et al., 2003; Mojtabai et al., 2002; Rabinowitz et al., 1999). The chart below provides a brief summary of findings on factors that predispose help seeking in military and civilian populations.

Behavioral Model of Mental Health Care Utilization: Predisposing Factors to Help Seeking		
<u>Factors</u>	<u>Military Populations</u>	<u>Civilian Populations</u>
Marital Status	Yes (Married) ³	Yes (Not Married) ^{5,6,7}
Gender	Yes (Female) ^{2,3}	Mixed (Female/Neither) ^{1,5,6,7}
Mental Health Symptoms	Yes (Current Symptoms) ^{3,4}	Yes (Current Symptoms) ^{5,6,7}

(Andrews, Issakidis, & Carter, 2001¹; Felker et al., 2008²; Fikretoglu et al., 2006³; Calhoun et al., 2002⁴; Koenen et al., 2003⁵; Mojtabai et al., 2002⁶; Rabinowski et al., 1999⁷)

Prevalence of Post Traumatic Stress Disorder

Military Populations

Recent research has been conducted on the prevalence of PTSD in military samples (e.g., Hoge, Auchterlonie, & Milliman, 2006; Hoge et al., 2004; Milliken, Auchterlonie, & Hoge, 2007; Seal, Bertenthal, Miner, Sen, & Marmar, 2007). These studies are fairly consistent in terms of high prevalence of PTSD among service members returning from current military operations (e.g., OIF, OEF). Seal et al. (2007) conducted a study of over 103,000 OIF/OEF veterans seen in Veterans Affairs facilities and found that 13% of those veterans met criteria for PTSD with young, male veterans being five times more likely than older, male veterans to meet PTSD criteria. Milliken and colleagues (2007) conducted a study looking at percentages of active duty and reserve service members who met criteria for PTSD immediately post-deployment (i.e., PDHA) as well as no later than 6 months post-deployment (i.e., PDHRA). Specifically, these researchers found significant percentage differences in PTSD in active duty and reserve personnel both immediately post-deployment (11.8% vs. 12.7%, respectively) and at

delayed (e.g., 6 mos.) post-deployment screening (16.7% vs. 24.5%). Milliken and colleagues (2007) not only showed increased percentages of service members with PTSD over time, they were also able to show that reserve component personnel were showing consistently higher percentages of PTSD throughout the study timeline.

Another study using pre- and post-deployment data was conducted by Hoge and colleagues (2004) who measured percentages of PTSD in both Army and Marine Corps personnel deployed to OIF. Using the 17-item National Center for PTSD Checklist, these researchers found that Army personnel met screening criteria for PTSD almost twice as often following deployment (18.0%) than they did prior to deployment (9.4%). Additionally, Hoge and colleagues (2004) showed that a significant percentage of Marine Corps personnel (19.9%) met criteria for PTSD following their deployment to OIF. In a subsequent study of a larger military sample, Hoge and colleagues (2006) found that around 7% (~ 24,000 out of 304,000) of Soldiers and Marines interviewed met criteria for PTSD. Total percentage of personnel meeting criteria for PTSD also varied significantly based on whether those personnel were deployed to OIF (9.8%), to OEF (4.7%), or to non-combat deployment regions (2.1%).

It is important to acknowledge that there were significant methodological differences between Hoge et al. (2004) and Hoge et al. (2006) in terms of assessing PTSD. In Hoge et al. (2004), researchers assessed PTSD criteria using the 17-item National Center for PTSD checklist; whereas, Hoge et al. (2006) assessed PTSD criteria using the Primary Care 4-item PTSD Screen. This methodological difference may account for the significant differences in PTSD rates between those two articles.

Other studies have assessed PTSD among military personnel outside of OIF/OEF. In a study of Gulf War veterans, researchers found that 3% of personnel deployed during the Gulf War met criteria for PTSD immediately following their deployment; however, when the same sample was reassessed two years later, the percentage of personnel meeting criteria for PTSD more than doubled to 8% (Wolfe, Erikson, Sharkansky, King, & King, 1999). In another study conducted prior to current war conditions, Bolten and Litz (2002) found a prevalence rate of PTSD of 10.9% among personnel deployed on peacekeeping mission in Somalia. Gahm, Lucenko, Retzlaff, et al. (2007) found that demographics such as military rank and participant gender were significant predictors of meeting criteria for PTSD. These authors used regression analyses to assess demographic predictors of PTSD. Specifically, they found that, among a sample of mainly active duty military Soldiers, participants of junior rank (i.e., E1-E4) were twice as likely to meet criteria for PTSD (OR = 2.2) compared to other enlisted categories as well as officers. This was due to the fact that junior enlisted service members composed a majority of deployed personnel and were more often exposed to combat. Additionally, male participants were roughly twice as likely to meet both criteria for PTSD (OR = 1.8) than were female participants. Gahm and colleagues (2007) speculate that higher rates of PTSD in male service members are related to higher proportions of males exposed to combat. In sum, studies of PTSD prevalence in post-deployment military populations have yielded percentages that, depending upon armed conflict studied, range from 2.1% seen in limited combat operations (e.g., Gulf War) through 19.9% in 2004 (e.g., OIF/OEF), and as high as 13% (e.g., OIF/OEF veterans) to even 24% (overall GWOT deployments) in 2007 (Gahm et al., 2007; Hoge et al, 2004; Wolfe et al., 1999).

Civilian Populations

In a replication of the 1995 National Comorbidity Survey, Kessler and colleagues (2005) found that current 12-month prevalence of PTSD in the United States was 3.5%. These researchers used the Diagnostic Interview Schedule (DIS), which uses criteria put forth in the Diagnostic and Statistical Manual of Mental Health Disorders Fourth Edition (DSM-IV), to assess diagnoses of PTSD. Kessler and colleagues (2005) found that women were 60% more likely than were men to exhibit a lifetime risk for PTSD. Furthermore, these researchers found that previously married individuals were 80% more likely than currently married individuals to show a lifetime risk for PTSD. Other researchers have found 12-month prevalence rates of PTSD of 3.1% (Karlin, Duffy, & Gleaves, 2008) and 4% (O'Donnell, Creamer, & Pattison, 2004), respectively.

