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Evaluation of Post-Deployment PTSD Screening of Marines Returning From a Combat Deployment

Erika L. Hall
Walden University

Walden University

College of Social and Behavioral Sciences

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Erika Hall

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Review Committee
Dr. Kristen Beyer, Committee Chairperson, Psychology Faculty
Dr. Reba Glidewell, Committee Member, Psychology Faculty
Dr. Marlon Sukal, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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MS, Walden University, 2011

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The purpose of this quantitative study was to examine whether the post-deployment screening instrument currently utilized to assess active-duty Marines for symptoms of PTSD upon their return from a combat deployment can be solely relied upon to accurately assess for PTSD. Additionally, this study sought to compare the number of Marines who have sought trauma-related mental health treatment based on their answers on the Post-Deployment Health Assessment (PDHA) to the number who have sought trauma-related mental health treatment based on their answers on their PTSD Checklist – Military Version (PCL-M). The participants in this study were comprised of a sample of active-duty Marines that had recently returned from a combat deployment. A quantitative secondary data analysis used Item Response Theory (IRT) to examine the answers provided by the participants on both the PDHA and PCL-M. Both instruments proved to be effective when assessing symptoms of PTSD and the participants identified as having symptoms of PTSD were referred for mental health services as required. According to the results, more Marines were identified as having symptoms of PTSD using both assessment instruments (PDHA and PCL-M) compared to those identified using just the PDHA. The result was a better understanding of predictors of Marines who may later develop PTSD. The results of this study can also assist the Marine Corps with its post-deployment screening for symptoms of PTSD which in turn can provide appropriate mental health referrals for Marines if deemed appropriate.

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Chapter 1: Introduction to the Study

Introduction

There has been a worrisome increase in the diagnosis of post-traumatic stress disorder (PTSD) in active-duty military members as well as veterans over the past decade due to the wars in Iraq (Operation Iraqi Freedom [OIF] and Operation New Dawn [OND]) and Afghanistan (Operation Enduring Freedom [OEF]; Shiner, 2011). The number of diagnoses of PTSD for the active duty United States military forces rose from approximately 170 diagnoses out of 100,000 people in 2000 to approximately 1,110 diagnoses out of 100,000 people in the year 2011 and an increase of approximately 650% over 11 years. The rate of diagnosis of PTSD in the veteran population who used Veterans Affairs (VA) services rose from 0.2% in 2001 to 21.8% in 2008 (Blakely & Jansen, 2013).

Even though the rate of diagnoses of PTSD has been escalating in recent years, researchers have not explored whether the revised Department of Defense's (DoD) DDForm 2796 – Post-Deployment Health Assessment (PDHA) should be solely relied upon in order to assess Marines for PTSD symptoms and/or risk factors within 30 days of return from a combat deployment (Shiner, 2011). The PDHA is the current assessment method that is used to screen for PTSD in active-duty Marines. In this study I reviewed the diagnosis of PTSD, the effects of combat and war stressors on active-duty and veteran military members, the definition of PTSD and its etiology, PTSD screening methods, and the Marine Corps culture.

This chapter summarizes the background of the wars that have highlighted PTSD in the military and how the frequency of the diagnoses has grown due to the ongoing wars in Iraq and Afghanistan. It also reviews the Marine Corps culture and how that culture relates to the assessment of symptoms of PTSD in active-duty Marines. Item Response Theory (IRT), the theoretical construct used in this study, is outlined, a statement of the research problem is given, and the purpose of the study is explained. Five research questions are proposed and directional hypotheses for each question is delineated. Definitions of common military terms are provided, the significance of the study is presented, and the assumptions and limitations are stated. This chapter concludes with a summary and an introduction to Chapter 2.

Background

United States Marines have been experiencing high levels of exposure to combat due to OIF, OEF, and OND; (Fissette et al., 2013). An epidemic of mental health issues is developing amongst the Marines who have been involved in these wars. However, mental health issues are not a new area of concern for the United States military; the topic has been an area of discussion since the 1800s during the American Civil War (Bentley, 2005). During World War I (WWI), DoD mandated mental health screenings to help prevent psychologically vulnerable personnel from enlisting out of concern for the mental health of the troops (Seal, Bertenthal, Maguen, Gima, Chu, & Marmar, 2008). Jones (2013) estimated that about 37.5% of American troops who saw combat during World War II (WWII) were mandated to be permanently discharged from the military due to psychological symptoms. In the Vietnam and Gulf Wars, combat exposure was strongly

correlated with mental health issues and substance abuse disorders. Subsequently, due to the growing rate of mental health issues amongst military personnel returning from the Vietnam and Gulf Wars, screening for mental health issues are now conducted before and after a combat deployment (Miller et al., 2013; Seal et al., 2008). However, this screening does not seem to have decreased the prevalence of psychological causalities in the military due to combat exposure (Seal et al., 2008).

PTSD was not a term that was utilized to describe the emotions that troops felt due to a combat experience until 1980. Throughout the wars that took place between the 1800's and those prior to 1980, some of the terms that were commonly used to describe the psychological symptoms of troops included "*shell shock*", "*combat fatigue*", "*soldier's heart*", and "*operational exhaustion*" (Bentley, 2005; Jones, 2013; Parrish, 2008). Prior to 1980, most combat veterans who had symptoms of what is now called PTSD were diagnosed with "*shell shock*", "*combat fatigue*", etc., and these conditions did not warrant long-term treatment (Parrish, 2008). Some combat veterans with symptoms of PTSD prior to 1980 were diagnosed with "bad nerves"; they did not rate long-term treatment and were provoked by the military to have a "*get over it*" attitude (Parrish, 2008). Additionally, since PTSD was not recognized by the U.S. Government or the American Psychiatric Association (APA) prior to 1980, those who suffered from the symptoms of PTSD were not eligible for long-term treatment or compensation from the military (Jones, 2013). PTSD was recognized as a disorder by the APA in 1980 and the escalating need for mental health services to be available and provided to combat veterans was identified (Jones, 2013).

Prevalence of PTSD

PTSD is the most prevalent mental health diagnosis amongst military members returning from a combat deployment (Fissette et al., 2013). PTSD became a common occurrence amongst those military members who served in the Vietnam War and has continued to be a growing concern due to the wars in Iraq and Afghanistan. Due to this growing issue, PTSD has become a subject that the military is compelled to address. The diagnoses rates of PTSD in active duty Marine Corps personnel in 2010 were 9.7 per 1,000 Marines compared to 3.7 per 1,000 Navy personnel, 14.3 per 1,000 Army Soldiers, and 3.4 per 1,000 Air Force service members (Blakely & Jansen, 2013).

Combat experiences have been proven to increase a service member's risk of acquiring symptoms of PTSD (Gates et al., 2012). After a combat deployment to Iraq and Afghanistan, one study found that approximately 10 - 18% of active duty service members had symptoms of PTSD (Blakely & Jansen, 2013). Researchers believe the stress and strain pertaining to and incurred during a combat deployment is a cause of a higher prevalence of mental health issues amongst active duty military members (Blakely & Jansen, 2013; Florey, 2010). In a survey conducted in 2009, the OEF Army Mental Health Advisory Team VI found that service members who were on their third and fourth combat deployments reported higher use of medication for psychological issues, experienced more stress, and suffered more psychological problems than service members on their first deployment (Florey, 2010). The Office of the U.S. Army Surgeon General established the Mental Health Advisory Team VI to assess the behavioral health

of Soldiers and to study the delivery of mental health care in OIF from 2008-2009 (Office of the Surgeon General, 2009).

Mental health issues in Marines have an effect on the Marine themselves as well as their families. Marines experiencing the symptoms of PTSD can feel estranged from their families and friends because they believe that they can better relate to other Marines who have had similar traumatic battle experiences. Mental health issues in Marines will also impact the Marine Corps service as a whole. The symptoms of PTSD affect Marines functional ability in a wartime environment for several reasons such as slowed reaction time and dulled senses in consequence of medication(s), impulsivity, flashbacks, etc. This not only poses a danger to themselves, but also to their fellow Marines which can result in reduced unit operational effectiveness. The expenditures for mental health care treatment for the DoD has increased since the wars in Iraq and Afghanistan began. This is due to the number of active duty service members who have sought mental health treatment due to diagnoses of PTSD and other mental health issues when returning from combat (Blakeley & Jansen, 2013).

Marine Corps Culture

The Marine Corps has a unique culture. Each Marine is expected to uphold and maintain the Service's Corps values, which are honor, courage, and commitment (Cooling & Turner, 2010). The Marine Corps is known for operating on limited funds and scarce resources; however, Marines are expected to always accomplish their assigned mission (Cooling & Turner, 2010). The Marine Corps culture is one that expects Marines to be strong-willed, disciplined, and committed to its overall mission. These expectations

can make it difficult for Marines to seek help if they are experiencing symptoms of PTSD. Marines are constantly prepared to go into combat by preparing their minds and maintaining healthy bodies, which allows them to react to dangerous and stressful events while remaining emotionally detached (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2008).

Marines require the ability to effectively address symptoms of PTSD once they return to a peacetime environment, which has been proven difficult (Florey, 2010). PTSD symptoms can affect a Marine's ability to perform the everyday responsibilities (as previously discussed) associated with being a Marine. In my 12 years of experience being in the Marine Corps (seven years active duty and five years in the Inactive Ready Reserve), I have personally witnessed several situations in which Marines have been extracted or dismissed from combat training exercises because of the negative reactions they incur due to their PTSD symptoms. A successful approach to reduce and prevent combat-related symptoms of PTSD is necessary for a Marine in order to effectively reintegrate into a typical daily life routine that is expected out of an active-duty Marine.

Some Marines do not actively seek treatment for PTSD due to the negative stigma they believe that exists regarding mental health treatment. Many Marines think that medications, with their many side effects, would possibly interfere with their ability to effectively accomplish their job duties. Most Marines also believe they would be negatively stereotyped by the public if they ask for help for symptoms of PTSD. Marines who are in leadership positions in the Marine Corps serve as role models to their subordinates and fellow Marines; therefore, Marines tend to not want their leaders to

think that they are weak or incompetent, which is what their personal perception is if they report their own symptoms of PTSD to health care professionals. In a study conducted by Zinzow et al. (2013), more than half of the active-duty military personnel that were utilized in the study who were veterans of OEF and/or OIF, had cited that they did not seek treatment for PTSD due to concerns about harming their careers. One of these reasons, a combination of these reasons, or other adverse stigma that is believed by Marines appears to be barriers to requesting treatment for mental health issues. Therefore, the Marine Corps needs an effective method of accurately assessing for PTSD symptoms to overcome these barriers and efficiently diagnose symptoms of PTSD (Miller et al., 2013).

Screening

There are many screening methods that are currently available for use in order to assess symptoms of PTSD. Individual assessment of the item properties that are on these assessments are important to conclude which items would be most efficient when screening Marines to properly identify PTSD symptoms (Bliese, Wright, Adler, Cabrera, Castro, & Hoge, 2008). The need for early identification of symptoms of PTSD in Marines returning from a combat deployment will ensure that health care providers are referring Marines to the appropriate psychiatric and psychological care that they may require. A screen that is easy to administer, valid, and cost-effective is desirable because of the environment and culture of the Marine Corps.

The PDHA was designed to help identify mental health issues and health concerns that a Marine may be experiencing upon his/her return from a combat deployment. Upon

return from a deployment, a Marine is mandated by the DoD to take the PDHA within the first 30 day time period upon his/her return. Early identification of a Marine suffering from mental health problems is vital to ensuring that the Marine will receive the treatment that he/she requires after returning from a recent deployment. Early detection of psychological distress could possibly prevent the Marine from going through more complicated issues later on in life. Upon the PDHA's first year of being utilized by the military in 2003, 9.8% of Marines and Army Soldiers who returned from an Iraq deployment screened positive for PTSD symptoms and 4.7% of Marines and Army Soldiers who returned from an Afghanistan deployment screened positive for PTSD symptoms (Gates, Holowka, Vasterling, Keane, Marx, & Rosen, 2012).

The PDHA is a questionnaire which is administered either by paper or electronically. It has questions pertaining to a Marine's overall well-being, exposure to combat events during deployment, demographics, and mental health concerns. There is one portion of the PDHA that is intended to assess symptoms of PTSD that is modeled after the Primary Care PTSD Screen (PC-PTSD) which consists of four items with yes-no response options (Gates et al., 2012). Once the PDHA is completed by the Marine, it is reviewed by a health care provider and any concerns are noted. However, no systematic grading system is outlined for those health care providers who review the PC-PTSD portion of the PDHA. It is up to the provider's judgment when assessing the PC-PTSD on the PDHA in determining whether a Marine will be further assessed for symptoms of PTSD (Johnston & Dipp, 2009). After the completion and review of the initial assessment, a face-to-face interview is then conducted between the Marine and a health

care provider to review the responses on the PDHA. Depending on the results of the interview, a Marine can be referred for mental health treatment based upon the provider's observations during the interview (Wright, Adler, Bliese, & Eckford, 2008)

The PTSD Checklist (PCL) is a self-report scale utilized to assess the 17 symptoms of PTSD described in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), that the respondent may have experienced over the past month (Bliese et al., 2008). There are three versions of the PCL that are designed to be utilized with specific populations; the PTSD Checklist – Military Version (PCL-M) is intended to be used with the military population, the PTSD Checklist – Civilian Version (PCL-C) is to be used with the general civilian population for assessing past stressful experiences, and the PTSD Checklist – Civilian Version (PCL-S) is used with the civilian population to address all stressful experiences (Cigrang et al., 2011). Depending on which population is being assessed in a study, cutoff scores for the PCL vary, which is a cause of confusion for providers as to which cutoff score would be the most suitable when assessing the active-duty military population (Bliese et al., 2008).

Statement of the Problem

PTSD is increasingly becoming a significant issue in the Marine Corps and the other military branches due to the recent OIF, OND, and OEF missions (Fissette et al., 2013). Since PTSD has become a concern for the Marine Corps over the past decade, the necessity for post-deployment screening has been identified. What has not been addressed is whether the post-deployment screening assessment utilized by the Marine Corps to assess for symptoms of PTSD upon Marines return from a combat deployment

should be solely relied upon. In order to begin to address the issue of PTSD in Marines returning from a deployment, it is important to examine the process that is used to assess these Marines during the first 30 days of their return. The existing research focuses on the assessment of the symptoms of PTSD utilizing the PCL-M in the military veteran population (Fissette et al., 2013; Hoge et al., 2008). There is very little research conducted in reference to assessing PTSD symptoms using the active-duty military population; out of the research that is available, it is largely U.S. Army Soldiers and U.S. Navy Sailors that were used as participants (Arbisi, Kehle-Forbes, Erbes, Polusny, Kaler, & Thuras, 2012; Bliese et al., 2008; Fissette et al., 2013). There is a current lack of research and understanding of the utility of the PDHA on the Marine Corps population, and more specifically the portion that is used to assess symptoms of PTSD.

Purpose of the Study

This study is quantitative in nature in order to research secondary data collected by health care providers. This study examined whether the post-deployment screening instrument currently utilized to assess active-duty Marines for symptoms of PTSD upon their return from a combat deployment can be solely relied upon to accurately assess for PTSD. For the purposes of this study, the population that was utilized was active-duty Marines which can also contain reserve Marines that have been called upon to fulfill a portion of active-duty time due to the needs of the Marine Corps. This study attempted to determine which items on the PDHA and PCL-M assessment instruments are the most efficient in accurately identifying the symptoms of PTSD. Additionally, this study sought to determine the number of Marines that have sought mental health treatment

related to trauma as a result of the answers provided on their PDHA, versus those who sought mental health treatment based upon their answers on their PCL-M. A quantitative analysis of the secondary data resulted in a better understanding of potential predictors for Marines who may later develop a diagnosis of PTSD.

Research Questions and Hypotheses

The following research questions and hypotheses have been derived from a review of the literature in the area of PTSD, PTSD screening methods, and of active-duty Marine Corps service members. There is a detailed discussion of the nature of the study in chapter 3.