Prevalence of Major Depressive Disorder

Military Populations

Several studies have conducted recent research on the prevalence of depressive symptoms in military samples (e.g., Hoge et al., 2006; Hoge et al., 2004; Milliken et al., 2007; Seal et al., 2007). Seal and colleagues (2007) found that 5% of the OIF/OEF veterans assessed met criteria for depressive disorders. Furthermore, young, male veterans were three times more likely than older, male veterans to meet depressive disorder criteria. Gahm, Lucenko, Retzlaff et al. (2007) found that demographics such as military rank and participant gender were significant predictors for meeting criteria for MDD. These authors conducted regression analyses of demographic predictors of MDD

in active duty service members. These researchers found that, among a sample of mainly Army personnel, male service members were roughly twice as likely to meet criteria for MDD (OR = 2.2) than were female participants. Milliken and colleagues (2007) looked at percentages of U.S. Army personnel affected by depression both immediately post-deployment and around 6 months post-deployment. They found significant percentage differences in MDD in active duty and reserve personnel both immediately post-deployment (4.7% vs. 3.8%, respectively) and at delayed (e.g., 6 mos.) post-deployment screening (10.3% vs. 13%). Hoge and colleagues (2004) conducted a pre- and post-deployment analysis of Major Depression (MDD) in Army personnel deployed to OIF. These researchers found that Army personnel met at-risk screening criteria for MDD significantly more often following deployment (15.2%) than they did prior to deployment (11.4%). Additionally, Hoge and colleagues (2004) showed that a significant percentage of Marine Corps personnel (14.7%) met criteria for MDD following their deployment to OIF. Overall, studies of the prevalence of MDD in military populations have yielded prevalence percentages ranging from 11.4% pre-deployment to OIF/OEF to 15.2% post-deployment to OIF/OEF (e.g., Hoge et al., 2004; Hoge et al., 2006; Milliken et al., 2007).

Civilian Populations

In a replication of the 1995 National Comorbidity Survey, Kessler and colleagues (2005) found that current 12-month prevalence of MDD in the United States was 6.7%. These researchers used the Diagnostic Interview Schedule (DIS), which uses criteria put forth in the Diagnostic and Statistical Manual of Mental Health Disorders Fourth Edition (DSM-IV), to assess diagnoses of PTSD. Kessler and colleagues (2005) found that

women were 50% more likely than were men to exhibit a lifetime risk for MDD.

Furthermore, these researchers found that previously married individuals were 90% more likely than were married individuals to show a lifetime risk for MDD. Kessler and colleagues (2003) found that over 87% of individuals who met criteria for MDD reported moderate to severe impairment in their work, school, and/or social roles. Other researchers have found 12-month prevalence rates of MDD of 5.9% (Karlin, Duffy, & Gleaves, 2008) and 6% (O'Donnell, Creamer, & Pattison, 2004), respectively.

Comparing Prevalence of PTSD/MDD: Military vs. Civilian

In comparing literature measuring prevalence of mental health disorders in military and civilian populations, there seemed to be significant variations in prevalence both between and within these populations. Recall that, in terms of PTSD, prevalence differed significantly within as well as between military (2-24%) and civilian (3-13%) populations. In terms of MDD, prevalence continued to be varied within military populations (4-15%) while prevalence in civilian populations remained consistent (~6%) across studies. These differences in prevalence could be the result of many factors including gender disparity in study samples, differences in research methodology, and timing of mental health assessments.

There was a large disparity in terms of gender when comparing samples used in civilian and military studies. Most of our civilian mental health prevalence data in this manuscript came from the National Comorbidity Study – Replication (NCS-R) which was an epidemiological study empirically designed to create a representative sample of the U.S. population in terms of many socio-demographic variables including gender (e.g.,

Kessler et al., 1999; Kessler et al., 2003; Kessler et al., 2005). Recent U.S. Census Bureau reports show gender percentages in the United States to be roughly equal with females comprising 51% of population and males comprising the remaining 49% (U.S. Census Bureau, 2004). Demographics (i.e., gender percentage) of the NCS-R were fairly representative of U.S. population with 45% of their sample being male and 55% being female.

Military studies reporting mental health prevalence percentages were varied in the gender distributions of their samples. Gender percentages (male vs. female, respectively) in the samples of each of these studies were as follows: 87% vs. 13% (Seal et al., 2007), 91% vs. 9% (Milliken et al., 2007), 100% male (Hoge et al., 2004), and 89% vs. 11% (Hoge et al., 2006). In 2006, the Defense Manpower Data Center reported that gender percentages in the Department of Defense were 85% males and 15% females. Further breakdown of gender percentages (males vs. . females) for each branch of the armed services were as follows: 85% vs. 15% in U.S. Navy, 87% vs. 13% for U.S. Army, 96% vs. 4% for U.S. Marine Corps, and 81% vs. 19% in U.S. Air Force (Defense Manpower Data Center, 2006). There was indeed much variation in gender percentages in those studies assessing mental health prevalence in military populations. While none of these studies were able to closely mirror the actual distribution of males and females in the DoD Armed Forces, Seal and colleagues (2007) and Hoge and colleagues (2006) came closest those numbers. Nonetheless, it is possible that a lack of gender effect in these military studies versus significant gender effects in many civilian studies may be due to a

lack of representative sampling and, thus, disparity in gender distribution in those military studies.

Another possible contributing factor to differences in mental health disorder prevalence both within and between military and civilian populations may simply be differences in research methodology. One major example of differing research methods is the type and quality of assessment materials used to gather data of prevalence of mental health disorders. There were no less than 10 different psychometric measures of PTSD and MDD used by the eight studies that were reviewed to provide insight on current prevalence of mental health disorders in the United States. These measures ranged from brief primary care instruments (e.g., 2-item Patient Health Questionnaire and Primary Care PTSD Screen) all the way to time-intensive research instruments (e.g., Structured Clinical Interview for DSM-IV and World Mental Health – Composite International Diagnostic Interview). Each of these instruments possesses differing psychometric properties, levels of specificity, and levels of sensitivity which was likely to lead to differences in diagnosis of specific mental health disorders such as PTSD and/or MDD.

Barriers to Professional Help Seeking

Military Population

There have been several recent studies assessing help seeking behaviors and barriers to care in military samples (e.g., Fikretoglu et al., 2009; Hoge et al., 2004). Hoge and colleagues (2004) found that, in terms of perceived need for mental health care, less than 43% of service members meeting screening criteria for a mental disorder indicated

interest in receiving help for that disorder. Furthermore, less than 40% of those interested individuals actually sought mental health care within 12 months of indicating interest. These researchers also reported specific barriers such as stigmatization were significantly higher in military personnel most in need of mental health services. Hoge and colleagues (2004) found specifically that Soldiers and Marines who met at-risk criteria for a mental disorder were twice as likely to show concern about stigmatization as were Soldiers and Marines who did not meet at-risk criteria for a mental disorder. In their assessment of Canadian military forces, Fikretoglu and colleagues (2009) found that around 14.5% of their sample met criteria for a mental health disorder, but only 9% of their sample sought care from a mental health provider and only 6% sought care for mental health from a medical provider. In other recent research, Fikretoglu and colleagues (2008) cite specific perceived barriers to care and fear of stigmatization as major reasons for small percentages of Canadian military personnel actually seeking mental health care.

According to Hoge et al. (2004) there are many perceived barriers to seeking health services among U.S. military personnel. Some heavily cited (i.e., > 50% endorsed) barriers to seeking mental health care included: I would be seen as weak (65%), My unit leadership would treat me differently (63%), Members of my unit might have less confidence in me (59%), and It would harm my career (50%). Other barriers included: It would be too embarrassing (41%), I don't trust mental health professionals (38%), and I don't know where to get help (22%). Fikretoglu and colleagues (2008) found in their sample Canadian military forces that lack of confidence in military health services (52%), not having enough time (36%), and not knowing where to get help (22%) were all

perceived barriers to mental health care. Furthermore, these researchers found that around 30% of Canadian military members did not seek mental health care due to fear of stigmatization.

There are very few other studies involving active duty military that comment on barriers to mental health. When assessing help seeking behaviors of OIF/OEF returnees, Friedman (2006) mentions one particular barrier to mental health treatment for PTSD: fear that treatment would be documented in the medical record and could affect military advancement. Other studies postulate the possibility that military personnel may be interested in receiving help for mental health disorders, but might also be perceiving barriers to care such as confidentiality, stigmatization, and career-related issues (Rona, Hyams, & Wessley, 2005). Finally, Jordan and colleagues (2004) mention in their research that widespread stigma as well as other perceived barriers to mental health care might exist because of concern about negative impact on careers. There are some barriers to care that are common across each of the above studies including: negative impact on career, lack of confidence in military healthcare providers, and lack of knowledge on where to seek help.

Civilian Populations

Several studies assessing mental health utilization in civilian populations have also assessed barriers to professional help seeking (e.g., Amaya-Jackson, Davidson, Hughes, et al., 1999; Leaf et al., 1986). Amaya-Jackson and colleagues (1999) report that, when asked about presence of barriers to care, individuals with symptoms of PTSD were two to three times as likely to perceive barriers to care for mental health services. Leaf

and colleagues (1986) found that individuals who met criteria for a psychiatric disorder did not often seek treatment for that disorder because they were either not receptive to treatment or they perceived barriers to treatment.

In their study of major depression and treatment seeking, Blumenthal and colleagues (1996) found that participants had several reasons for not seeking treatment. Some stigma-related reasons for not seeking treatment included: not wanting to discuss personal issues (25%), concerned that others might find out (13%), and concerned about having a record of treatment (7%). It is important to note that stigma was not a significant factor for treatment seeking in this sample of depressed individuals (Blumenthal et al., 1996). Koenen et al. (2003), in their study of PTSD, asked participants who had never sought help for a mental disorder to assist in identifying possible barriers to treatment. These researchers found that individuals with PTSD endorsed significantly more barriers to mental health care than did individuals with other anxiety disorders. Those barriers to care included: being afraid of what others might think (18.4%), not sure where to get help (40%), and can't afford treatment (28.3%). It is of note that individuals with PTSD ($OR = 2.30$) were twice as likely as were individuals with other anxiety disorders to report fear of stigmatization from seeking treatment (Koenen et al., 2003).

Comparing Barriers to Professional Help Seeking: Military vs. Civilian

We have looked into research concerning perceived barriers, in both military and civilian populations, that tend to interfere with individuals seeking help for mental health issues. In military population, researchers have found that perceived barriers include being seen as weak, leadership treating individuals differently, and harm to military

career (Hoge et al., 2004). In civilian populations, researchers have found that perceived barriers include fear of what others may think, worries about information going into medical records, and lack of desire to discuss personal issues (Blumenthal et al., 1996; Koenen et al., 2003). The chart below shows a brief summary of barriers to care in both military and civilian studies.

Perceived Barriers to Mental Health Care: Military vs. Civilian	
<u>Military</u>	<u>Civilian</u>
Seen as weak ⁴	Fear of what others may think ^{1,6}
Treated different by leadership ^{4,8}	Information stored in medical records ¹
Harm to Career ^{2,4,5,8}	No desire to discuss personal issues ^{1,7}
Embarrassment ⁴	Do not know where to get help ^{1,6}
Do not know where to get help ^{2,4}	Cannot afford care ⁶

(Blumenthal et al., 1996¹; Fikretoglu et al., 2008²; Friedman, 2006³; Hoge et al., 2004⁴; Jordan et al., 2004⁵; Koenen et al., 2003⁶; Leaf et al., 1986⁷; Rona et al., 2005⁸)

Hypotheses

Predicted associations between predisposing factors and perceived need for help seeking in a U.S. Navy sample were grounded in theoretical support found within military and civilian research on help seeking. In military populations, researchers have shown that marital status and psychiatric illness are significant predisposing factors to help seeking (e.g., Felker et al., 2008; Fikretoglu et al., 2006; Calhoun et al., 2002; Kulka et al., 1991). Specifically, Fikretoglu and colleagues (2006) showed that married military personnel were twice as likely to seek help post-deployment as were single military

personnel. Felker and colleagues (2008) found that 97% of military personnel seeking care in their study met criteria for a mental health disorder. These researchers also showed a trend toward gender differences in help seeking with female gender being more strongly associated with help seeking than was male gender. Civilian research has also supported influence of predisposing factors such as marital status, mental health symptoms, and gender on help seeking (e.g., Koenen et al., 2003; Mojtabai et al., 2002; Rabinowitz et al., 1999).

In our study, we propose that predisposing factors of marital status, gender, meeting risk criteria for PTSD, and meeting risk criteria for a depressive disorder will be significant predictors of Navy personnel's perceived need to seek help. Based on gathered evidence, there were four hypotheses generated for this research. First, we propose that marital status, gender, risk for PTSD, and risk for a depressive disorder will be associated with perceiving a need to schedule an appointment with a healthcare provider. Second, we propose that marital status, gender, risk for PTSD, and risk for a depressive disorder will be associated with perceiving a need to schedule a visit with a chaplain or community support counselor. Third, we propose that marital status, gender, risk for PTSD, and risk for a depressive disorder will be associated with perceiving a need for assistance with a stress, emotional, or alcohol concern. Finally, we propose that marital status, gender, risk for PTSD, and risk for a depressive disorder will be associated with perceiving a need for assistance with a family or relationship concern.

Method

Participants

A study sample of 2,616 United States Navy personnel was drawn from a data set containing 173,261 service members from all four branches of the armed services that were gathered and formed into a dataset by Department of Defense database at Army Medical Surveillance Activity (AMSA). A total of 2384 male (91%) and 232 female (9%) Navy personnel data files were sampled for this study. Of these personnel sampled, 1549 were married (59%) and 1067 were unmarried (41%) at the time of our data collection. Most of the sample (90%) were between 21 and 45 years of age, range = 19-61 ($M = 34 \pm 9$). A majority (62%) of our sample were non-commissioned officers. Percentages of rank across sample were as follows: junior enlisted (E1-E3) 18%, non-commissioned officers (E4-E6) 62%, senior non-commissioned officers (E7-E9) 8%, junior officers (O1-O4) 9%, command officers (O5-O6) 2%, and warrant officers (W01-W05) 1%. All data used in this study met HIPAA criteria for privacy and confidentiality.