Research Question #1. Is the Post-Deployment Health Assessment (PDHA) an effective stand-alone tool in assessing symptoms of Post-Traumatic Stress Disorder (PTSD) in active-duty Marines during the 30-day time period following their return from a combat deployment?

Directional Hypothesis #1. It is expected that the PDHA is not an effective stand-alone tool in assessing symptoms of Post-Traumatic Stress Disorder (PTSD) in active-duty Marines during the 30-day time period following their return from a combat deployment.

Research Question #2. What percentage of the Marines assessed were identified as having symptoms of Post-Traumatic Stress Disorder (PTSD) through the utilization of the Post Deployment Health Assessment (PDHA)?

Directional Hypothesis #2. It is expected that approximately 28% to 44% of Marines will positively endorse two or more items on the PDHA in relation to symptoms of PTSD.

Research Question #3. What percentage of the Marines assessed were referred for mental health services for symptoms related to trauma based upon the results of their PDHA?

Directional Hypothesis #3. It is expected that 4% of the Marines will positively endorse two or more items on the PDHA in relation to PTSD, and will then be referred for mental health services based upon the raw scores of their PDHA.

Research Question #4. What percentage of the Marines assessed were identified as having symptoms of PTSD through utilization of the PDHA and Post Traumatic Stress Assessment (PCL-M)?

Directional Hypothesis #4. It is expected that approximately 38% to 54% of the sample population will be identified as having symptoms of PTSD through the utilization of the PDHA and PCL-M.

Research Question #5. What percentage of Marines assessed were referred to mental health services based upon their responses on the PDHA and PCL-M?

Directional Hypothesis #5. It is expected that 6% of the Marines that are identified as having symptoms of PTSD, based upon their results of the PDHA and PCL-M, will be referred for mental health services.

Theoretical Construct

The theoretical framework for this study is the Item Response Theory (IRT) which is commonly known as a way to assess the equivalence of items included in tests across specific groups (Embretson & Diehl, 2000). Because this study looked at the answers to questions on the PDHA in addition to a supplementary assessment instrument (the PCL-M), the IRT was appropriate to use for this study as it is based on the theory that a person's traits will determine how they will answer specific questions or items (Embretson & Diehl, 2000). Use of the IRT when conducting this study helped to identify common factors in responses in order to provide insight into which active-duty Marines are likely to develop a diagnosis of PTSD. The findings of this study may then determine if it would be appropriate to modify the PDHA in order to more accurately measure the characteristics and traits of the Marine Corps population who may struggle with symptoms of PTSD.

Definitions of Theoretical Constructs

The term posttraumatic stress disorder is a psychiatric disorder which is caused by exposure to, or of a perceived threat of severe harm and death to oneself or others (American Psychological Association (APA, 2013). The experiences of being in a wartime environment in which Marines are involved increase the risk of obtaining PTSD symptoms (Florey, 2010). PTSD is further discussed in Chapter 2 in order to describe the risk factors and potential consequences related to the disorder.

Definition of Terms

Active-duty is full-time employment of a military member in a branch of the United States military (Bliese, Wright, Adler, Thomas, & Hoge, 2007).

Civilian population is the term referring to the residents of the United States that are not a part of the active-duty military population (Bliese et al., 2007).

Combat deployment is a military expedition during which service members receive hazardous duty pay in a combat-zone that is excluded from tax while being deployed to Afghanistan, Iraq, Kuwait, or Qatar (Larson, Highfill-McRoy, & Booth-Kewley, 2008).

Improvised Explosive Device (IED) is a homemade explosive device that is utilized to maim and kill; a common example of an IED is a roadside bomb (Cigrang et al., 2011).

Item Response Theory is a theory based on the premise that a person will answer questions in a particular way dependent upon the specific traits that they uniquely possess (King & King, 1994).

Hyper-arousal is an enhanced state of tension and is a common symptom of PTSD which may include: anger, insomnia, aggression, and irritability (Gates et al., 2012).

Hyper-vigilance is an amplified response in behavior, such as scanning for danger and/or rapid mood swings, so as to be able to identify perceived threats within the environment (Gates et al., 2012).

Military Occupational Specialty (MOS) is a coding system utilized by the Marine Corps and the United States Army to identify a specific occupation (Cooling & Turner, 2010).

Post-traumatic stress disorder (PTSD) is defined by the American Psychiatric Association (APA, 2013) as a psychiatric condition which is caused by exposure to or witnessing a traumatic event or situation that was life threatening or could cause serious injury to oneself or others.

Self-stigma is an unsympathetic belief that a person may think about themselves resulting in negative judgment toward oneself and may include the avoidance of certain activities (Mittal, Blevins, Corrigan, Drummond, Curran, & Sullivan, 2013).

War stressors are the experiences that a person encounters while in a wartime environment that instigates or increases their personal experiences of tension and stress (Gates et al., 2012).

Significance

This study attempted to contribute to the current body of literature conducted on PTSD; specifically, the PTSD assessment methods currently utilized by the Marine Corps. This study is also important because it attempted to understand the mental health status of an under-researched population.

The results of this study are intended to assist the Marine Corps with its post-deployment screening for symptoms of PTSD (Schnurr et al., 2010). Although the current psychological screens utilized by the Marine Corps can evaluate a variety of mental health concerns, assessing and properly identifying symptoms of PTSD is

important because of the reported high occurrence of a PTSD diagnosis in Marines who return from a combat deployment. Efficient and accurate assessment tools are critical in the early identification of Marines in need of mental health treatment for PTSD. The findings from this study may provide the health care professionals who screen Marines returning from deployment a method that effectively identifies symptoms of PTSD and results in an appropriate referral to mental health treatment if deemed appropriate.

It is important to have effective assessment methods in order to identify symptoms of PTSD in Marines. Due to advances in technology, the survival rate is high for those Marines who have served in combat deployments in Iraq and Afghanistan and survived those deployments (Cigrang et al., 2011). Due to the high survival rate of those Marines who have experienced trauma, the occurrence of the symptoms of PTSD and other mental health issues in Marines has become increasingly common (Cigrang et al., 2011). Having a comprehensive understanding of the psychological complexities involved in a diagnosis of PTSD is essential in being able to properly identify those who evidence symptoms of the disorder. In addition, understanding the culture of the Marine Corps is necessary when assessing its members for PTSD. Recognition of the distinctiveness of the Marine Corps, its history, goals, and traditions that are instilled within its members, will assist a health care provider in comprehending possible barriers to accurately identify symptoms of PTSD in this population. The unique mindset of Marines may also explain the low rate of follow-up related to PTSD diagnosis that has been common in past studies.

It has been proposed that there are distinct properties present in items of the PCL-M and the PDHA that hold more discriminate information than others (Lang & Stein, 2005). The Item Response Theory (IRT) proposes that the common traits and characteristics that Marines share will influence the ways in which they will answer an item on a test or assessment. Identifying which items on the PCL-M and the PDHA that are the most efficient when attempting to accurately assess symptoms of PTSD in Marines will help to ensure that the most effective assessment tools will be utilized by health care providers. This study added to the literature by ensuring that valid and reliable assessment tools for recognizing symptoms of PTSD are utilized by the physical or mental health care professionals working within the Marine Corps.

A review of the literature revealed that the DoD has recognized that Marines returning from a combat deployment need to be promptly assessed for mental health concerns (Bliese, Wright, Thomas, Adler, & Hoge, 2004; Seal et al., 2008). Because of this identified need, the PDHA was mandated to be given to Marines upon their first 30 days after returning from a combat deployment. The PDHA includes a four-item measure designed specifically for PTSD assessment modeled after the PC-PTSD (Primary Care-PTSD Screen). However, there is disagreement among military health care providers as to whether the PDHA should be solely relied upon to assess symptoms of PTSD (Wright et al., 2008). There is no consensus as to which assessment method is the most effective to be utilized with an active-duty military population, and different branches of the military utilize different assessment methods. There is very little research involving the active-duty Marine Corps population regarding the subject of PTSD and no

current research on the reliability of the PC-PTSD portion of the PDHA used to assess active-duty Marines (Bliese et al., 2008). Recent research on the PC-PTSD has proven that it is an effective assessment instrument when utilized on U.S. Army Soldiers returning from a deployment within six months; however, questions arose regarding its success in identifying symptoms of PTSD immediately upon a return from deployment (Bliese et al., 2008).

As military conflicts continue and more Marines return from combat deployments, the number of Marines evidencing symptoms of PTSD will likely continue to rise. Successful identification of the symptoms of PTSD is essential to ensuring that Marines receive the appropriate mental health treatment needed in order to reduce the possibility of later developing psychological issues that may be related to their experiences in combat (Sharkey & Rennix, 2011).

Assumptions and Limitations

It is assumed that the Marines who participated in this study who completed the additional assessment (PCL-M) in addition to the PDHA that they are mandated by the DoD to complete, was done so in a manner that will produce an unbiased study. Prior to taking the PCL-M, the Marines were instructed by a health care provider that it was not mandatory to take the additional assessment, that they were be requested to do so in order to help the medical team further screen for symptoms of PTSD. A health care provider was present during the test-taking to answer any questions the Marines may have had and if any assistance was necessary. It is also assumed that the participants in the study answered the questions honestly and to the best of their ability. Lastly, it is presumed

that both instruments (PDHA and the PCL-M) are appropriate measures for assessing the symptoms of PTSD.

Generalization of this study was limited as it focused on the experiences of the active-duty Marine population. No personally identifiable information (PII) was collected during this study by the researcher. Names, PII, and/or identifying characteristics of the participants were undisclosed to the researcher due to the confidential nature of the study.

This study was correlational in nature and it assessed a Marine Corps sample population in order to determine the occurrence of PTSD symptoms within its members. This study measured the items that are the more efficient from the two instruments used for PTSD assessment (PDHA and PCL-M). Internal validity is weaker for correlational designs than if an experimental design was utilized (Brannick, 2012). The PDHA and PCL-M are self-report surveys that are dependent on the participants answering the questionnaires truthfully and accurately. These surveys also rely on the participants' memories of experiences and their reactions to those experiences. Therefore, differences between participant reports of symptoms and difficulty describing their emotions and reactions may be related to extraneous variables, such as memory. There are limitations noted within retrospective studies such as difficulty with memory and self-stigmatization (Mittal et al., 2013). A Marine who has just returned from a combat deployment may not have had the time to recall memories of an incident, may not want to evoke those memories, or may deny any symptoms of PTSD he/she may be experiencing due to the Marine Corps culture and/or due to self-stigmatization (Florey, 2010).

Summary

The current literature has established the importance of the assessment of PTSD in military members who have served time in a combat deployment (Felker, Hawkins, Dobie, Gutierrez & McFall, 2008; Gates et al., 2012; Schnurr et al., 2010). Marines who fulfill their duty of defending their country are deserving of effective mental health screening that will facilitate the appropriate mental health care upon their immediate return home. The life of Marines is stressful and the potential psychological burden of memories of combat deployments may directly impact their ability to continue to function as active-duty military personnel (Bliese et al., 2008). The high prevalence rates of symptoms of PTSD for military members following their return from the OIF, OEF, and OND wars emphasize the necessity for psychological assessment screening instruments that will accurately assess PTSD symptoms (Bliese et al., 2008). It is important to utilize a screening instrument that is efficient and simple to administer with an active-duty Marine Corps population. This study sought to determine which PTSD assessment items are the most important to include on the PDHA.

Chapter 2 of this study will address a review of the existing literature and how new research is indicating the need for more accurate assessment instruments for assessing the existence of PTSD symptoms in a military population. The next chapter will also describe the utility of the Item-Response Theory (IRT), as the theoretical framework for this paper, and how this theory can be used to help identify which items on the PDHA and PCL-M are the most efficient to include on future PTSD assessment instruments. Chapter 2 will also explain that there are items on the PCL-M that have

more discriminate information than others (Lang & Stein, 2005). The next chapter will include a review of the current assessment method utilized with active-duty Marines as well as a description of an assessment method commonly used by the Veterans Administration (VA). The number of Marines and other service members returning from combat deployments with symptoms of PTSD has increased the public awareness of PTSD, subsequently creating the need for increased research in this area. Chapter 2 will also include a review of the literature and the research that is similar to this study, and how this information may impact future research.

Chapter 3 will describe the methodology of the study. It will review the research questions proposed in this chapter and describe methods that will be used in order to attempt to answer these questions. The chapter will include a description of the sample population, the method for obtaining participants, ethical considerations, procedures, measures, and data analysis.

Chapter 2: Literature Review

Introduction

This literature review establishes the need for continued research in order to better understand the process and reliability of assessing symptoms of PTSD in an active-duty Marine population during the 30 day time period following their return from a combat deployment. Little research has been done regarding the reliability of screening instruments utilized on the active-duty military population. PTSD screening of military members returning from a combat deployment can increase early detection rates of symptoms of PTSD and early intervention (Seal et al., 2008). A synthesis of the research on past studies that have screened for mental health issues, specifically PTSD, that may be a result of a combat deployment tend to utilize veterans who have served in support of OIF and OEF (which changed to Operation New Dawn (OND)). There is limited data available to detail the assessment of PTSD in the active-duty Marine population upon their initial return from a combat deployment. Screening for symptoms of PTSD can identify those at risk and assist in ensuring that active-duty military members can receive care for mental health concerns. Screening instruments are selected for use on military populations based on their past validity when used on civilian populations (Bliese et al., 2004). When these screening instruments are utilized on military members, the screening and scoring methods utilized by health care providers are often those that were applied to the civilian population. These methods may not be the most effective way to screen and score the assessment when examining the military population (Bliese et al., 2004).

Scoring methods used by health care providers when assessing a population may be most effective when adapted for that specific population.

The theoretical framework for this study is the Item Response Theory (IRT), which is utilized to assess the equivalence of items included in tests across specific groups. IRT is a long-standing theory that many researchers have utilized to examine an item or item characteristics and traits of a specific population (Embretson & Diehl, 2000). Because this study looked at the answers to questions on the PDHA, in addition to the responses given on the PCL-M, the IRT was appropriate to use as it is based on the theory that a person's traits will determine how they will answer specific questions or items. Those participants that have higher trait scores will have a greater probability of answering a test question in a specific way according to the item characteristic function (Hambleton, 1982).

Research in the area of item characteristics in relation to assessment instruments used to assess PTSD is evident in more recent peer-reviewed journals as well as older psychological articles. The extensive search of literature for this study was conducted through electronic psychology and military databases such as PsycINFO, PsycARTICLES, Military and Government Collection, PsycTESTS, and PsycEXTRA available through the Walden University library database as well as research on PTSD conducted by the DoD. The list of search terms utilized to conduct the literature search used singularly and also in different combinations included PTSD, PDHA, PCL, military, IRT, and mental health in the military.

This chapter will discuss how symptoms of trauma psychologically affect Marines and how proper early identification of symptoms of PTSD in Marines returning from a combat deployment is essential for them to receive proper mental health care. It will also provide a broad overview of the culture and background of the Marine Corps in order for the general reader to be able to better understand the common experiences of an active-duty Marine. A review of the most common barriers to mental health care that many Marines cite will also be identified. It will also review the symptoms of PTSD, discuss the current methods utilized by the Marine Corps in assessing PTSD, and methods used by other branches of the military and the civilian population in the assessment of symptoms of PTSD. This chapter will include a review of the literature and past studies that have been conducted on different assessment methods that have been utilized on the veteran population as well as various active-duty military populations.

Post-Traumatic Stress Disorder

Post-Traumatic Stress Disorder (PTSD) is defined by the American Psychiatric Association (APA) as a psychiatric condition which is caused by exposure to or witnessing a traumatic event or situation that was life threatening or could cause serious injury to oneself or others. According to the DSM-5, the diagnostic criterion for PTSD states that a person must meet specific symptoms and stipulations in each category which are: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity (APA, 2013, p. 467-468). Two highly vulnerable and at-risk groups for acquiring PTSD are active-duty military members and veterans. War stressors have been identified to increase the risk of incurring symptoms of PTSD. The risk

factors for developing combat-related symptoms of PTSD are grouped into three primary categories which are: individual factors (age, education, intelligence, race, previous trauma exposure, psychiatric history, gender, and socioeconomic status), the severity and type of the trauma(s), and environmental factors (life stress after experiencing a traumatic event and social support; Gates et al., 2012).