Power Analysis

The sample size of Navy personnel was a fixed number based on data availability. However, we conducted a power analysis on each predictor variable using the smallest detectable difference between proportions (nQuery Advisor 6.0, Statistical Solutions). We expected to see perceived need for help seeking in no more than 15% of our sample. Based on analysis of the predictor variable of gender, the available sample had adequate power ($P \geq .80$) to detect differences of 8% or greater with respect to perceived need for

help seeking. Based on analysis of the predictor variable of marital status, the available sample had adequate power ($P \geq .80$) to detect differences of 4% or greater with respect to perceived need for help seeking. Based on analysis of the predictor variable of meeting at risk criteria for PTSD, the available sample had adequate power ($P \geq .80$) to detect differences of 7% or greater with respect to perceived need for help seeking. Finally, based on analysis of the predictor variable of meeting at risk criteria for a depressive disorder, the available sample had adequate power ($P \geq .80$) to detect differences of 9% or greater with respect to perceived need for help seeking. All power analyses were based on chi-square tests with a significance level of $p = .05$.

Procedure

We obtained 2616 United States Navy personnel of all ages and ranks whom had completed at least one Post Deployment Health Reassessment (DD2900) with 90-180 days following their perspective deployments. These personnel were informed that their responses would remain confidential. These data were gathered on United States Navy personnel who had deployed between June 1, 2005 and March 30, 2007.

This data set of U.S. Navy personnel contains subject identifier, , date of DD2900 completion, deployment date, service member's age, gender, self-reported marital status, service branch, component (e.g., active vs. reserve), and pay grade as well as area of deployment, location of operation, and number of deployments in the past five years. Additionally, Navy personnel's answers to items 8, 9a-d, 11a&b, 12, 13, 14, 15, and 16 from the DD2900 form are included in the data. Item eight on the DD2900 asks: "Since you returned from deployment, have you had serious conflicts with your spouse, family

members, close friends, or at work that continue to cause you worry or concern?” Navy personnel have the option to select either “Yes”, “No”, or “Unsure” as their answer to this question. Item nine is a four part question on the DD2900 form that asks: “Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, youa) Have had any nightmares about it or thought about it when you did not want to?, b) Tried hard not to think about it or went out of your way to avoid situations that remind you of it?, c) Were constantly on guard, watchful, or easily startled?, and d) Felt numb or detached from others, activities, or your surroundings?” Navy personnel have the option to select either “Yes” or “No” as their answer to each of the four parts of this question. Item 11 on the DD2900 form is a two part question that asks: “Over the PAST MONTH, how often have you been bothered by any of the following problems? a) Little interest or pleasure in doing things and b) Feeling down, depressed, or hopeless. There were options to select either “Not at all”, “Few or several days”, “More than half the days”, or “Nearly every day” as their answer to each part of this question. Item 12 on the DD2900 form asks: “If you checked off any problems or concerns on this questionnaire, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?” Navy personnel have the option to select either “Not difficult at all”, “Somewhat difficult”, “Very difficult”, or “Extremely difficult” as their answer to this question.

The remaining four questions (i.e., numbers 13, 14, 15, and 16) from the DD2900 are used in this data set to assess perceived need for help seeking. Navy personnel are asked two questions concerning type of provider they would be interested in visiting and

two questions concerning particular deployment-related problems that could be of concern. In terms of provider type, Item 13 on the DD2900 form asks: “Would you like to schedule a visit with a healthcare provider to further discuss your health concerns?” Personnel may opt to select either “Yes” or “No” as their answer to this question. Item 16 on the DD2900 asks: “Would you like to schedule a visit with a chaplain or a community support counselor?” Personnel may opt to select either “Yes” or “No” as their answer to this question. In terms of problem type, Item 14 on the DD2900 asks: “Are you currently interested in receiving information or assistance for a stress, emotional, or alcohol concern?” Personnel may opt to select either “Yes” or “No” as their answer to this question. Item 15 on the DD2900 asks: “Are you currently interested in receiving assistance for a family or relationship concern?” Personnel may opt to select either “Yes” or “No” as their answer to this question.

Analysis of the Post-Deployment Health Reassessment (PDHRA)

The Post Deployment Health Reassessment (PDHRA) is a screening tool that is provided to service members approximately 90-120 days post-deployment. In the PDHRA, service members complete questions assessing general health, physical symptoms, and mental health that could be related to their recent deployment (Milliken et al., 2007). This form was developed as part of a psychological screening program designed by the US Army Medical Research Unit – Europe (Bliese et al., 2005). Unlike pre-deployment screening forms, the PDHRA contains several measures used to screen for depression, PTSD, interpersonal conflict, and alcohol use. The screening measures for depression, posttraumatic stress disorder, and alcohol use have been validated in both

military (e.g., Adler, Wright, Huffman, Thomas, & Castro, 2002; Adler, Huffman, Bliese, & Castro, 2005; Wright, Huffman, Adler, & Castro, 2002; Wright, Thomas, et al., 2005) and civilian (e.g., Brown, Leonard, Saunders, & Papasouliotis, 2001; Kroenke et al., 2003; Ouimette et al., 2008). Our study focuses on those measures that assess service members' risk for depression and posttraumatic stress disorder. Our study focused on at-risk criteria for depression and PTSD because the PC-PTSD and PHQ-2 used in the Post Deployment Health Reassessment were predictive of depression and PTSD but they did not assess all of the symptoms of those mental health disorders.

The PDHRA includes a 4-item screening for post-traumatic stress disorder (PTSD) that was developed by the National Center for PTSD. It is called the Primary Care PTSD screen or PC-PTSD. The PC-PTSD includes four questions that cover key areas of PTSD symptoms including avoidance of traumatic cues, re-experiencing of traumatic event, physical/psychological numbing, and hyperarousal symptoms. In 2004, the PC-PTSD was made part of the Post-Deployment Health Assessment by the DoD and was later that year added to the Post-Deployment Health Reassessment. Cut-off scores for at risk criteria for post traumatic stress on the PC-PTSD include endorsement of two or more of the four symptom measures. These cut-off scores have been used in other research involved post-deployment health assessment of PTSD (e.g., Hoge et al., 2006; Milliken et al., 2007). The PC-PTSD was found to be correlated with the CAPS, $r = 0.83$, which supports convergent validity. The PC-PTSD scores were compared at participant recruitment and study follow up (roughly 1 month later) and showed good test-retest reliability, $r = 0.83$ (Prins et al., 2003).

The PDHRA also includes a two-item version of the Patient Health Questionnaire depression module (PHQ-2). The PHQ-2 consists of the first two items of the nine item version of the Patient Health Questionnaire depression module (PHQ-9). The two items in the PHQ-2 address individuals' depressed mood and anhedonia. For each response item (e.g., "not at all", "several days", "more than half the days", and "nearly everyday", scores of 0, 1, 2, 3 were assigned respectively. Total numerical scoring range for the PHQ-2 is 0 – 6. Kroenke et al (2003) recommend that cut-off an optimal score of three or more to detect risk for depressive symptoms. Pt's who score three or more on the PHQ-2 screened for major depression with 83% sensitivity and 92% specificity (Kroenke et al., 2003).

The Patient Health Questionnaire-2 showed good criterion validity when compared with mental health professional interview. Specifically, the PHQ-2 with a cutoff of 3 or greater was comparable to the clinician administered PHQ-9 for any depressive disorder ($k = 0.62$ vs. 0.58) as well as major depressive disorder ($k = 0.48$ vs. 0.54) (Kroenke et al., 2003). In terms of construct validity, there was a strong association between increasing scores on the PHQ-2 and deteriorating function as measured by the Medical Outcomes Study Short-Form General Health Survey (SF-20). Specifically, the PHQ-2 correlated most strongly to the SF-20 domain of mental health, $r = .70$. Scores of three or more on the PHQ-2 were also associated with other construct validity measures including increase in disability days, increase in health care utilization, and an increase in symptom related difficulty in relationship and daily activities, $p's < 0.05$ (Kroenke et al., 2003).

The PHQ-2 also showed convergent validity with other measures of depressive symptoms commonly used in primary care settings, such as the Hospital Anxiety and Depression Scale, $r = .67$ (Lowe et al., 2004). PHQ-2 showed divergent validity with measures less related to depression, such as the physical component of the Short Form Health Survey-12, $r = -0.23$ (Lowe et al., 2004). Lowe and colleagues (2004) also found that the PHQ-2 had good internal consistency, $\alpha = 0.83$. Test-retest reliability scores for the PHQ-9, which was significantly correlated with the PHQ-2, over a seven day period, were 0.81 and 0.96 (Lowe et al., 2004).

Statistical Analyses

For this study, we used SPSS version 14.0 for all data analysis. Multivariate logistic regression analyses were used to determine associations among variables. These associations were described using odds ratios (ORs) with 95% confidence intervals (CIs). Logistic regression techniques were used to build a model for predicting whether Navy personnel perceived the need to seek help 90-180 days following deployment.

Specifically, logistic regression models were created to assess each dependent variable at each level of the independent variables in our study. The dependent variables used in each model are described in the next section. The first independent variable (i.e., visit with healthcare provider) was a dichotomous variable with 1 indicating a desire to seek help and 0 indicating no current desire to seek help. The second independent variable (i.e., visit chaplain or community support counselor) was also dichotomous with 1 indicating a desire to seek help and 0 indicating no current desire to seek help. The third independent variable (i.e., assistance for a stress or emotional concern) was dichotomous

with 1 indicating a desire to seek help and 0 indicating no current desire to seek help. The final independent variable (i.e., assistance for a family or relationship concern) was dichotomous with 1 indicating a desire to seek help and 0 indicating no current desire to seek help. The predictor variables are all categorical and include: marital status (married vs. unmarried), gender (male vs. female), posttraumatic stress disorder criteria (met vs. not met), and major depressive disorder criteria (met vs. not met).

Results

Overview of Analyses

Four separate logistic regression models were used in this study in order to assess associations between outcome measures of perceived need for help seeking and predictor variables of marital status: (married vs. not married), gender: (male vs. female), risk criteria for posttraumatic stress disorder: (met vs. not met), risk criteria for depressive disorder: (met vs. not met). The four outcome or independent measures of perceived need for help seeking included Navy personnel's desire to: schedule visit with health care provider, schedule a visit with chaplain or community support counselor, receive assistance for a stress, emotional, or alcohol concern, and/or receive assistance for a family or relationship concern.

Descriptives

In terms of gender, we found that our sample of Navy personnel contained 91% males and 9% females. For marital status, we found that 59% of Navy personnel were married and 41% were not married. For risk criteria for PTSD, we found that 87% of

Navy personnel did not meet risk criteria for PTSD while 13% did meet criteria for PTSD. For risk for depressive disorder, we found that 92.5% of Navy personnel did not meet risk criteria for a depressive disorder while 7.5% did meet criteria for a depressive disorder (See Table 1).

For perceived need to schedule a visit with a healthcare provider, we found that 14.5% of the Navy personnel sampled answered “yes” while 85.5% answered “no.” For perceived need to schedule an appointment with a chaplain or community support counselor, we found that 2% of Navy personnel answered “yes” while 98% answered “no.” For perceived need for assistance for a stress, emotional, or alcohol concern, we found that 8% of Navy personnel answered “yes” while 92% answered “no.” Finally, for perceived need for assistance for family or relationship concerns, we found that 5% of Navy personnel answered “yes” while 95% answered “no.”

Main Analyses

It was hypothesized that marital status, gender, risk for PTSD, and risk for a depressive disorder would be associated with Navy personnel’s perception of the need to schedule a visit with a healthcare provider, schedule a visit with a chaplain or community support counselor, receive assistance for a stress, emotional, or alcohol problem, and/or receive assistance for a family or relationship concern. In order for these predictions to be supported, we would expect significant relationships between the four measures of perceived need to seek help and the predisposing factors of marital status, gender, risk for PTSD, and risk for a depressive disorder. Consistent with the first hypothesis, meeting risk criteria for PTSD and/or a depressive disorder were significantly associated with

perceived need to schedule a visit with a healthcare provider (See Table 2). Odds ratios were used for interpretation of these results. In terms of risk criteria for PTSD, we found that Navy personnel meeting risk criteria for PTSD were around 3.5 times more likely than were personnel who did not meet criteria to want to schedule a visit with a healthcare provider (OR = 3.48, 95% CI = 2.62-4.64). In terms of risk criteria for a depressive disorder, we found that Navy personnel meeting risk criteria for a depressive disorder were around 2.3 times more likely than were personnel who did not meet criteria to want to schedule a visit with a healthcare provider (OR = 2.32, 95% CI = 1.62-3.31). Gender and marital status of U.S. navy personnel were not significantly associated with perceived need to schedule a visit with a healthcare provider.