One can experience many different symptoms of PTSD as a result of experiencing or witnessing a traumatic event. Some of these symptoms include: helplessness, horror, sleep difficulties, intrusive thoughts, anger, avoidance, hyper-vigilance, and fear. The traumatic event can be re-experienced on numerous occasions through remembrances of the event which can come in the form of realistic re-occurring dreams, flashbacks of the event, and psychological distress due to exposure to stimuli associated with the traumatic event (Gates et al., 2012). Conditioned stimuli (e.g., crowds or memories) and conditioned responses (e.g., anxiety or avoidance) can be false alarms for those suffering from symptoms of PTSD and may cause a person to respond in a specific way (fight, flight, or freeze) (Cigrang et al., 2011). PTSD symptoms affect a person's everyday life because they tend to avoid places and people that may remind them of the traumatic occurrence, become detached from people involved in their lives, and can be irritable or angry (Florey, 2010).

Combat experiences place military members in a high-risk category for developing a diagnosis of PTSD (Zinzow et al., 2013). These combat experiences can include: being attacked or ambushed, seeing human remains, firing their weapon, killing the enemy, and knowing someone that was seriously injured or killed. Improvised

Explosive Devices (IED's) and Motor Vehicle Improvised Explosive Devices (MVIED's) have become increasingly common experience for service members in a combat environment which often causes death or injury. Survival rates for active-duty military members who serve on deployments in support of OIF and/or OEF is currently at 90%; this survival rate is the highest in history. Those who do survive often can have severe or mutilating injuries or be a witness to these injuries which in turn is one of the most common risk factors related to developing symptoms of PTSD (Cigrang et al., 2011).

PTSD not only affects the people experiencing it, but also others involved in their life. Those who may have PTSD symptoms can emotionally and physically isolate themselves from family and friends. They tend to feel more comfortable speaking and interacting with those who have experienced similar combat-related situations versus key people in their lives that have not had comparable encounters. Other issues that may arise as for a person living with someone diagnosed with PTSD include interpersonal violence, substance abuse issues, marital problems, and parenting problems (Florey, 2010; Zinzow et al., 2013).

PTSD also substantially affects society due to the economic costs that are associated with the illness. Gates et al. (2012) estimated that up to 6.2 billion dollars could be spent in relation to mental health care of those military members returning from war. The economic cost of PTSD is significant, but it is nothing compared to the long-term individual and societal costs that are incurred by those suffering from the disorder. For those who have been diagnosed with PTSD, it is common for work attendance to be

reduced. This not only affects the employee(s), but also has a negative effect on the overall efficiency of the company. Work was rated as the third most important part of a person's life that has PTSD; therefore, decreased work participation causes the person to lose the social support provided by their work environment. Additionally, a person diagnosed with PTSD may feel that their work is not important, potentially resulting in absenteeism and lost income. Lost income negatively impacts other areas associated with quality of life (e.g., financial hardships or loss of credit) (Lagerveld, Blonk, Brenninkmeijer, Wijngaards, & Schaufeli, 2012).

History of PTSD in American Wars

The symptoms that troops display as a result of an experience in combat that coincide with post-traumatic stress disorder (PTSD) is not a new concept. However, the term PTSD is a relatively new label for the psychological state of those troops involved in warfare (Jones, 2013). It has been determined that Swiss military physicians devised the term "*nostalgia*" in 1678 for the feelings and reactions that their troops described after combat (Bentley, 2005). Nostalgia was used to describe a condition that included symptoms such as appetite loss, anxiety, disturbed sleep, homesickness, and stupor (Bentley, 2005). Then starting in the early 1800's and continuing until the mid-1800s, exhaustion was what military doctors began diagnosing their troops with after they endured the stress of battle (Parrish, 2008). Exhaustion was used to describe those troops that underwent a mental shutdown in consequence of trauma endured (Parrish, 2008). Military physicians commonly diagnosed cases of psychological breakdown during the first few years of the American Civil War that started in 1861. Many of those diagnosed

troops were placed on trains to go home without supervision or left to wander around the countryside and died of exposure (Bentley, 2008). Due to the amount of troops that were left to roam the American lands, the public became aware of the extent that psychological trauma affected the troops which led to the first military hospital for the insane to be established in 1863 (Bentley, 2008).

During the 1900's, the troops endured brutalities during the wars which was at fault for creating great numbers of psychologically wounded troops (Bentley, 2005). "*Shell shock*" and "*soldier's heart*" became common terms during WWI that were used to describe the mental fatigue that the troops expressed (Parrish, 2008). As the end of WWI was nearing, psychiatrists were beginning to see that the psychiatric casualties developing as a result of troops in combat were not suffering from "*shell shock*", but emotional damage that caused a vast array of symptoms in the troops (Bentley, 2005). After four years into WWII which started in 1939, approximately 800,000 American troops saw combat and out of those 800,000, 37.5 percent suffered such de-habilitating psychological symptoms that they were forced to be permanently discharged from the military (Jones, 2013). At that time, the military adopted the terminology "*battle fatigue*" and "*combat exhaustion*" to describe the stress reactions that troops underwent during wartime (Jones, 2013).

By the time the Korean War began in 1950, the perceived seriousness of combat stress was diminished by humanity (Jones, 2013). However, the chances of being a psychiatric casualty as a result of serving in combat in the Korean War was 143 percent greater than the prospect of being killed (Bentley, 2005). Next came the Vietnam War in

which the fighting proved to be more intense than those experienced during any other American conflict up to that point (Jones, 2013). Out of the 2.8 million who served in the Vietnam War, it was estimated that 480,000 suffered from severe "*operational exhaustion*" and another 350,000 suffered from mild "operational exhaustion" (Bentley, 2005).

It was not until 1980 that the American Psychiatric Association first used the term PTSD and included it in the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition (DSM-3) under the anxiety disorder category (Jones, 2013). The fourth version of the DSM was released in 1994 and the term PTSD still was in the anxiety disorder category, but was then placed under the sub-category of stress response (Parrish, 2008). Up until the fourth version of the DSM (with a small number of exceptions), those veterans who experienced combat were diagnosed with "*shell shock*" and "*operational exhaustion*" which did not provide to them the long term psychological treatment that they required (Parrish, 2008). In the most current version of the DSM (DSM-5) released in 2013, PTSD was moved from the anxiety disorders category to a new category labeled as trauma and stressor related disorders (APA, 2013).

With PTSD being recognized as a psychological issue requiring treatment, it has been estimated by researchers that about 2.5 million troops (or about 30 percent) who have deployed in support the current wars in Iraq and Afghanistan suffer from PTSD (Jones, 2013). Even though the name for PTSD have changed and evolved over the years, PTSD and symptoms of PTSD has been documented for ages in attempt to explain the human behavior and reactions to trauma and stress (Bentley, 2005).

Combat Deployments

There has been an increase in the diagnosis of PTSD over the past decade in active-duty military members due to the wars in Iraq (OIF and OND) and Afghanistan (OEF; Shiner, 2011). The first presence of troops in Iraq to support OIF occurred in March 2003. This was a direct result of the claims by the governments of the United States (U.S.) and the United Kingdom that Iraq was in possession of weapons of mass destruction. Since the terrorist attacks that occurred on U.S. soil on September 11, 2001, U.S. military personnel were called upon to support OEF in Afghanistan, which began approximately in October 2001, with aerial bombings specifically targeting locations known to harbor al-Qaeda and Taliban Forces. As of September 1, 2010, the OEF campaign officially ended and was renamed as OND to signify the reduced role that troops will play in attempt to secure the country of Iraq (Kornfield, Klaus, McKay, Helstrom, & Oslin, 2012). As of September 2013, over two million American service members have served in support of OEF, OND, and OIF since the tragedy of the terrorist attacks that occurred on September 11, 2001 (Fissette et al., 2013).

The need for service members to deploy, and the amount of service members who have deployed to combat theaters, has raised the awareness of mental health issues that are evident in the military. The environments that military members are exposed to while in support of these wars are stressful and require psychological resilience on the behalf of the service member (Florey, 2010). It has been corroborated by many studies that deployment experiences, especially those that are combat-related, have an adverse effect on mental health (Bliese et al., 2004; Hoge et al., 2008; Johnston & Dipp, 2009; Schnurr

et al., 2010). There is evidence to support that serving on a combat deployment in Iraq (OIF) is associated with high rates of mental health services being utilized by military members (Wright et al., 2008). Hoge et al. (2004) discovered that between 11% and 19% of service members who have returned from a combat deployment in Iraq or Afghanistan reported experiencing mental health issues. In a different study, conducted by Wright et al. (2008) four years after the study done by Hoge et al. (2004), found that during post deployment screening, approximately 20% of active-duty military members needed mental health treatment and approximately 42% of reserve military members required mental health treatment. These two studies helped to show evidence that symptoms of PTSD in active-duty and reserve service members are rising.

PTSD has been labeled as the signature injury of the OIF, OEF, and OND wars as it is the number one reported mental health outcome that is most commonly associated with these combat deployments (Florey, 2010). Public recognition of PTSD has also increased, which has resulted in a significant increase in PTSD research studies (Schnurr et al., 2010). In a recent study conducted by Fissette et al. (2013), out of those veterans who sought help after taking part in a combat deployment to Iraq and/or Afghanistan, approximately 37% received some form of a mental health diagnosis; out of that 37%, approximately 22% were diagnosed with PTSD.

Marine Corps Background and Culture

Meilinger (2007) describes the Marine Corps culture as, "socially transmitted behavior patterns, beliefs, and institutions that shape a community or population, " (p. 80) that "influences the way a people fight, affecting not only goals and strategies but also

methods, technologies, weapons, force structures, and even tactics" (p. 80). It was recognized by Lieutenant General Krulak that Americans value the Marine Corps not only due to its reliability of supplying dependable fighters during times of need, but also because it is able to transform the American youth into reliable and trustworthy citizens. The Marine Corps was founded on November 10, 1775 and two predominant factors have helped create its culture. The first factor is driven by its unique role as a naval expeditionary power force. The second factor is its necessity to remain relevant and honored (Cooling & Turner, 2010).

The Marine Corps is tasked with a range of military operations that has boasted a healthy competition amongst its members and those members of other U.S. military branches. They are a unique force because when called into action, they are capable of taking whatever means necessary to get to the required location (e.g., plane, boat, etc.) as well as utilize any equipment available in order to complete their mission. Fighting side-by-side with other branches of the U.S. military has helped the Marines take bits and pieces of other military cultures and integrate them into their own unique values and ethos. The Marine Corps is small in force and has fought on several occasions throughout its existence to survive due to budgetary constraints and scarce national defense resources. The Marine Corps has survived, but its budget and resources remain limited (Cooling & Turner, 2010).

Marines are always prepared to be called into combat, even during peace time; therefore they constantly train, maintain healthy bodies, educate, and ensure that their equipment is ready. Being weak-minded, or weak-bodied is not part of the Marine Corps

culture and Marines "police themselves," meaning Marines are quick to correct and/or adjust fellow Marines that may cause damage to their reputation and/or culture. The goal of the Marine Corps is to accomplish all missions assigned to them and this expectation for success in all missions is culturally instilled in the Marines beginning in basic training. Every Marine is considered a rifleman, regardless of what Military Occupational Specialty (MOS) he/she may have, and is expected to utilize weapons and fight in hand-to-hand combat efficiently. The Marines have the longest and most rigorous introductory training (12 weeks of recruit training and four weeks of Marine Combat Training) which helps to create the bond that is shared amongst its members. Even though the Marine Corps has the lowest budget out of the military services and subsequently has modest resources, they pride themselves in maintaining what they have. Thriftiness is a phrase in which a Marine is acutely aware of and this has a large impact on the overall Marine culture (Cooling & Turner, 2010).

Being in the Marine Corps means being a Marine and that title is held by a member for life. The psychological transformation that a person endures from a civilian to being a Marine is a lasting change. Most potential Marines are drawn to the Marine Corps because of its reputation of having the most difficult introductory training and the most stringent standards on military performance and expectations (Cooling & Turner, 2010). The Marine Corps culture is one that expects extraordinary results with failure not being an option.

Barriers to Care

The culture of the Marine Corps is one that may cause some Marines to not seek treatment for their mental health issues because of the negative stigma that surrounds the idea of mental health treatment for service members. Researchers have found that stigma is the most dominant barrier that service members have cited as to the reason they do not utilize the mental health services available to them (Zinzow et al., 2013; Hoge et al., 2004; Kelley, Britt, Adler, & Bliese, 2013). Many veterans who have completed their active-duty service who have recently returned from a combat deployment state that they will not seek out mental health treatment because of their concerns about stigmatization and the potential for being deemed unfit for duty (Mittal et al., 2013). .

A negative stigma that Marines have is that their leaders will look down upon them and treat them differently if they have a diagnosis of PTSD (Cigrang et. al., 2011). A past study that was conducted on military leaders from various military branches has shown that their judgments have an immense impact on their subordinates (Florey, 2010). Marines do not desire to look weak or incompetent to their leaders and they believe that if their leaders were aware that they had PTSD or symptoms of PTSD, they would be seen as ineffective which then could have a negative impact on their reputation and career in the military. "*Harm to career*" is another negative stigma in which active-duty military personnel commonly cited during a study conducted by Zinzow et al. (2013). Some of the key career concerns include: loss of security clearances, hindrance of advancement, treatment time needed, discharge from the military, and other team members having to complete work assignments (Zinzow et al., 2013). The stigma believed by service

members that their disclosure of mental health concerns (to include symptoms of PTSD) may negatively affect their career in the military also was an indication that they would not follow through with mental health referrals given by health care providers (Kelley et al., 2014).

Another stigma that Marines have cited as to why they choose not to seek treatment is that of the medication that may be prescribed to them. When a Marine is placed in a combat environment, it is his/her duty to remain alert and attentive to his/her environment and the situations that are occurring around him/her. Most medications that are prescribed for PTSD have side-effects that can impede a Marine's reaction time and abilities which would negatively impact their capability to effectively carry out their duties (Cigrang et al., 2011). This in turn can be a cause of harm not only for the Marine, but also their fellow Marines around them. Further, a stigma that Marines have regarding treatment of PTSD is the potential negative public stereotypes. The most common public stereotypes are that Marines are "crazy" or "violent" and that is it their fault that they have PTSD because they volunteered for the military; therefore, they were the ones who willingly put themselves in dangerous situations and then they have to deal with the repercussions of their military experiences. Lastly, self-stigma is a cause for hesitation on a Marine's part when seeking treatment for PTSD. Someone who believes the stereotypes that are associated with mental illness will experience self-stigma and will not seek the proper mental health that they may require. The stigma(s) that Marines have about seeking mental health treatment is a reason(s) for them to not request help and is a significant barrier to treatment (Mittal, et al., 2013).

Early Identification

Research on the post-deployment screening method for PTSD in active-duty Marines during the 30 day time period following their return from a combat deployment is needed in order to ensure symptoms of PTSD are being correctly identified so that effective support services can be provided in order for the service member to make a successful transition from combat to their previous role in active duty service and their personal life. A previous study showed that the onset of PTSD symptoms occurred shortly after a traumatic event was experienced (Arbisi et al., 2012). However, Sharkey and Rennix (2011) found that service members self-identified at least one mental health concern during re-assessment that occurs 3-6 months after the initial assessment versus at the initial post deployment assessment. This is a cause of concern to health care professionals as the early identification of symptoms of PTSD is imperative to successful treatment outcomes. For those military members who have PTSD symptoms and/or mental health concerns, early intervention has been proven to avoid chronic mental illness such as depression (Seal et al., 2008).

Screening For Symptoms of PTSD

There are currently several psychological instruments utilized for screening to assess a wide range of mental health concerns; however, the high prevalence rates of PTSD in those military members returning from combat has emphasized the need for a reliable and efficient assessment of symptoms of PTSD (Bliese et al., 2008). A screening instrument that is easy to administer, simple, valid, and cost-effective is preferred when assessing the military population for mental health concerns (Wright et al., 2007).