Opposite our prediction in second hypotheses, we found that none of our independent variables (i.e., gender, marital status, risk for PTSD, and risk for depressive disorder) were significantly associated with Navy personnel wanting to schedule a visit with a chaplain or community support counselor (See Table 2).

Consistent with our third hypotheses, meeting risk criteria for PTSD and/or a depressive disorder were significantly associated with perceived need for assistance for a stress, emotional, or alcohol concern (See Table 2). Again, odds ratios were used for interpretation of these results. In terms of risk criteria for PTSD, we found that Navy personnel meeting risk criteria for PTSD were nearly 8 times more likely than were personnel who did not meet criteria to want assistance for a stress, emotional, or alcohol concern (OR = 7.95, 95% CI = 5.66-11.20). In terms of meeting risk criteria for a depressive disorder, we found that Navy personnel meeting risk criteria for a depressive

disorder were around 4 times more likely than were personnel who did not meet criteria to want assistance for a stress, emotional, or alcohol concern (OR = 3.76, 95% CI = 2.53-5.60). Gender and marital status of U.S. Navy personnel were not significantly associated with perceived need for assistance with a stress, emotional, or alcohol concern.

Lastly, consistent with our final hypothesis, meeting risk criteria for PTSD and/or a depressive disorder were significantly associated with perceived need for assistance for a family or relationship concern (See Table 2). We also found that marital status was significantly associated with perceived need for assistance for family or relationship concerns. As before, odds ratios were used for interpretation of these results. In terms of risk criteria for PTSD, we found that Navy personnel meeting risk criteria for PTSD were around 6 times more likely than were personnel who did not meet criteria to want assistance for a family or relationship concern (OR = 5.67, 95% CI = 3.67-8.77). In terms of meeting risk criteria for a depressive disorder, we found that Navy personnel who met criteria for a depressive disorder were around 3 times more likely than were personnel who did not meet criteria to want assistance for a family or relationship concern (OR = 2.68, 95% CI = 1.65-4.37). Finally, in terms of marital status, we found that married Navy personnel were 1.5 times more likely than were unmarried personnel to want assistance for a family or relationship concern (OR = 1.56, 95% CI = 1.04-2.40). Gender of U.S. navy personnel was not significantly associated with perceived need for assistance with a family or emotional concern.

Discussion

The findings indicate that perceived need to schedule a visit with a healthcare provider was related to whether Navy personnel met risk criteria for PTSD and/or a depressive disorder; however, that need was not dependent upon marital status or gender of Navy personnel. Perceived need to schedule a visit with a chaplain or community support counselor was not associated with any of our individual determinants (i.e., predisposing or illness factors). Perceived need for assistance for a stress, emotional, or alcohol concern was related to whether Navy personnel met risk criteria for PTSD and/or a depressive disorder, but did not depend on either gender or marital status of those personnel. Finally, perceived need for assistance for a family or relationship concern did depend on whether Navy personnel met risk criteria for PTSD and/or a depressive disorder as well as marital status of those personnel. Personnel gender was not related to this perceived need.

Support for Military Help Seeking

Partial support was obtained for our hypotheses concerning perceived need for help seeking among U.S. Navy personnel. Desiring help from a healthcare provider, help for a stress/emotional concern, or help for a family/relationship concern were found to be associated with whether or not Navy personnel met risk criteria for PTSD and/or a depressive disorder which was consistent with other research assessing the impact of mental health disorders on need for help seeking in civilian samples (e.g., Amaya-Jackson et al., 1999; Jordan et al., 2004; Leaf et al., 1988; Rabinowitz et al., 1999) and in military samples (e.g., Fikretoglu et al., 2006). Navy personnel serve integral roles in

nearly all OIF/OEF operations. It is likely that the U.S. Navy is the only service in the U.S. armed forces that provides direct combat (e.g., hospital corpsman, Seabees, air strikes, afloat battle formations) as well as medical/logistics positions from the sea, from the air, and from “boots on the ground” Sailors. The unique roles of U.S. Navy personnel in the field of battle places those personnel at similar risk for PTSD and/or a depressive disorder as are Soldiers and Marines. However, there has been no prior research found on predisposing factors leading to post-deployment help seeking in U.S. military personnel. Our research findings with Navy personnel provide support for a relationship between post-deployment mental health risk and perceived need to seek help in a U.S. military sample.

Desiring help for a family or relationship concern was also found to be dependent upon marital status of Navy personnel. Personnel who were married at time of completion of PDHRA were more likely to perceive a need to seek help for a family or relationship concern than were personnel who were not married. Our sample of Navy personnel was split 60/40 in terms of married/non-married closely paralleling current DoD reporting of marital status percentages (i.e., 58/42 split) in U.S. Navy (Defense Manpower Data Center, 2006). Comparable percentages between our sample and U.S. Navy population, in terms of marital status, allow us to be able to better generalize our findings from this study to the U.S. Navy population. It is important to note that our finding on marital status was opposite most help seeking literature in the civilian sector. These studies consistently showed that individuals who were not married (i.e., separated or divorced) sought help more often than married individuals (e.g., Koenen et al., 2003,

Mojtobai et al., 2002, Rabinowitz et al., 1999). At the time of study completion, no research was found that had specifically assessed factors predisposing help seeking (e.g., marital status, gender) in U.S. military samples.

It is interesting that our findings in terms of marital status and help seeking were opposite the findings shown in many studies of U.S. civilian samples, but were consistent with the findings on marital status and help seeking in many Canadian military samples (e.g., Fikretoglu et al., 2006, Sareen et al., 2007). Specifically, Fikretoglu and colleagues (2006) found that married Canadian military personnel were twice more likely to seek help post-OIF/OEF deployment than were single Canadian military personnel. These findings have been replicated in recent help seeking studies of post-deployment Canadian military personnel (e.g., Fikretoglu et al., 2008; Sareen et al., 2007). Research on help seeking in Canadian military forces has also shown that separated or divorced military personnel were also significantly more likely to perceive a need for help following an OIF/OEF deployment than were single personnel. However, the odds for divorced/separated military personnel were equal to or less than odds shown for married personnel. Unfortunately, our current study's sample did not have adequate enough numbers of separated or divorced military personnel for a more specific analysis of differences in help seeking between single personnel and divorced/separated personnel. However, similarities in research findings on marital status and help seeking between Canadian military samples and U.S. Navy personnel seems to offer some evidence in support of a potentially key difference between military and civilian populations in terms of factors that predispose help seeking.

Research studies in civilian populations have found that it is unmarried individuals who tend to perceive the need to seek help for mental health concerns more often than their married counterparts. Koenen and colleagues (2003) found that divorced/separated individuals were nearly twice as likely as married individuals to seek help for mental health concerns. Likewise, Mojtabai and colleagues (2002) found that it was loss of marriage that was more likely to be a predisposing factor to mental health help seeking than was marriage. Lin, Goering, Offord, Campbell, and Boyle (1996) showed that marital disruption was a significant predictor for mental health help seeking. Finally, Rabinowitz and colleagues (1999) showed that divorced and widowed individuals were twice as likely as married and/or single individuals to seek help for a mental health issues.