Independent assessment of the properties of the assessment tools is important when they will be utilized on military members because the scoring criterion that is established with assessments when used on the civilian population may not be applicable when assessing the military population. An additional reason why it is important to examine the properties of the instruments is because the assessments utilized with the civilian population tend to be lengthy and complex, which are not favorable factors when assessing the military population. When assessments are given to military members, they are often given in a group setting and the health care practitioners who are responsible for scoring the surveys may be scoring thousands of assessments in a short period of time (Bliese et al., 2004). Efficient screening tools are necessary when assessing military members as a high false positive rate is detrimental to the service member and costly and inconvenient for the providers that are giving the assessments (Wright et al., 2007). Therefore, the scoring guidelines and length of the assessment are important aspects to take into consideration when choosing an assessment instrument for use with a military population (Bliese et al., 2004).

There are conflicting theories in the literature regarding whether or not short instruments for screening would be most effective when utilized with the military population, or whether multiple-item assessments would be more efficient. Short screening methods have been viewed as a positive method for use with military populations as single-items selected from mental health assessments have shown promising results and are available to possibly provide an alternative for mental health practitioners to use in place of assessments that contain multiple-items. However, it is

unknown whether the use of a single-item assessment is sensitive enough to identify those who may require mental health assistance. In other studies, multiple-item assessments have been proven effective because having multiple questions on specific clinical dimensions provides more opportunities for symptoms to be assessed properly (Wright et al., 2008). However, it is not always feasible to administer lengthy screens to the military population due to restraints of time and cost (Bliese et al., 2004). A combination of select items from various screens into a potential new instrument has been found to be effective and does not necessarily require it to be lengthy in nature (Wright et al., 2007). Lang and Stein (2005) also discovered that combining shorter versions of symptom-based scales could provide a more accurate diagnosis and cost-effective screening method.

Post Deployment Health Assessment

The Department of Defense (DoD) identified the need for military members to receive a timely and effective identification and subsequent diagnosis of mental health concerns stemming from exposure to combat situations. Prompt screening following a deployment provides the opportunity for a military member to self-identify their need for mental health services due to their experiences in a combat environment. In April 2003, DoD instituted a Deployment Health Program which included the Post Deployment Health Assessment (PDHA, DD2796, Sep 2012) and the Post Deployment Health Reassessment (PDHRA, DD2900, Sep 2012). The PDHA is a questionnaire, completed either by paper or electronically, that includes questions on demographics, environmental and/or chemical/biological exposures, mental health measures in relation to the

deployment, and overall well-being. Once the service member completes the questionnaire, a health care provider reviews it and notes any indicated concerns in a section included at the end of the PDHA. A face-to-face interview is then completed with the service member by a health care provider to discuss their responses on the PDHA (Sharkey & Rennix, 2011).

Depending on the results of the face-to-face interview, military members can then be referred for behavioral health consultation and/or treatment (Florey, 2010). The personal interview portion is an important step in the PDHA process as this is when the health care provider identifies who is in need of follow-up mental health care (Wright et al., 2008). The health care provider also is the first person with whom the service member has the opportunity to discuss their mental health concerns. This interview can ultimately affect the military member's decision whether or not to seek mental health treatment and also provides the military member an opportunity to ask any questions they may have. Finally, as evidenced by the results of the study conducted by Bliese et al. (2007), the health care provider conducting the interview can refer a service member for a consultation or treatment for symptoms of PTSD, even if the service member did not screen positive for PTSD in the written assessment, based on the provider's perceptions gathered during the interview.

The PDHA is required to be given to the military member within the first 30 day time period following their return from a combat deployment (common practice) or it can be given in theater to the service member while they are preparing to return from their deployment (less common). The PDHA was created to identify mental health issues

connected to deployments and to provide an open forum to be able to discuss deployment-related mental health and physical health concerns with trained medical and mental health providers (Sharkey & Rennix, 2011). The PDHA's goal is to promote the need for treatment and early identification of mental health concerns (Prins, Ouimette, & Kimerling, 2003). The PDHA can also be used to identify those who may be experiencing a difficult time reintegrating back into their professional and personal lives upon their return from deployment. The reintegration period has been identified as a significant transition for the service member from combat to garrison (Bliese et al., 2008). For the PDHA to be a successful screening instrument to assess mental health concerns, the survey has to be sensitive enough that those military members who are experiencing symptoms will be identified, but the screen also has to be specific enough to be able to identify false-positives.

Upon the first year that DoD mandated the PDHA be given to military personnel returning from a combat deployment, 9.8% of Marines and Army Soldiers returning from a deployment in Iraq screened positive for PTSD symptoms and 4.7% of Marines and Soldiers returning from a deployment in Afghanistan screened positive for PTSD symptoms (Gates et al., 2012). In 2009, a study with 196 participants concluded that 22% of active-duty service members who returned from Iraq and Afghanistan received a diagnosis of PTSD (Fissette et al., 2013). Due to the increasing rate of the diagnosis of PTSD, the DoD revised the PDHA in September 2012 in an attempt to focus on symptoms of PTSD (Johnston & Dipp, 2009).

Primary Care-PTSD Screen

There is one portion of the PDHA that is designed to assess symptoms of PTSD which was modeled after the Primary Care PTSD Screen (PC-PTSD, 2003). The PC-PTSD contains four items with yes-no response options that are used to assess symptoms of PTSD which are: numbing, re-experiencing, avoidance, and hyper-arousal (Gates et al., 2012). The PC-PTSD has good diagnostic efficiency when used in primary care settings, yielding a sensitivity of .91 and specificity of .72 with a cutoff score of two yes responses and a sensitivity of .78 and specificity of .87 with a cutoff score of three. An instrument utilized for testing is generally considered acceptable if sensitivity and specificity are .70 or above (Bliese et al., 2004). In most situations, the results of the PC-PTSD should be positive if someone answers yes to two items. A positive screen does not necessarily mean that a person has reached the diagnostic threshold to identify PTSD, but that they may have other trauma-related problems. The PC-PTSD has been proved to be a valid screening tool, was designed to be easily and quickly administered, and is currently utilized by the Department of Veterans Affairs (VA) as a stand-alone assessment to screen for PTSD symptoms in veterans (Prins et al., 2003).

No systematic grading system is in place for providers assessing the completed PC-PTSD portion of the PDHA. Past studies have shown that a "yes" answer to three items should be considered a positive screen, whereas other studies have stated that "yes" to two items is sufficient. It is essentially up to the health care provider to make their best clinical judgment when it comes to assessing the PC-PTSD on the PDHA for service members returning from a combat deployment (Johnston & Dipp, 2009).

Post-Traumatic Stress Disorder Checklist

The Posttraumatic Stress Disorder Checklist (PCL) was developed as a self-report scale for assessing the 17 diagnostic symptoms for PTSD that are outlined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) (APA, 2013, 467-468; Bliese et al., 2008). The PCL is the standard instrument used when screening the veteran population for symptoms of PTSD (Gates et al., 2012). The PCL has been proven to have excellent test-retest reliability over a 2-3 day time period and internal consistency is high (Cigrang et al., 2011). When utilized with traumatized populations, the PCL has also shown to have good psychometric properties (Bliese et al., 2008). A positive aspect for the PCL is that it is considered easy to administer and to score.

The PCL consists of 17-items that measure PTSD symptoms that the respondent may have experienced over the past month (Cigrang et al., 2011). The PCL is a self-report questionnaire that was originally created to screen for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) definition of PTSD symptoms and diagnosis (Arbisi et al., 2012). Cutoff scores for the PCL vary depending on the different populations and settings in which they are administered. In one validation study of the PCL, a cutoff score of 50 was used in a group of Vietnam Veterans who were seeking treatment for combat-related PTSD; however, in a study of women veteran participants, a cutoff score of 28 or 30 was used. The varying range of different cutoff scores that have been utilized with the veteran population makes it difficult to discern which cutoff score would be most appropriate to utilize in the active-duty military population (Bliese et al.,

2008). There are three versions of the PCL with small differences amongst each version. The PCL-M is the military version with the questions geared towards "a stressful military experience" (p. 2). The PCL-C is a general civilian version of the assessment and the questions are geared towards "a stressful experience from the past" (p. 2). And the PCL-S can be utilized to assess any traumatic event with the questions referring to "the stressful experience" (Fissette et al., 2013, p.2).

This study utilized the PCL-M assessment tool to assess its participants for symptoms of PTSD. The PCL-M is designed to assess the symptoms of PTSD a military member may be experiencing. Some of the questions asked are: "Repeated, disturbing dreams in a stressful military experience," "Avoiding activities or situations because they reminded you of a stressful military experience," and "Trouble falling or staying asleep?" These items are then measured utilizing a five-point Likert scale with 1 (*not at all*) and 5 (*extremely*) resulting in a total score from 17 to 85. The PCL-M has strong correlation with other measures that are used to measure PTSD symptoms such as the Mississippi PTSD scale and the MMPI-2 (Peterson, Luethcke, Borah, Borah, & Young-McCaughan, 2011).

When it comes to the clinical assessment and scoring of the PCL, any combination of positively screened items is assumed to have equal predictive utility for assessing PTSD. These items range from high-prevalence symptoms that are not necessarily specific to PTSD (e.g. irritability or trouble falling asleep) to low-prevalence symptoms that are specific to PTSD (e.g. re-experiencing a stressful military experience) (Prins et al., 2003). The cutoff score established by the provider could be reached by

rating the small impact on a great amount of low-level items that were endorsed on the PTSD latent construct or by rating the large impact on a low amount of high-level items endorsed on the PTSD latent construct. Because of the different ways in which scores can be assessed by the health care provider, the score obtained by using the 17 items on the PCL are unclear based on the individual interpretation of the provider administering the test (Fissette et al., 2013). When testing positive for PTSD using the PCL, the health care provider usually bases their determination of the cutoff score, on the DSM criteria, or a combination of both (Gates et al., 2012). When in a combat environment, those military members who are screened for symptoms of PTSD using the PCL who have a total score that is determined by the health care provider to be high, will be pulled from active operations and placed in a less-stressful environment or even evacuated from the area. When screening for symptoms of PTSD upon their return from a deployment, the provider may want to look for items that are more sensitive and less severe (Fissette et al., 2013).

Referrals

The early identification of PTSD symptoms with subsequent mental health interventions may lead to referrals so that the military member can receive the appropriate psychological services that may reduce the overall severity of the service member's symptoms. Referral rates are relatively low with the reasoning being unclear. In a study conducted by Hoge et al. (2004) with Army Soldiers, of those that screened positive for mental health concerns, approximately 2-12% received a referral for further evaluation. Of those referrals, it was not determined how many service members actually

followed through with the referral in order to receive mental health services (Hoge et al., 2004). In a study conducted by Sharkey and Rennix (2011), approximately 4% of military personnel that were given the PDHA upon their return from combat were given a mental health referral. Again, it was not acknowledged how many of those identified actually followed through with their referrals. Seal et al. (2008) conducted a study and it was identified that even when military personnel were given a mental health referral, they did not always follow through with the referral. This finding is consistent with other similar studies that looked at symptoms of PTSD in the military.

Item Response Theory

This section will provide an overview of the theoretical underpinnings of IRT and how it has been utilized in past studies when assessing item properties in relation to the symptoms of PTSD (Bliese et al., 2008; Fissette et al., 2008). Item properties within the PCL-M and PDHA are scored based on the assumption that each item has equal information; however, it is likely that distinct information will vary amongst these items (Bliese et al., 2008). A further look into the validity of each item in both scales is needed to determine the variation of the properties. This will allow the identification of the discriminating items to govern which items are the most efficient to include on the assessment instruments. In past research, Lang and Stein (2005) showed that a few items in the PCL contained more discriminate information than those in other items. Examining item properties is also helpful as response patterns can be identified which may reveal information that may not be discovered when looking at the scale as a whole (Lang & Stein, 2005).

The IRT is based on a series of item-characteristic curves that help to define the association between a person's attribute of interest and the possibility that the person will answer a specific test question in a particular way determined by a set of factors called traits (King & King, 1994). Item characteristic function states that those participants with higher trait scores have a higher probability of answering a test item in a certain way than those who have lower scores on the same traits (Hambleton, 1982). Using IRT as a theory occurred between 1950 and 1960 with three people credited for its creation: Frederic M. Lord, Georg Rasch, and Paul Lazarsfeld. However, the IRT became popular in the 1970s and 1980s due to the advances in computer technology and the advantages of using IRT versus other theories such as the Classical Test Theory (CTT). IRT is the most popular modern test theory utilized today primarily because it provides a theoretical justification for doing things that the CTT does not. A few of the differences between IRT and CTT are: IRT makes stronger assumptions, it provides enhanced descriptions in scaling people and items, and it provides more flexibility when different samples or test forms are utilized (Brannick, 2012).

The IRT has evolved since it was first developed. King and King (1994) stated that when the IRT was first created, the item-characteristic curves were S-shaped cumulative normal density function. These S-shaped curves were meant to represent the likelihood that the respondent would answer in a certain way on a test item that was scored. A logistic function was introduced at a later time that made the computation procedures much easier to complete. This function is determined by up to three parameters/item characteristics which are: *discrimination index, guessing or faking*

index, and *difficulty or attribute threshold level*. The *discrimination index* describes how the items differ amongst the participants in a study at the threshold. The *guessing or faking index* represents the probability that a participant, who has none of the attributes in question, will still positively endorse the item that is in question. The *difficult or attribute threshold level* represents which participants will choose one test item over another (King & King, 1994).

Different IRT models have been developed over time to accommodate the various item types that researchers may want to examine (King & King, 1994). Some models only estimate one of the three item characteristics (as previously discussed), other models estimate all three (King & King, 1994). It is ideal to have various IRT models available to utilize based upon the items that will be assessed. In the past, IRT computations were complex and time consuming; however, since computer programs have been created, the technology is now available for all researchers to utilize in order to complete the computations and subsequent results in an accurate and timely manner. Some of the computer programs that are available are: Mplus statistical software, MULTILOG program, BILOG, and RASCAL, ASCAL and XCALIBRE (Miller et al., 2013). The IRT appears to provide a more thorough understanding of how the items being assessed represent the construct in which they are supposed to measure. IRT also appears to have more flexibility in items being utilized for multiple purposes (e.g. ordinal Likert-type or dichotomous), and provides a greater amount of information about items when compared to other theories, such as the CTT (King & King, 1994).

Current Study

This study interpreted the item characteristics used to assess symptoms of PTSD that are present in the PDHA and the PCL-M. Examining these item characteristics may be helpful in identifying which items are most effective when measuring a Marine population for symptoms of PTSD. The IRT appears to be the best theory to utilize when determining which item characteristics would facilitate efficient assessments to be administered to active-duty Marines returning from a combat deployment. The IRT may be able to identify different item functioning in this study than what has been found in previous studies which used alternate populations, which may lead to the conclusion that assessing for symptoms of PTSD varies across populations (Bliese et al., 2008; Fissette et al., 2008). Depending on the results of this study, the findings may then determine if it would be appropriate to modify the PDHA in relation to assessing symptoms of PTSD in order to more accurately measure the characteristics and traits of the active-duty Marine population.

Past Research Impacting Present Research

Bliese et al. (2008) conducted a study with active-duty U.S. Army Soldiers who were utilizing the DoD's Post-Deployment Reassessment program. In this study, the PCL and PC-PTSD screens were given to Soldiers three months after they returned from a combat deployment. The researchers then utilized the IRT to examine the item characteristics of both assessment methods. One and two-parameter IRT models were utilized for the outcomes of the PC-PTSD and a graded response IRT model was used to look at the PCL items. The IRT results of the study showed that the four items that are

present on the PC-PTSD differed in difficulty and discrimination. Item 2 ("Tried hard not to think about it (the experience) or went out of your way to avoid situations that remind you of it") showed that it had a low probability of being endorsed by the respondent unless the respondent had increased levels of PTSD. The PC-PTSD was assessed at the diagnostic efficiency between two and three "yes" responses, which, depending on the setting, two "yes" responses had too low specificity while three "yes" responses had too low of a sensitivity. The IRT results regarding the PCL identified four high-information items that were present in the study conducted by Bliese et al. (2008) that was consistent with all of their participants. This then suggested that these 4-items of the PCL screen had an accuracy estimate no different than that of the PC-PTSD. In conclusion, the authors stated that the PC-PTSD and the PCL can be used as screening tools for identifying Soldiers who have symptoms of PTSD and that the four-item PCL would be useful because of its short-length (Bliese et al., 2008).