This difference in the influence of marital status on help seeking in military and civilian samples could reflect unique differences between military and civilian culture in the United States. It may be a reasonable assumption that military families may be physically separated more often than are civilian families due to a factor unique to military culture: sea trials, training, and deployments. The frequency and duration of deployment-related separations have increased substantially since the beginning of the Global War on Terrorism (Perry, 2006). This increase in family separation may create additional stress to relationships and thus may be driving significant increases in perceived need for assistance with family or relationship issues.

We did not find support for our hypotheses concerning the relationship between gender of military personnel and measures of perceived need to seek help. This lack of

differentiation in help seeking by gender has been both supported (e.g., Amaya-Jackson et al., 1999; Rabinowitz et al., 1999) and contradicted (e.g., Greenley et al., 1987; Leaf et al., 1988; Mojtabai et al., 2002) by research on help seeking behaviors with civilian samples. There are several plausible explanations for a lack of gender effect on help seeking in our sample of Navy personnel.

First, it appears as though our sample did not have enough representation of female military personnel ($n = 232$) to justify a comparison to male personnel ($n = 2384$). Only 9% of our Navy personnel were female. Current DoD statistics report that current gender percentages of military personnel in the U.S. Navy are 85% male and 15% female military personnel (Defense Manpower Data Center, 2006). This disparity in percentages of female personnel between our sample (9%) and current estimates of U.S. Navy population (15%) could mean that our U.S. navy sample was not representative of the U.S. Navy population as a whole. Furthermore, due to small sample size, our regression analyses were likely under-powered as well. A power analysis of predictor variables (e.g., gender, marital status) in this study showed that our sample of Navy personnel had adequate power ($P \geq .80$) to find detectable differences of 8% or greater with respect to perceived need for help seeking. An under-powered regression analysis would make it difficult to determine whether lack of significant difference was a main effect or an artifact of under-representation of female personnel in our sample.

Another plausible explanation for the lack of significant gender differences in perceived need to seek help in our Navy sample could indicate the presence of key differences in help seeking between civilian and military populations. Many civilian

studies of help seeking behavior (e.g., Boscarino et al., 2002; Leaf et al., 1988; Mojtabai et al., 2002) have shown gender differences. Particularly, these studies have found that females tend to perceive a need for mental health help at significantly higher rates than do males. Multiple studies assessing perceived need to seek help using military samples have also found gender differences (e.g., Felker et al., 2008; Fikretoglu et al., 2006). Fikretoglu and colleagues (2006) showed that female military personnel were more likely to seek mental health help than were their male counterparts with similar diagnoses. Felker and colleagues (2008), when assessing a treatment seeking sample of military personnel in Iraq, found that percentage of females seen in their clinic (27%) was significantly greater than percentages of females deployed in support of OIF in 2005 (10-14%). Finally, Rundell (2006) found that female military personnel were over-represented among those evacuated from OIF/OEF for a psychiatric evaluation. Our findings did not support gender differences in perceived need to seek help (possibly due to lack of power), it has generally been found that gender significantly influences help seeking behaviors in both civilian and military studies.

Study Limitations

One limiting factor in this study was measuring U.S. Navy personnel's perceived need for help seeking from a sample of convenience. The dataset captures help seeking information only from Navy personnel who completed both a PDHA and PDHRA during one of their deployments between the study's specific dates (i.e., January 2005 through August 2007). Because our sample was a sample of convenience, we were unable to ensure that this Navy sample was representative of Navy populations in terms of gender,

rank, age, and other demographic variables. As previously discussed, one variable that we know was underrepresented in this sample was gender. Our sample was composed of 9% female military personnel while current DoD estimates of female military personnel in U.S. Navy population were 15% (Defense Manpower Data Center, 2006). Our findings in this study on perceived need for help seeking, therefore, may not be generalizable to the current U.S. Navy population.

Another limiting factor of this study is that our help seeking outcome variables did not assess percentages of U.S. Navy personnel who actually sought help but rather assessed percentages of those personnel who perceived a need to seek help. Many research studies on help seeking in both military and civilian samples measured actual help seeking via participant self-report (e.g., Amaya-Jackson et al., 1999; Hoge et al., 2004; Hoge et al., 2007; Koenen et al., 2003), some studies differentiated between seeking help from medical professional and seeking from mental health professionals (e.g., Fikretoglu et al., 2008; Fikretoglu et al., 2009). There were few studies utilizing actual medical record data in order to assess help seeking (e.g., Hoge et al., 2006). However, because our help seeking outcome variables assessed only perceived need to seek help it seems possible that our findings might not be comparable to findings of other research studies measuring reported help seeking.

However, there were some studies that aided in bridging the gap between perceived need for help seeking and self-reported help seeking behaviors (e.g., Mojtobai et al., 2002; Rabinowitz et al., 1999). These studies provided support for predictor variables that were related both to individuals' perceived need for help as well as to those

individuals' reported help seeking behaviors. Rabinowitz and colleagues (1999) found that marital separation (i.e., divorce) was significantly related to both perceived need for help and actual help seeking. These researchers also found a substantial trend in their data indicating that females were more likely to engage in help seeking behaviors if they had initially perceived a need to seek mental health help. Mojtabai and colleagues (2002) found that female gender and divorce/separation were significant predictors of either perceived need for mental health help or reported mental health help seeking behaviors. It does seem reasonable, then, to allow for comparison of our research findings to those findings shown in other studies of help seeking behavior.

Finally, all of the predictor variables and outcome variables that were used to assess predisposing factors to post-deployment help seeking were gathered via self-report. Measures of risk for PTSD and depression were completed by service member and then reviewed by a clinician. Self-report measures are convenient for gathering large amounts of data in a short amount of time, but clinician assessment and direct observation would have provided better reliability and validity to this study's findings.

Future Directions

Many potential research studies could be designed as follow up or additional studies related to our research assessing the relationships between predisposing factors (i.e., gender, marital status, and risk for mental health disorder) and perceived need to seek help in U.S. Navy personnel. This study explored only a small portion of the data that were available within the Post-Deployment Health Reassessment (PDHRA) form. Other avenues of future research using PDHRA data might include experimentally

assessing reliability/validity of the PDHRA as a measure of deployment-related health, studying relationships between other predisposing factors (e.g., age, rank, branch of service) available on the PDHRA and perceived need for help seeking in military personnel, and a comparing perceived need for help seeking and actual help seeking in post-deployment military personnel.