A study conducted by Rutkowski, Proctor, Vasterling, & Anderson (2010) assessed U. S. Army Soldiers who had symptoms of PTSD and how that could potentially affect their test-taking ability. IRT models with covariates were created from the data to examine how a person's competency to answer a test question can be affected by symptoms of PTSD. The participants were given the PCL-C along with additional assessments to look at their vocabulary, logical reasoning, and combat experiences. A latent regression Rasch model (an IRT model) was utilized because of its ability to analyze item response data while taking into consideration individual differences. The results indicated that PTSD symptoms adversely affected a Soldier's ability to take a test.

The researchers emphasized that this in turn could affect career advancement and their ability to pursue a higher education (Rutkowski et al., 2010).

Miller et al. (2013) utilized American adults and U.S. military veterans as participants who met the criteria for lifetime PTSD to take online-surveys to gather data regarding how proposed changes to the DSM-IV's definition of PTSD may affect prevalence rates. At the time of their study, the researchers proposed adding new symptoms to the DSM-IV's definition of PTSD, and recommended revision of some of the current symptoms already included. The researchers created a test measure that was used in this study to be able to assess different traumatic events and to look at the severity and presence of the PTSD symptoms defined in the DSM-IV. An IRT analysis was then utilized to look at the relationship between endorsement probability of items and the severity of each symptom within a symptom cluster. IRT analysis was completed in this study using Mplus statistical software to analyze the answers provided by the participants. The results showed that the likelihood of endorsing an item by a participant, depending on the amount of the trait being measured, was equivalent across the test items. This result could be interpreted in two different ways; first, that items are mapping onto the same symptom cluster within the ICC curves and second, that the items are presenting redundant information. Additionally, Miller et al.'s (2013) study provided information regarding how their proposed changes to the DSM-IV would possible effect the population by examining item characteristics and traits of a large number of participants.

In a study conducted by Fissette et al. (2013), the researchers examined the item-level functioning of the PCL-M in relation to PTSD symptoms using U.S. Air Force (USAF) personnel who returned from a year-long deployment in Iraq. The researchers claimed that it may not always be ideal to utilize the full 17-item PCL-M, but rather to identify three or four key items to use in order to screen for symptoms of PTSD. Using the IRT to examine item characteristics of the PCL-M, a two-parameter logistic analysis was used for each item to identify a slope parameter and a difficulty parameter. The study concluded that items that are ideally used to identify those who have high levels of PTSD differ from those items that are preferably used to identify those who have low levels of PTSD. Utilizing the information that was discovered throughout the study, clinicians can make a decision as to which items to use that would identify PTSD symptoms depending on PTSD severity and the population being assessed. Fissette et al. (2013) stated that the four items that are present on the PC-PTSD were not consistently those items that had the highest discrimination in their study. Using the IRT to look at the item characteristics in PTSD assessment instruments may allow providers to facilitate a more accurate assessment as they can tailor the assessment to each specific population and setting (Fissette et al., 2013).

Limitations

Increased awareness in PTSD has prompted the interest in developing methods to properly assess for symptoms of PTSD in military members. However, all of the methods currently being utilized have limitations. First, the results of the PTSD screens may lead to underreporting or over-reporting by the person taking the assessment.

Answers given on assessment instruments are dependent on the person taking the assessment as well as the environmental circumstances surrounding the testing. Next, self-report assessments are susceptible to response bias by the respondents. A problem arises when the respondent may answer the questions the way that they believe the provider wants them to answer them, rather than answering truthfully. Third, utilizing only one assessment method when screening for PTSD may create a large number of false positives or negatives, which then may lead to an inaccurate diagnosis of PTSD (Gates et al., 2012). Finally, the Marine Corps is a predominantly male military branch with only males being able to fulfill infantry positions (at the current time) (Fissette et al., 2013). This may be an indicator that the results from the study may not be accurate to generalize to the female Marine population.

Summary

The current review has explored past research in the areas of PTSD and the assessment methods currently utilized for identifying symptoms of PTSD. The wars in Iraq and Afghanistan and the prevalence rates of PTSD in service members were discussed (Fissette et al., 2013; Hoge et al., 2004; Wright et al., 2008). The Marine Corps culture and background were also discussed in order for the general reader to better understand the barriers that Marines encounter when seeking mental health care (Cooling & Turner, 2010). Although there has been extensive research in the past on the assessment methods used to assess the symptoms of PTSD in military members, the studies have mainly included military veterans as participants. Studies conducted

regarding the assessment of symptoms of PTSD as well as mental health utilization of the active-duty military population are scarce.

The DoD has improved their screening efforts for symptoms of PTSD but some researchers still have concerns with the instruments being employed because of the limited amount of evidence that is available for use with the active-duty military population (Mittal et al., 2013; Schnurr et al., 2010). The proper assessment of mental health, specifically related to the diagnosis of PTSD in an active-duty Marine population, is essential so that appropriate mental health care can be provided. Examining the item characteristics in the PDHA used to assess for symptoms of PTSD to the item characteristics in the PCL-M may identify the items that are the most efficient when identifying symptoms of PTSD in Marines. The next chapter will discuss the purpose, methodology, sample, setting, instruments, and ethical considerations utilized in this research study.

Chapter 3: Research Method

Introduction

This chapter includes a description of the design of the research study, the sample population that was used, instrumentation, data analysis, and ethical considerations. An overview of the study's design will state the rationale for why this particular design was chosen. Participants used in this study, as well as a description of the size of the population, will also be discussed. The instruments that were utilized to assess the participants are also explained. Lastly, the data collection process that was used to collect the information for analysis will be discussed.

Purpose of the Study

The purpose of this study was to examine whether the post-deployment screening method currently utilized to screen active-duty Marines for PTSD upon their initial return from a combat deployment can be solely relied upon to assess PTSD symptoms accurately. The identification of the growing amount of military service members returning from the OEF/OIF/OND wars with symptoms of PTSD has raised the awareness of health care practitioners regarding the necessity of the need to properly assess military members for PTSD upon their initial return from a combat deployment. Examining the PDHA whose completion is currently mandated by DoD (DoDI 6490.03) and which is subsequently used by the Marine Corps for those Marines returning from a combat deployment will identify which items on that assessment are the most effective in identifying symptoms of PTSD. The literature review demonstrated that professionals agree for the need to assess for symptoms of PTSD in service members upon their initial

return from war; however, there is no consensus to which assessment tool is the most effective and reliable (Bliese et al., 2008; Seal et al., 2008; Sharkey & Rennix, 2011). This study examined the PDHA and the PCL-M to explore and compare which items on these assessment tools are the most accurate in assessing for symptoms of PTSD.

Research Design and Approach

In this study, I used a secondary data analysis design, with a quantitative descriptive and correlational approach in order to investigate the items on the PDHA and on the PCL-M. Identifying the item characteristics that are the most accurate and efficient in identifying symptoms of PTSD will help ensure the most effective assessment methods are being utilized on active-duty Marines. The descriptive approach was an appropriate design to utilize in this study as a thorough explanation of the data that will be gathered will help the reader to better understand the responses given by the participants. The correlational approach was appropriate to use in this study as the data was collected using questionnaires with the intent of generalizing the findings of this study from the sample of participants (Creswell, 2014). The participants retrospectively reported their combat experiences in relation to potential trauma experienced, and their responses were compared and correlated amongst the 2 groups involved in the study. Retrospective studies of the item characteristics on the PDHA and PCL have demonstrated that some items on the tools are more effective than others when identifying symptoms of PTSD in U.S. Army Soldiers (Bliese et al., 2008). However, Fissette et al. (2013) called for future studies to determine and identify which item characteristics of the assessment tools would be the most accurate and efficient to have

on the assessments utilized on active-duty military members in order to tailor the assessment methods to this population and the setting in which the assessment will be given. Also, Peterson et al. (2011) addressed the lack of data in relation to identifying and treating PTSD in active-duty military personnel.

Setting and Sample

Participants

The participants of this study were active-duty United States Marines who had just returned from a combat deployment in Afghanistan. The Marine Corps represents a diverse population containing people with various ethnicities, ages, personal beliefs, and its members are from different regions not only in the U.S., but from around the world (Hoge et al., 2008). A typical Marine Corps battalion contains the following: approximately 30-40 Marines in a platoon, approximately 100-120 Marines in a company, and approximately 500 Marines in the whole battalion (Powers, 2013). A power analysis revealed that for a two tailed test at $p < .05$, to detect a medium effect size of .35 with a power of at least .80 (chance of detecting an effect), the study would require a sample of at least 96 participants (Field, 2009).

The goal for this researcher was to use a sample size of Marines equal to a Marine company for participants (approximately 100-120) in this study so as to produce enough data to ensure the study's validity and reliability. Participant data was included in this study only if the Marines completed all items on the PCL-M and the PC-PTSD portion of the PDHA. Additionally, participant data was excluded if there were three or less participants of a military pay rank. Of the total 289 Marines that participated in this

study, 7 failed to fully complete the PCL-M and the PC-PTSD portion of the PDHA. Also, the data for 9 Marines was further excluded due to limited number of participants belonging to those particular pay ranks and age groups. The final study sample was comprised of 273 Marine participants.

Marines returning from a combat deployment are mandated to take the PDHA within 30 days of their return or while they are still deployed during out-processing (Sharkey & Rennix, 2011). The PDHA was administered by health care providers to the Marine participants in this study as mandated by DoD (DoDI 6490.03). In addition to the PDHA, volunteer participants also took the PCL-M, which was also administered by health care providers. The PCL-M was created by government employees and copyrighted; therefore, it is free to be utilized and administered by qualified health care providers that were utilized in this study (Weathers et al., 1993). The participants who volunteered to take the PCL-M in addition to the PDHA were considered group 1 and the participants that took only the PDHA were considered group 2. Prior to taking the PCL-M, the health care provider advised the Marine participants that taking the PCL-M was voluntary. The health care provider also relayed that completing the PCL-M would help the medical team further screen for symptoms of PTSD. The PCL-M was then handed out to the Marines who volunteered to complete them and a health care provider was present to answer any questions that the Marines may have had at that time.

Procedures

The data that was utilized in this study was secondary in nature; therefore, no assessments were given to the participants by the researcher. The assessments were

administered by qualified health care providers who were tasked with assessing the mental and physical health of the Marines in a health care setting within 30 days of their return from a combat deployment. Secondary data is data that is collected by somebody else with a different research purpose in mind (Boslough, 2013).The benefits of using a secondary data analysis is that it saves time, is cost effective, and provides the researcher with a vast amount of data (Boslough, 2013).

The use of secondary data in this research study was appropriate and beneficial as the data sought for this research study was collected utilizing assessments containing protected health information (PHI). PHI is information about an individual to include their name and/or other identifying information associated with the content of the health information (HHS, 2014). PHI is protected by the Health Insurance Portability and Accountability Act (HIPAA) which is a U.S. law designed by the Department of Health and Human Services taken into effect on April 14, 2003 (HHS, 2014). HIPAA is designed to provide privacy standards to help protect a person's medical records and other health information therefore giving them more control over how their personal medical information is utilized and disclosed (HHS, 2014). For the researcher to be able to use the data collected by the PDHA and PCL-M assessments, de-identification (removal of identifiers) of the datasets was conducted by the health care providers in accordance with the standards outlined in the HIPAA privacy rule (HHS, 2014). The de-identification of the datasets completed by the health care providers ensured the data received by the researcher did not contain information that could identify any of the participants in the study.

Instrumentation

Post-Deployment Health Assessment

The Post-Deployment Health Assessment (PDHA) is a questionnaire designed to identify experiences that the Marines had during deployment and potential mental health issues that they may undergo upon their return from a deployment. This survey has 25 questions; however, the focus for this study was on question number 15, which is modeled after the PC-PTSD which is used to assess for symptoms of PTSD. The PC-PTSD was specifically constructed to assess for symptoms of PTSD (Gates et al., 2012). The reliability of the PC-PTSD has been established by a past study conducted by Peterson et al. (2011). This was done by comparing the PC-PTSD to a structured interview that was conducted utilizing Army Soldiers that had recently returned from a combat deployment. Peterson et al. (2011) concluded that either two or three "yes" responses on the 4-item self-report PC-PTSD would produce the most accurate and efficient screening for Soldiers in reference to symptoms of PTSD (Peterson et al., 2011). Question # 15 that is used to analyze symptoms of PTSD is:

Question # 15: Have you ever had any experience that was so frightening, horrible, or upsetting that, in the PAST MONTH, you:

a. Have had 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 started?

d. Felt numb or detached from others, activities, or your surroundings?

These questions were used to assess the participants' symptoms that they may have experienced over the past month that is consistent with the DSM-IV PTSD diagnosis (Peterson et al., 2011). The health care provider did not use a cutoff value for the PC-PTSD portion of the PDHA assessments that were analyzed for this study as there is no cutoff value established for the PDHA (as previously discussed). For the most part, the health care provider referred Marines who had three to four "yes" responses for the PC-PTSD. For those Marines who had two "yes" responses on the PC-PTSD, the health care provider's referral was dependent on the results of the face-to-face interview the health care provider had with the Marine. In a previous study conducted by Bliese et al., three "yes" responses produced a specificity of near .90 and a level of sensitivity above .70 (2008). Bliese et al. (2008) also identified that the items on the PC-PTSD that were proven to be the most discriminate questions were those questions that were connected to avoidance. The researcher secured a full copy of the PDHA through a medical provider (see Appendix B), and it is also available online.

PTSD Checklist-Military Version (PCL-M)

The PCL-M was created by Weathers, Litz, Herman, Huska, & Keane (1993) in order to rate each symptom of PTSD as a response to stressful military experiences (Arbisi et al., 2012). The PCL-M is a 17-item self-report assessment that measures symptoms of PTSD in the military population (Arbisi et al., 2012). A few examples of the questions in the PCL-M are Question #1, Repeated, disturbing *dreams* of a stressful experience from the past? Question #4, Feeling *very upset* when *something reminded* you of a stressful experience from the past? Question #7, Avoid *activities* or *situations*

because they remind you of a stressful experience from the past? Question #11, Feeling *emotionally numb* or being unable to have loving feelings for those close to you? Question #13, Trouble falling or staying asleep? And Question #16, Being "*super alert*" or watchful on guard? The PCL-M uses a Likert Scale for scoring; (1) Not at all, (2) A little bit, (3) Moderately, (4) Quite a bit, and (5) Extremely. A total symptom severity score ranging from 17 to 85 can be obtained by adding the total of the scores answered by the participant. For the purpose of this study (modeled after a previous study), items that were rated 1 (not at all) were omitted during analysis as they were not endorsed and items 2 to 5 (moderately to extremely) were seen as an endorsement of symptoms and data analysis will be focused on these items (Fissette et al., 2013). A cutoff score of 31when scoring the PCL-M was utilized for this study (by health care provider and researcher) as this has been previously used and has proven to be a reasonable cutoff score in past military studies measuring symptoms of PTSD (Bliese et al., 2008; Hoge et al., 2004).

The PCL-M is one of the most widely used assessment tools employed to assess for symptoms of PTSD by the VA (Fissette et al., 2013). The PCL-M has been proven to have good internal consistency with a Cronbach alpha of .96 and a test-retest reliability of .96 (Weathers et al., 1993). The PCL-M is an appropriate instrument for this study because it contains items that specifically measure symptoms of PTSD. A copy of the 17 item PCL-M is provided in Appendix B.

Analysis

Item Response Theory models look at participant's behavior at the item level versus the test level. One of the most critical assumptions of the IRT methodology is that

it assumes unidimensionality amongst the items being looked at. Unidimensionality refers to when a test measures only one construct. A second assumption with IRT models is that of local independence. Local independence refers to the assumption that the items are independent and there will be no statistical relationship between the participants' responses to the items if the principal construct is removed. In this case study, the principal construct that was assessed was PTSD. A third assumption with IRT models involves the relationship between the trait being measured (PTSD), and the responses to the items on the test (Tyek Han 2013). There are various IRT models available to utilize that make dissimilar assumptions about that relationship.

Exploratory factor analysis was conducted in previous studies on the PCL-M and PC-PTSD scales and supported that they were unidimensional (Bliese et al., 2008; Fissette et al., 2013). To further support that the PC-PTSD portion of the PDHA met the basic assumptions of the IRT, an exploratory factor analysis was conducted using SPSS. After examining a scree plot obtained from the component analysis of the PDHA data, it was determined the items were independent thus meeting a basic assumption of the IRT models. Specifically, for the PDHA data, the eigenvalue of the first factor was 2.1 and accounted for 51.5% of the explained variance (50% or above shows the item as independent). Additionally, the PDHA's response data is dichotomous, meaning the response data is binary (i.e. 0 or 1 (yes or no responses are recoded to 0 or 1 in SPSS)). Therefore, two- parameter and three-parameter IRT models were available to use for the PDHA. The results showed that a two-parameter IRT model was the most appropriate to utilize for the analysis of the dichotomous responses for the PC-PTSD. It was justified

because the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values were lower than the AIC and BIC result values given when a three-parameter analysis was conducted indicating a better fit when using the two-parameter IRT model (Tyek Han, 2013).

To further support that the PCL-M met the basic assumptions of the IRT, an exploratory factor analysis was conducted using IRTPro. Specifically, for the PCL-M data, the eigenvalue of the first factor was 9.1 and accounted for 53.8% of the explained variance, compared to eigenvalues of 1.6 and percentages of explained variance of less than 7% for the other factors. Furthermore, the PCL-M's response data is polytomous, meaning the items have multiple responses options using a Likert scale (*not at all, a little bit, moderately, quite a bit, and extremely*). Therefore, different IRT models were available to use for the PCL-M items than the IRT models used for dichotomous response items (Thorpe & Favia, 2012). The graded response IRT model was chosen as the most appropriate to utilize to analyze the polytomous PCL-M items. The results found for the exploratory factor analyses conducted on the PDHA and PCL-M combined with findings from previous studies, demonstrated sufficient unidimensionality of the PCL-M and PDHA data for this sample population in order to proceed with IRT analysis.

SPSS and IRTPro statistical software was used for data analysis to investigate the item characteristics on the PDHA and PCL-M. A two-parameter logistic analysis was utilized for each item on the PC-PTSD portion of the PDHA with discrimination parameter (a) and difficulty parameter (b) as the two defined characteristics. The discrimination parameter (a) describes how closely each item is connected to PTSD (the

latent construct). The difficulty parameter (b) describes at which point on the latent construct that a participant is likely to endorse an item. The analysis of these two parameters helped to assess the probability of participants positively endorsing items on the PDHA and at which level of PTSD symptom severity. A graded response IRT model was used to assess the answers provided by the participants for the items on the PCL-M as these items have multiple response options. This analysis highlighted the items with the highest values of item information which were then further analyzed to determine which items were more accurate in discriminating those Marines with higher than average levels of PTSD. Finally, the responses that were provided by the participants to the items on the PCL-M and the PDHA were compared to identify the participants with health care provider referrals based off their symptoms of PTSD. The specific analysis that was conducted to address each research question is listed below along with the researcher's hypotheses.

Research Question #1. Is the Post-Deployment Health Assessment (PDHA) an effective stand-alone tool in assessing symptoms of Post-Traumatic Stress Disorder (PTSD) in active-duty Marines during the 30-day time period following their return from a combat deployment? To address this research question, item characteristics on the PDHA were analyzed using a two-parameter IRT analysis and the items on the PCL-M were analyzed by using a graded response IRT model and the results were then compared. Additionally, test characteristic curves were provided to compare the discrimination parameter of the items on both test and their likelihood of being endorsed.

Directional Hypothesis #1. It is expected that the PDHA is not an effective stand-alone tool in assessing symptoms of Post-Traumatic Stress Disorder (PTSD) in active-duty Marines during the 30-day time period following their return from a combat deployment.

Research Question #2. What percentage of the Marines assessed were identified as having symptoms of Post-Traumatic Stress Disorder (PTSD) through the utilization of the Post Deployment Health Assessment (PDHA)? To address this research question, the responses that the participants gave on the PDHA were reviewed for those Marines who self-identified experiencing symptoms of PTSD.

Directional Hypothesis #2. It is expected that approximately 28% to 44% of Marines will positively endorse two or more items on the PDHA in relation to symptoms of PTSD.

Research Question #3. What percentage of the Marines assessed were referred for mental health services for symptoms related to trauma based upon the results of their PDHA? To address this research question, provider-identified mental health referrals for treatment were reviewed for the PDHA in order to identify those Marines who were referred to seek mental health services related to symptoms of PTSD.

Directional Hypothesis #3. It is expected that 4% of the Marines would be referred for mental health services based upon their raw scores of their PDHA.

Research Question #4. What percentage of the Marines assessed were identified as having symptoms of PTSD through utilization of the PDHA and Post Traumatic Stress Assessment (PCL)? To address this research question, the responses that the participants

provided on the PDHA and the PCL-M were reviewed of those Marines who self-identified experiencing symptoms of PTSD.

Directional Hypothesis #4. It is expected that approximately 38% to 54% of the sample population will be identified as having symptoms of PTSD through the utilization of the PDHA and PCL-M.

Research Question #5. What percentage of Marines assessed were referred to mental health services based upon their responses on the PDHA and PCL-M? To address this research question, the provider-identified mental health referrals were reviewed to identify those Marines who were referred to seek mental health services related to symptoms of PTSD.

Directional Hypothesis #5. It is expected that 6% of the Marines that are identified as having symptoms of PTSD, based upon their results of the PDHA and PCL-M, will be referred for mental health services.

Descriptive statistics was used to provide a depiction of the demographic characteristics of the participants. Age, pay grade, and whether the participant was an enlisted member or officer was the demographic information that was used for comparison. SPSS was used to compare the participants demographic to be able to provide a figure for representation of the sample population.

Using the IRTPro Software, differential item functioning was assessed on an item-by-item basis for each item on the PC-PTSD portion of the PDHA for the responses given by both groups. Item characteristic curves were provided with PTSD represented on the x-axis, and the y-axis represents the probability of endorsing item(s). A graded

response model was run on Group 1's responses for the four selected items on the PCL-M to understand how the items functioned across varying levels of PTSD. Test characteristic curves were also provided for the responses from both groups on the PC-PTSD, group 1's responses on the full-item PCL-M, and group 1's responses on the 4-item PCL-M. The test characteristic curves provide a distinct look at the tests' items across the theta continuum and were also utilized to compare the both tests' ability to identify symptoms of PTSD and at what levels. Additionally, recommended cutoff scores were provided by evaluating the discrimination curves provided for the PC-PTSD and PCL-M assessments.

SPSS software was utilized to provide a bar graph of the comparison between the answers given by the participants on the PDHA assessment tools for group 1 and group 2. SPSS software was also used to provide a histogram of the distribution of the total scores for group 1's responses on the PCL-M. In addition, descriptive statistics were provided to show the comparison of the mental health referral services for both groups to distinguish who was being given referrals based upon their responses given on the PDHA. Descriptive statistics also described the percentage of the participants who were assessed as having symptoms of PTSD through only using the PDHA. Finally, the percentage of the participants who were assessed as having symptoms of PTSD through the PDHA and the PCL-M was reported.

Ethical Considerations

The nature of this study considered the possible negative effects that it could have on the Marine participants. The military is considered a protected population, and the

Marines that were involved in this study that may have symptoms of PTSD are considered a vulnerable population. The researcher had many conversations with active-duty Marines regarding their outlook on the PDHA and the items currently on the PDHA used to assess for PTSD. This study was created in response to those conversations and the current research that has been conducted on the effects of admitting to symptoms of PTSD for active-duty Marines.

The purpose of this study was to examine whether the post-deployment screening method that is currently utilized to screen active-duty Marines for symptoms of PTSD upon their return from a combat deployment can be solely relied upon to accurately assess for symptoms of PTSD. It is hoped that the information that was obtained during this study will identify which items are the most efficient in accurately assessing for symptoms of PTSD in Marines. There is no extra stress or psychological risks to the Marines who participated in this study as Marines are already mandated by DoD to be assessed for PTSD upon returning from a combat deployment (via the PDHA). There was no contact between the Marine participants and the researcher as this study used secondary data. Additionally, to further avoid any potential conflicts of interest, the researcher utilized participants not located at the military installation in which the researcher is currently employed. The Marines that were identified to have symptoms of PTSD through participation in this study received appropriate referral in order to seek mental health treatment.

The current study respected all of the ethical considerations mentioned above. Furthermore, datasets were not obtained until receiving approval from the Marine Corps

Institutional Review Board (IRB), Walden University's IRB, and the Navy and Marine Corps Public Health Center. This study used de-identified secondary datasets that were obtained from the health care providers of the Marine Corps unit. All characteristics or identifying factors that could link the participants to the assessments were removed by the health care providers before being acquired by the researcher. All of the PDHA assessments, considered protected health information (PHI), that were completed by the participants will be retained and maintained in a centralized location by the health care provider as outlined in Chapter 10 of the U.S. Code (U.S. Code §§1074f). The PCL-M assessments that were completed by the participants in this study are also in the custody of the health care providers to be stored as PHI.

Summary

In summary, Chapters 1-3 are an introduction to the research study. They include a thorough review of the current and historical literature available on the subject matter, and describe the quantitative secondary data analysis methods that were utilized in order to analyze the items that are currently utilized on the PDHA and the PCL-M assessment tools that are used to assess for symptoms of PTSD. Chapter 4 will provide a detailed description of the results of the data analysis conducted during this study. The data analysis was conducted on the items in the assessment tools that were administered to the Marines who participated in this study. Chapter 4 will also include a discussion of the statistical significance of the assessments given to the participants and the potential impact those results could have on how the Marine Corps may utilize this research.

Chapter 4: Results

Introduction

The purpose of this study was to quantitatively assess secondary data collected by health care providers to examine whether the post-deployment screening instrument currently utilized to assess active-duty Marines for symptoms of PTSD upon their return from a combat deployment can be solely relied upon to accurately assess for PTSD. Five hypotheses were tested using several quantitative statistical techniques with SPSS and IRTPro programs. This chapter looks at the demographics of the Marine participants utilized in this study as well as the results of the data analyses conducted.

Sample Demographics

The final study sample was comprised of 273 Marine participants. Participants were from an all-male Marine Corps infantry unit and ranged in age from 19-40 years old with the majority of the participants being enlisted Marines (see Table 1).

Table 1

Demographic Characteristics of Participants (N=273)

Characteristic	*N*	%
Age Bracket		
19-21	86	31.5
22-25	130	47.6
26-28	44	16.1
29-34	13	4.8
Pay Grade (Enlisted Marines)		
E-2	9	3.3
E-3	154	56.4
E-4	83	30.4
E-5	15	5.5
E-6	5	1.8
Pay Grade (Marine Officers)		
O-2	7	2.6

More than three quarters (79.1%) of the study participants were between the ages of 19 and 25. The fewest number of participants (4.8%) were between the ages of 29 and 34. More than three quarters (86.8%) of the study participants were enlisted Marines that consisted of E-3 and E-4 pay grades.

Directional Hypotheses

Hyphothesis 1

The first hypothesis predicted that the PDHA is not an effective stand-alone tool in assessing symptoms of Post-Traumatic Stress Disorder (PTSD) in active-duty Marines during the 30-day time period following their return from a combat deployment. To test this hypothesis, the IRT theory was used to examine item characteristics on the PC-PTSD

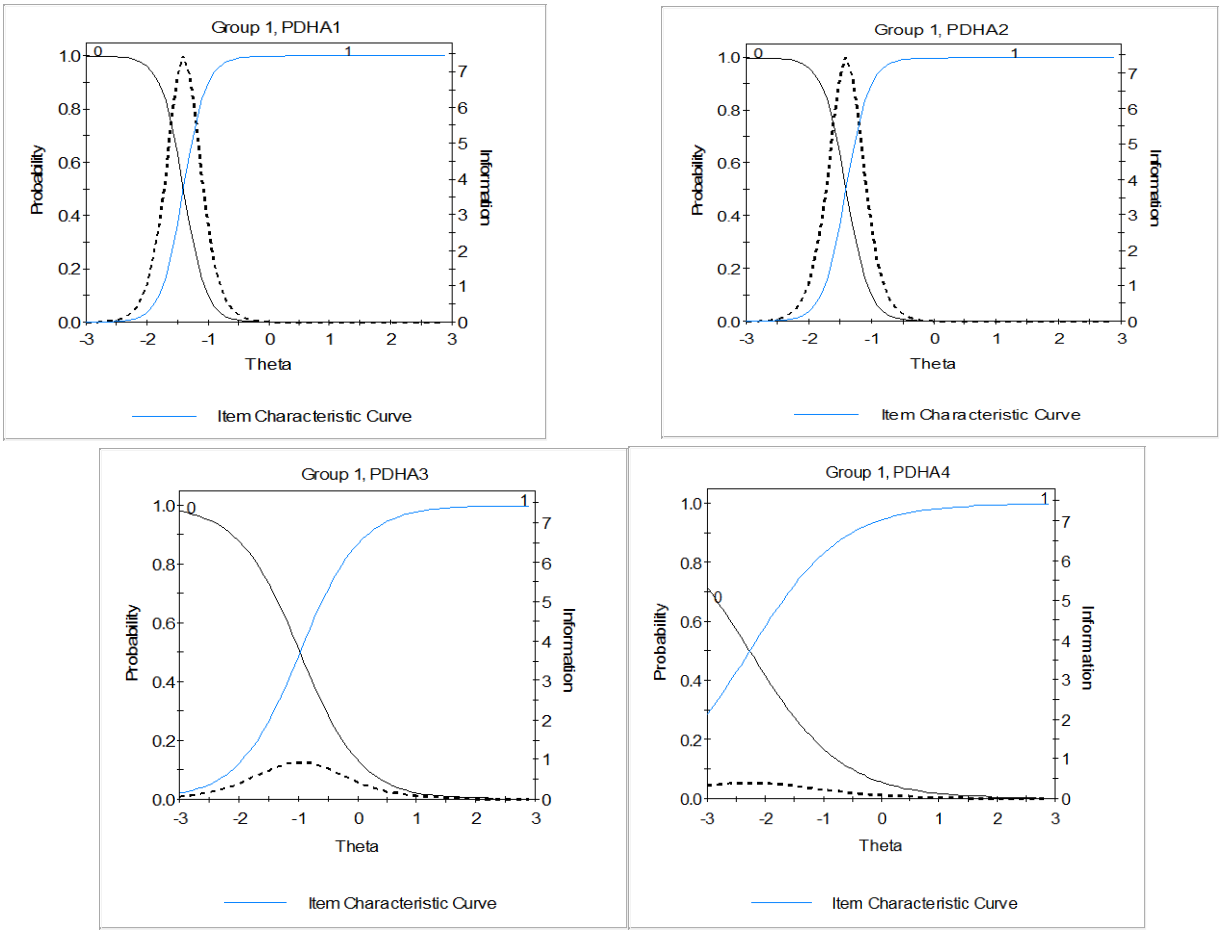
and PCL-M assessment instruments. Two-parameter and graded response models are provided to review the items on the PC-PTSD portion of the PDHA for the respondents in both groups and the responses for group 1's PCL-M items.

The first goal of this analysis was to provide information about item difficulty, item and test discrimination, and the most efficient cut-off values for the PC-PTSD portion of the PDHA. The IRT allowed for the examination of the relationship between the level of PTSD of the person completing the assessment and the likelihood of them endorsing an item. The 4-item instrument had 2 response options, a possible score range of 1-4, and a total of 8 parameters.