One possibility for future research involves assessing the reliability and validity of the PDHRA form in measuring post-deployment physical and mental health symptoms. The results of our study were gathered using previously validated instruments (i.e., PHQ-2 and PC PTSD) that are inserted into the PDHRA along with many other questions surrounding physical and mental health of military personnel. There have been a few field studies conducted assessing validity of PDHRA in predicting physical and mental health concerns in military personnel returning from deployment (Bliese, Wright, Adler, & Thomas, 2004; Bliese, Wright, Adler, Thomas, & Hoge, 2004). However, these validation studies were conducted in field settings with little to no controls put in place. For example, there were no controls for timing of PDHRA completion, setting of PDHRA completion, or type of medical personnel giving PDHRA and/or making referrals for follow on care. By designing an experiment with more controls in place, it could be possible to conduct test-retest trials and inter-item reliability tests on the PDHRA while at the same time significantly reducing the level of variance seen in prior studies. This experimental approach would yield valuable reliability and validity information on this testing instrument that is widely used by the U.S. Department of Defense. Additional experimental testing, such as research conducted by Wright et al.

(2005) and Bliese et al. (2006), could be designed to assess the validity of the four help seeking questions (i.e., Questions 13, 14, 15, & 16) used within the PDHRA. The more valid and reliable we can make the PDHRA form, the more likely we are to be able to accurately predict and, hopefully, treat post-deployment health-related issues.

A second possibility for future research is examining relationships between other predisposing factors (e.g., age, rank, years of service, number of/location of deployments) and perceived need for help seeking in U.S. Navy personnel. In this study, the relationships between the following predisposing factors and perceived need for help seeking were assessed: marital status, gender, and risk criteria for a mental disorder. There are many other potentially useful variables included in the PDHRA form that could be used to compare differences in perceived need for help between military and civilian populations. For example, some civilian studies have found that income (perhaps comparable to rank), age, and ethnicity are related to help seeking (e.g., Kessler et al., 1997; Shapiro et al., 1984). With some potential differences in predisposing factors related to perceived need for help seeking (e.g., marital status) already seen between military and civilian samples, it seems reasonable to continue to assess other factors that could also differ in how they influence individuals' perceived need to seek help.

A final possibility for future research could involve assessing whether military personnel's perceived need for help (as indicated on PDHRA form) was predictive of future help seeking behavior. Our current study assessed perceived need to seek help in post-deployed U.S. Navy personnel, but we did not follow up with medical records to confirm actual help seeking behaviors. In a study of post-deployed U.S. Army and

Marine Corps personnel, Hoge and colleagues (2006) accessed military personnel's medical records to assess actual help seeking behavior (i.e., medical/mental health appointments); however, these researchers did not have data on whether those personnel had perceived a need to seek help prior to engage in help seeking behaviors. A recent study of U.S. Army personnel, Milliken and colleagues (2007) came close to our suggested experiment when they used current mental health care status at time of PDHRA completion as well as clinician referrals for mental health as help seeking outcome variables. However, these researchers did not assess the predictive qualities of perceived need for help on actual help seeking nor did they measure actual help seeking behaviors (only referrals). Therefore, if a research study were designed that could link factors predisposing both a perceived need for help as well as actual help seeking behavior, then it is possible that we could better understand factors that promote help seeking and target factors that, perhaps, detract from help seeking in military personnel.

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Table 1

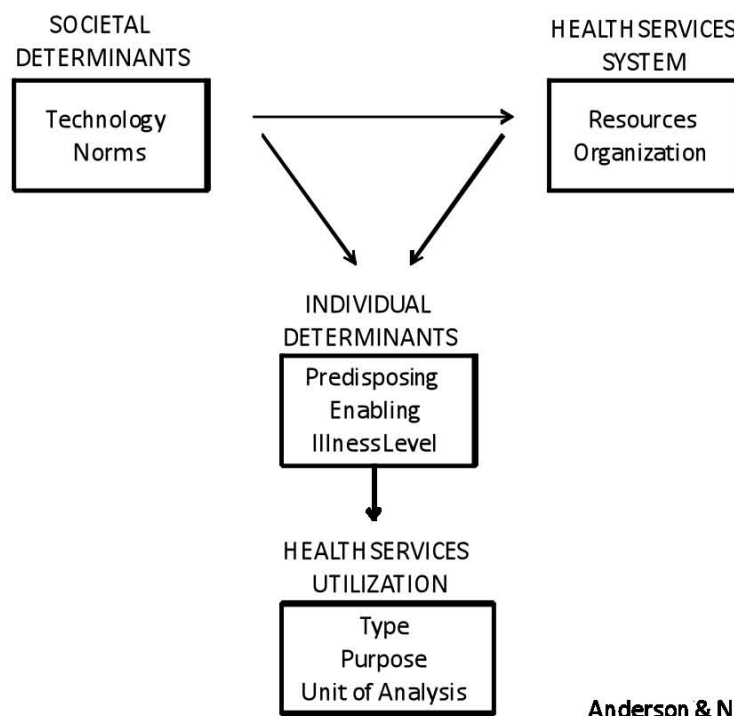
Frequency Distributions of Independent Variables Used in this Study

Characteristic	Number of Participants	Percentage of Sample
Gender		
Female	232	9%
Male	2384	91%
Marital Status		
Married	1549	59%
Not Married	1067	41%
Met Criteria for PTSD		
Yes	347	13%
No	2269	87%
Met Criteria for MDD		
Yes	196	7.5%
No	2420	92.5%

Table 2

Demographic and Illness Factors Related to Perceived Need for Help Seeking among U.S. Navy Personnel

Predisposing Factors	Type of Provider		Type of Problem	
	Health Care Provider <i>OR (95% CI)</i>	Chaplain/Counselor <i>OR (95% CI)</i>	Stress/Emotional <i>OR (95% CI)</i>	Family/Relationship <i>OR (95% CI)</i>
Demographic Factors				
Gender				
Female vs. Male	1.07 (0.73-1.60)	1.62 (0.70-3.90)	1.34 (0.82-2.20)	1.54 (0.85-2.80)
Marital Status				
Married vs. Not Married	1.20 (0.95-1.52)	1.32 (0.71-2.50)	0.81 (0.60-1.12)	1.56 (1.04-2.40)*
Illness Factors				
Risk for PTSD				
Met vs. Not Met	3.48 (2.62-4.64)***	0.71 (0.26-1.90)	7.95 (5.66-11.20)***	5.67 (3.70-8.80)***
Risk for MDD				
Met vs. Not Met	2.32 (1.62-3.31)***	2.20 (0.81-5.90)	3.76 (2.54-5.60)***	2.68 (1.65-4.37)***

Figure 1.

Anderson & Newman, 1973