As previously discussed, an exploratory factor analysis was used to determine which IRT model would be the best fit to analyze the gathered data for the PC-PTSD. The exploratory factor analysis confirmed the two-parameter IRT model was the most appropriate to utilize as both the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values were lower than the AIC and BIC result values given when a three-parameter analysis was conducted. Therefore, the dichotomous data gathered from the PC-PTSD portion of the PDHA was analyzed using the two-parameter IRT model and graphics were provided to understand how the items functioned across the varying levels of PTSD.

Figure 1

PC-PTSD Item Characteristic Curves for Group 1



The vertical axis (y) in the graphs shown in Figures 1 and 2 represents the probability in which an individual will respond to an item. The horizontal axis (x) represents the levels of PTSD the respondent may have. The probability of endorsing an item on the PC-PTSD is represented by the blue lines in the graphs and the probability of not endorsing an item is represented by the black lines. The black lines in the graphs represent the discrimination parameters for each item. The discrimination parameter represents the level of theta which is required to move a person's response to the next

choice. There is a 50% probability that a person will respond at a certain threshold that is displayed on the theta continuum. To understand the curves present in the graphs in Figures 1 and 2, detect the discrimination parameter (blue lines) on the horizontal axis and follow it to determine where it intersects at the 50% on the difficulty parameter on the vertical axis (black lines). The difficulty parameter shows as the levels of PTSD increases, the probability of not endorsing an item decreases.

The four graphs in Figure 1 show the item characteristic curves (ICC) for the two-parameter IRT model analysis conducted on the responses to the items on the PC-PTSD for group 1. The probability of endorsing items 1 and 2 ("Have had nightmares about it or thought about it when you did not want to" and "Tried hard not to think about it or went out of your way to avoid situations that remind you of it") is low at low levels of PTSD. As PTSD levels increase, the probability of endorsing items 1 and 2 sharply increases at theta -1.5. The ICC curves for items 1 and 2 are very steep because the items have a high discrimination parameter with high difficulty suggesting that those items should be effective at distinguishing persons with low to modest levels of PTSD from those with high levels of PTSD.

Graph 3 in Figure 1 shows the probability of endorsing item 3 is also low at low levels of PTSD; however, item 3 has a higher probability of endorsement than items 1 and 2 at low levels of PTSD. An individual has a 50% probability of endorsing item 3 ("Were constantly on guard, watched, or easily startled") at the latent value of -.97. Graph 4 in Figure 1 shows the probability of endorsing item 4 is higher than the other items at low levels of PTSD. An individual has a 50% probability of endorsing item 4

("Felt numb or detached from others, activities, or your surroundings") at the latent value of approximately -2.27.

Table 2

Item Information Levels for the PC-PTSD Items for Group 1 (n=140)

Item	Theta	Item Information	Item	Theta	Item Information
1	-2.8	.01	3	-2.8	.10
	-2.4	.13		-2.4	.21
	-2	1.05		-2	.40
	-1.6	5.61		-1.6	.66
	-.04	.13		-.04	.70
	0	.01		0	.43
	.08	0		.08	.91
	2	0		2	.01
	2.8	0		2.8	0
2	-2.8	.01	4	-2.8	.35
	-2.4	.13		-2.4	.39
	-2	1.05		-2	.38
	-1.6	5.61		-1.6	.33
	-.04	.13		-0.4	.13
	0	.01		0	.08
	.08	0		.08	.03
	2	0		2	.01
	2.8	0		2.8	0

Table 3

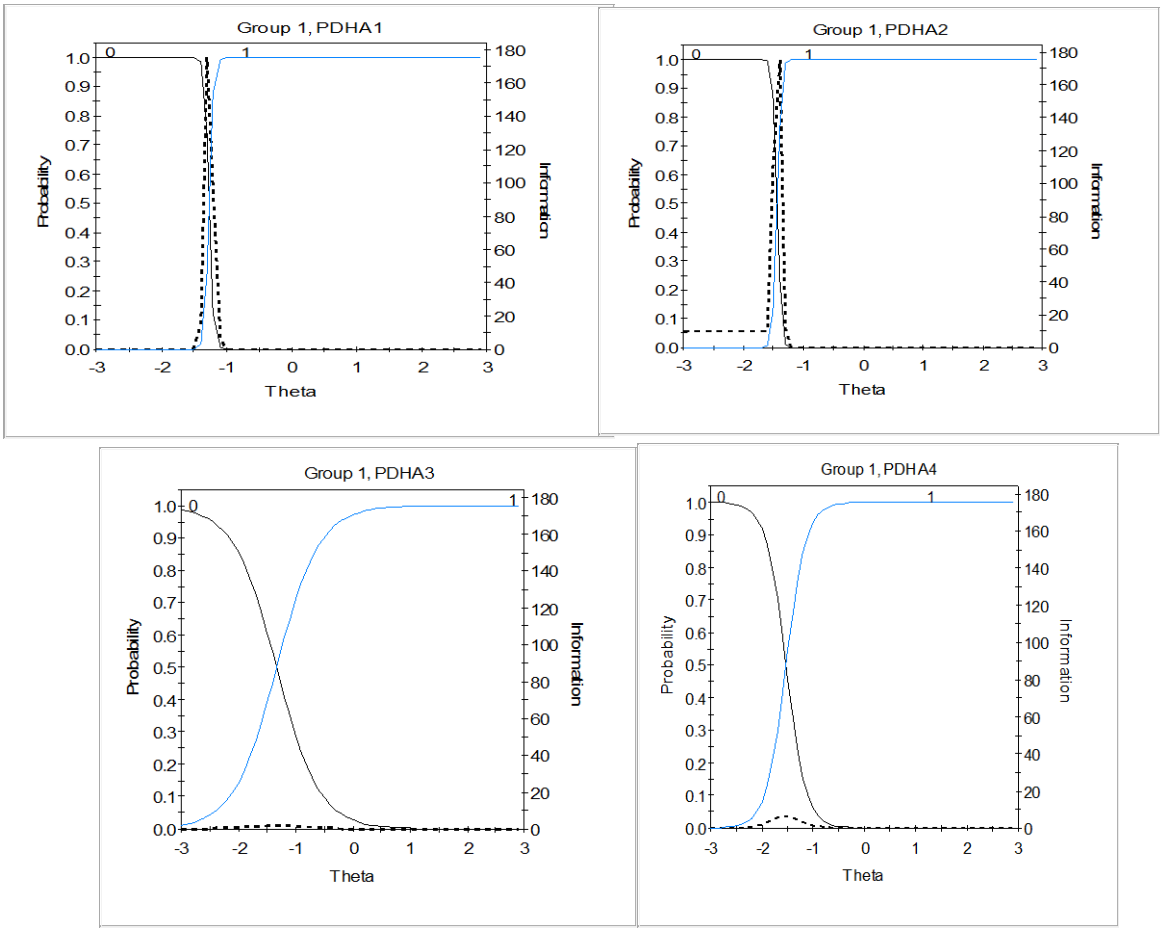
Item Parameter Estimates for the PC-PTSD Items for Group 1 (n=140)

Item	Discrimination	(SE)	Levels	(SE)
1	5.45	2.88	-1.40	.16
2	5.45	2.89	-1.40	.16
3	1.94	.59	0.97	.19
4	1.25	.47	.49	.61

Tables 2 and 3 show how effectively an item can discriminate individuals' various levels of PTSD. A higher discrimination value signifies which items are more effective. The highest and lowest values of item information at levels of theta were 2.4 to -2.8. Item 4 showed the lowest level of discrimination of .47, and an item information peak of .39 at theta -2.4. Item 2 showed the highest amount of item information level at 5.61 at theta -1.6 and discrimination of 2.89. Items 1 and 2 provided the most information for individuals at lower levels of PTSD. Item 3 provided the most information across the continuum of PTSD levels with a slight increase at higher levels of PTSD and item 4 provided a lot of information at lower levels of PTSD but also was able to provide information at higher levels of PTSD.

Figure 2

PC-PTSD Item Characteristic Curves for Group 2 (n=133)



Like the analysis results for group 1 shown in Figure 1, the analysis results for group 2 showed that two of the four items were similar in both difficulty and discrimination (items 1 and 2), with item 2 being slightly higher in both categories (shown in Figure 2). The probability of endorsing items 1 and 2 is low at low levels of PTSD and sharply increases at approximately -1.5. Graphs 3 and 4 in Figure 2 show the probability of endorsing the items are also low at low levels of PTSD; however, items 3 and 4 have a higher probability of endorsement than items 1 and 2. An individual has a

50% probability of endorsing item 3 at the latent value of -1.33 and item 4 at the latent value of -1.53.

Table 4

Item Information Levels for the PC-PTSD Items for Group 2 (n=133)

Item	Theta	Item Information	Item	Theta	Item Information
1	-2.8	.01	3	-2.8	.14
	-2.4	.01		-2.4	.37
	-2	.01		-2	.88
	-1.6	.04		-1.6	1.58
	-.04	.13		-.04	.07
	0	0		0	.19
	.08	0		.08	.02
	2	0		2	0
	2.8	0		2.8	0
2	-2.8	9.94	4	-2.8	.04
	-2.4	9.94		-2.4	.29
	-2	9.94		-2	1.97
	-1.6	9.94		-1.6	6.38
	-.04	0		-0.4	.08
	0	0		0	.01
	.08	0		.08	0
	2	0		2	0
	2.8	0		2.8	0

Table 5

Item Parameter Estimates for the PC-PTSD Items for Group 2 (n=133)

Item	Discrimination	(SE)	Levels	(SE)
1	30.22	18.76	-1.27	.07
2	31.57	3.43	-1.44	.10
3	2.68	1.11	-1.33	.24
4	5.14	2.51	-1.53	.2.

Tables 4 and 5 show the discriminate values for the respondents various levels of PTSD. The highest and lowest values of item information at levels of theta were 1.2 to -2.8. Item 3 showed the lowest level of discrimination of 2.68, and an item information peak of 1.73 at theta -1.2. Item 2 showed the highest amount of item information level at 9.94 at theta -2.8 and discrimination of 31.57. Items 1 and 2 provided the most information for individuals at lower levels of PTSD and item 3 provided the most information across the continuum at PTSD levels with a slight increase at higher levels of PTSD. Item 4 provided more information at lower levels of PTSD as shown in Tables 4 and 5.

Figure 3

Test Characteristic Curves for PC-PTSD for Group 1 (n=140) and Group 2(n=133)

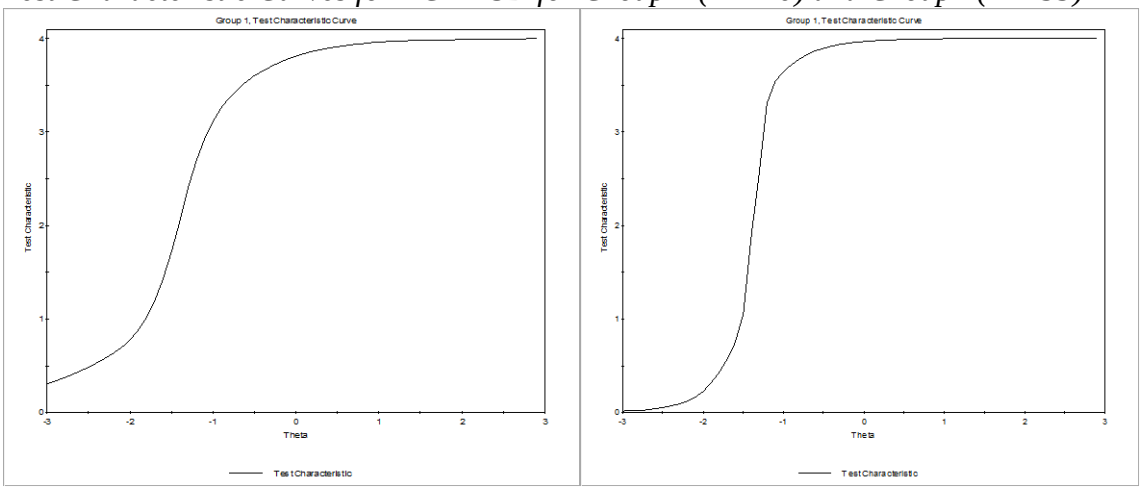


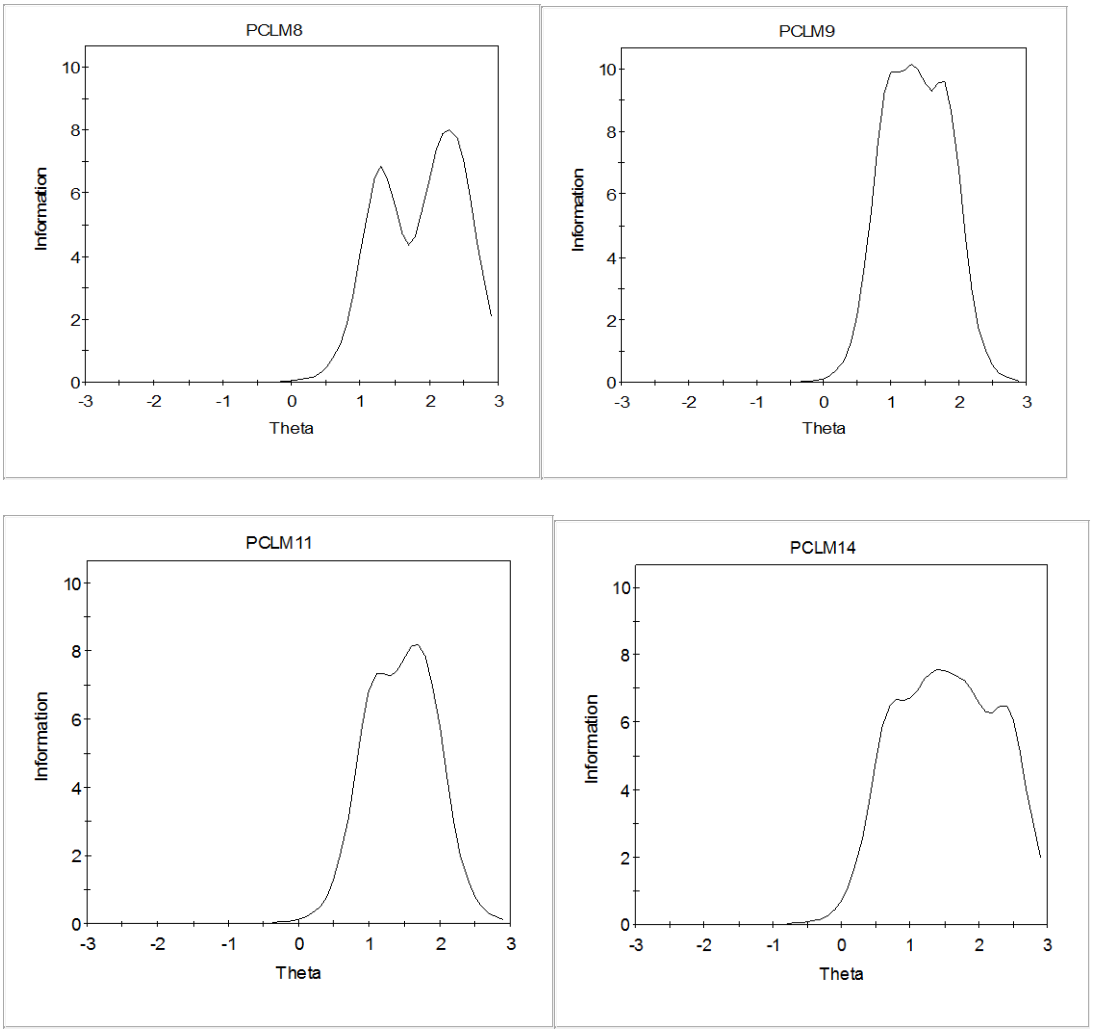
Figure 3 shows the test characteristic curves for the responses given by both groups' responses on the PC-PTSD. The curves shown in Figure 3 provide a clear look at the information across the theta continuum. The probability of positively endorsing an item on the PC-PTSD for both groups starts at or near zero at the lowest levels of PTSD and increases until at the highest levels of PTSD, the probability of positively endorsing items approaches one. The steepness of a test characteristic curve in its middle section shows the probability that the respondent will positively endorse the items on the test. On the basis of the analysis for both groups shown in Figure 3, the responses given on the PC-PTSD created steep discrimination curves. As PTSD levels increase in the respondents, the probability of positively endorsing an item changes rapidly which is denoted by the steepness of the test characteristic curves. The steep discrimination curves denote that the expected endorsements of the items on the PC-PTSD assessment are sensitive to levels of PTSD. The test characteristic curve on the left in Figure 3 for group 1 shows that the respondents were more likely to endorse an item on the PC-PTSD

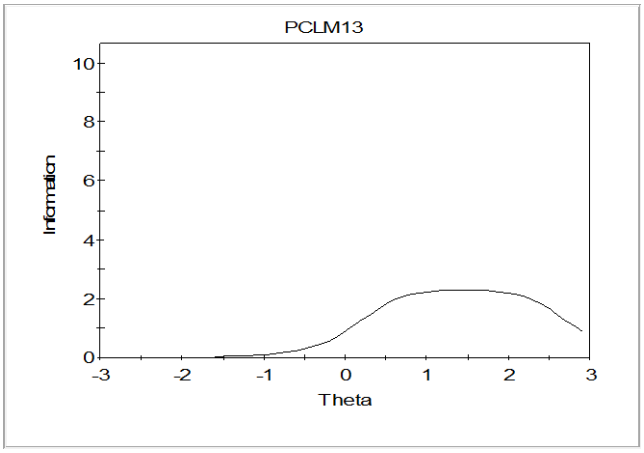
at lower levels of PTSD versus group 2 respondents. Response cut-off's of two and three "yes" responses, shown by the steepness of discrimination curves in the graphs in Figure 3, are ideal as the curve begins to smooth out after the 3rd item represented on the discrimination parameter.

The second goal of this analysis was to provide information about item difficulty, item and test discrimination, and the most efficient cut-off values for the PCL-M taken by group 1. The 17-item instrument had 5 response options, a possible score range of 17-85, and a total of 75 free parameters. A graded response IRT model was utilized to analyze responses given on the PCL-M for group 1. As previously discussed, a graded response IRT model was the most appropriate to utilize to analyze the PCL-M items as these items have multiple responses options (not at all, a little bit, moderately, quite a bit, and extremely). The polytomous data gathered from the PCL-M from group 1 was then analyzed using the graded response IRT model and graphics are provided to understand how the items functioned across the varying levels of PTSD.

Figure 4

PCL-M Item Information Curves (graded response) for Group 1 (n=140)





A graded response IRT analyses was conducted on group 1's responses to the PCL-M. Four of the items on the PCL-M displayed high information compared to the other 13 items on the assessment. The 4-item instrument had 5 response options, a possible score range of 4-20, and a total of 18 free parameters. The four items were:

Item 8: "Trouble remembering important parts of a stressful military experience?"

Item 9: "Loss of interest in things you used to enjoy?"

Item 11: "Feeling emotionally numb or being unable to have loving feelings for those close to you?"

Item 14: "Feeling irritable or having angry outbursts?"

Item information curves for the four items on the PCL-M are provided in the top four graphs in Figure 4. In the fifth and bottom graph in Figure 4, item 13 ("Trouble falling or staying asleep?") is shown as it has the lowest information out of the 17 PCL-M items. Item 13 is shown only as reference to compare the item information curves for those items with high information to those items with low information and no further information will be provided on this item.

The graphs in Figure 4 show that the items demonstrate information to help discriminate those Marines with PTSD levels a little higher than average than those Marines with medium to high PTSD levels. This is shown as the item PTSD levels tend to start at or above zero, which is in the positive part of the graph. It was previously explained that the 4 items from the PCL-M were picked for further analysis due to them displaying high information compared to the other items in the assessment. Specifically, if it is desired to identify individuals with medium to high PTSD symptom severity, these would be the 4 most discriminating items to utilize. Graphs 1 through 4 in Figure 4 show the probability of endorsing an item is relatively high at medium to high levels of PTSD. The probability of endorsing an item at 50% ranges from the latent values of approximately .4 to 4.

Table 6

Item Information Levels for the 4 PCL-M Items for Group 1 (n=140)

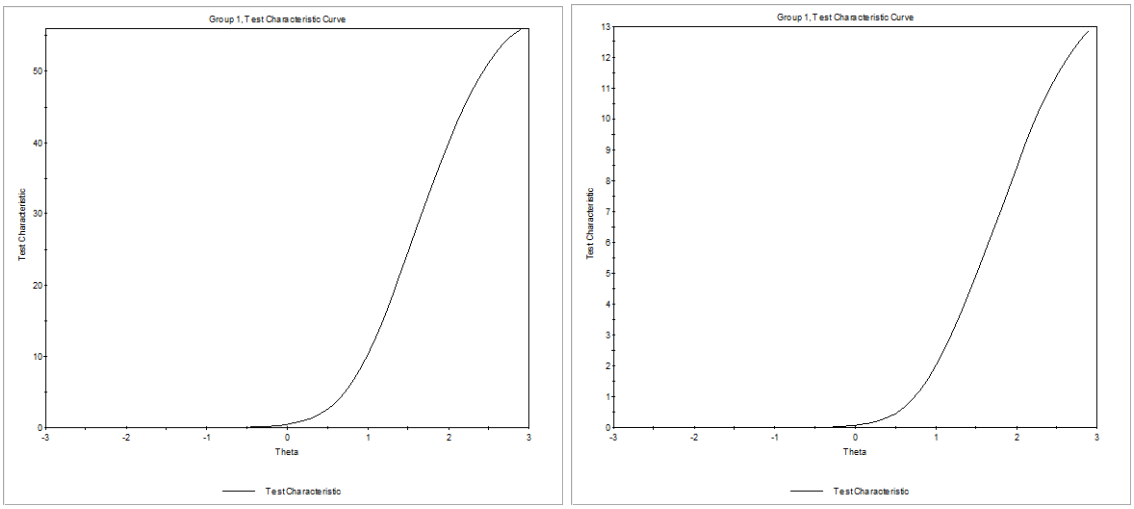
Item	Theta	Item Information	Item	Theta	Item Information
8	-2.8	0	11	-2.8	0
	-2	0		-2	0
	-1.6	0		-1.6	0
	0	.03		0	.10
	1.2	6.47		1.2	7.34
	1.6	4.73		1.6	8.15
	2	6.48		2	5.81
	2.4	7.75		2.4	1.26
	2.8	3.11		2.8	.17
9	-2.8	0	14	-2.8	0
	-2	0		-2	0
	-1.6	0		-1.6	0
	0	.12		0	.69
	1.2	9.96		1.2	7.26
	1.6	9.30		1.6	7.46
	2	6.77		2	6.59
	2.4	1.0		2.4	6.51
	2.8	.09		2.8	2.86

Table 6 shows the discriminate values for the respondents various levels of PTSD. The highest and lowest values of item information at levels of theta were 2.8 to -2.8. Out of the four items that were analyzed, item 9 showed the greatest amount of item information at 9.96 at a theta of 1.2 and the largest discrimination parameter of 6.02. Out of the four items on the PCL-M that were analyzed, item 14 showed the least amount of reliable information with a discrimination of 4.96, and an item information peak of 7.46 at theta 1.6. A review of the item information for each item (see Table 6) indicated that

the lowest information level for all of the four items was -.08 and the majority of information was provided for medium to high levels of PTSD.

Figure 5

Test Characteristic Curves for Full and 4-Item PCL-M (graded response) for Group 1 (n=140)



The graph on the left in Figure 5 shows the test characteristic curve for group 1's responses' given on the full 17-item PCL-M and the graph on the right in Figure 5 shows the test characteristic curve for the responses for group 1 for the four most discriminate items from the PCL-M. The graphs in Figure 5 are very similar suggesting that the 4-item PCL-M had an accuracy estimate no different than that of the full PCL-M. The probability of positively endorsing an item on the full 17-item and 4-item PCL-M for group 1 starts near zero at the lowest levels of PTSD and continues to rapidly increase. The responses given on the PCL-M for created a steep discrimination curve which represents the probability an individual will positively endorse an item on the PCL-M is dependent on the levels of PTSD. Scores between 32 and 44 for the 17-item PCL-M,

shown by the steepness of the discrimination curve in graph 1 of Figure 5, are ideal as then the curve starts to smooth out. A score between 7 and 8 for the 4-item PCL-M is ideal as shown in graph 2 of Figure 5.

The results of the analysis of the items on the PC-PTSD portion of the PDHA for both groups show the probability of endorsing an item is low at low levels of PTSD. The steep discrimination curves show that the expected endorsements of the items are sensitive to levels of PTSD. The results of the analysis of the items on the PCL-M for group 1 show the probability of endorsing an item is relatively high at medium to high levels of PTSD. The steep discrimination curves also show that the probability of endorsing an item is sensitive to the levels of PTSD an individual may have. Based upon these findings, the hypothesis that the PDHA is not an effective stand-alone tool in assessing symptoms of PTSD in active duty Marines during the 30-day time period following their return from a combat deployment is not supported. However, the items most effective for identifying Marines at the highest level of PTSD differ from those items at the lowest levels of PTSD.

Hypothesis 2

The second hypothesis predicted that approximately 28% to 44% of Marines will positively endorse two or more items on the PDHA in relation to symptoms of PTSD. To test this hypothesis, descriptive statistics to analyze frequencies using SPSS was utilized to review the responses that the participants in both groups gave on the PDHA.

Figure 6

Comparison of Symptoms of PTSD Identified Using PDHA (Group 1, n=140)

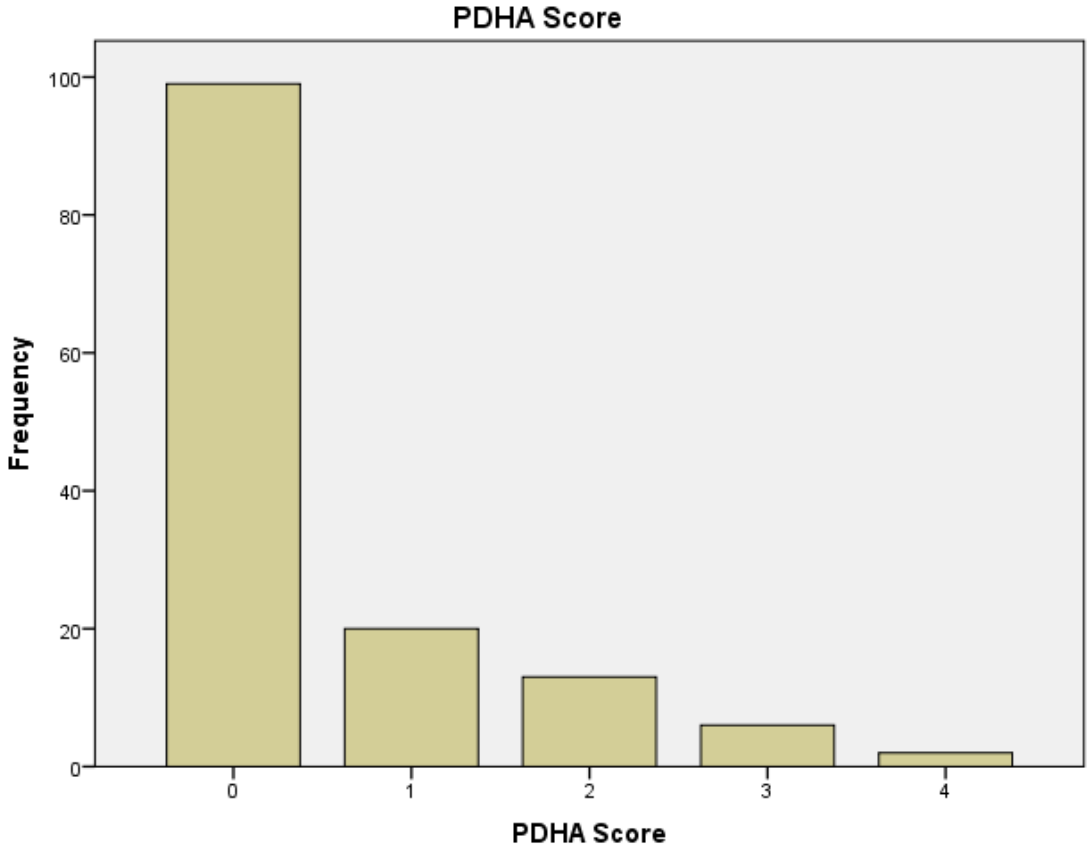


Figure 6 displays the frequency in which group 1 participants endorsed the items on the PDHA. The majority of group 1 participants (99 or 70.7%) answered negatively to experiencing any symptoms of PTSD and 20 (14.3%) participants positively endorsed 1 item on the PDHA. 13 (9.3%) participants positively endorsed 2 items on the PDHA, 6 (4.3%) positively endorsed 3 items on the PDHA, and 2 (1.4%) positively endorsed all 4 items on the PDHA.

Figure 7

Comparison of Symptoms of PTSD Identified Using PDHA (Group 2, n=133)

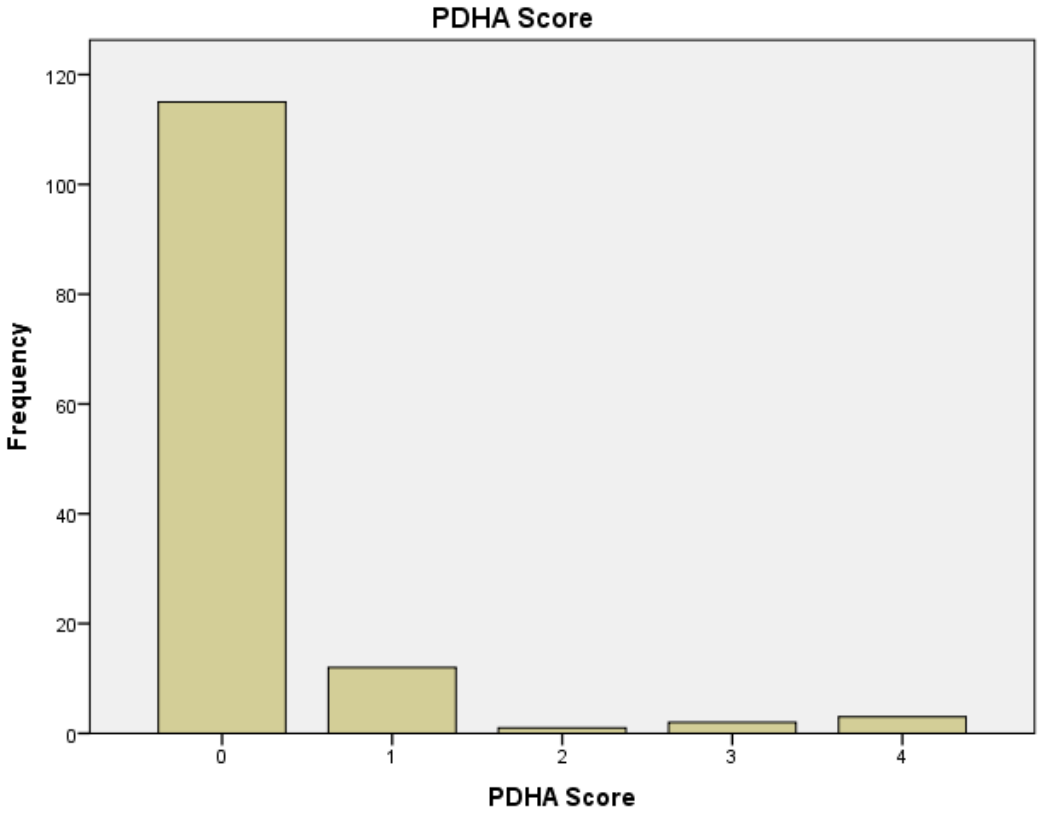


Figure 7 displays the frequency in which group 2 participants endorsed the items on the PDHA in relation to symptoms of PTSD. The majority of group 2 participants (115 or 86.5%) answered negatively to experiencing any symptoms of PTSD and 12 (9%) participants positively endorsed 1 item on the PDHA. 1 (.8%) participants positively endorsed 2 items on the PDHA, 2 (1.5%) positively endorsed 3 items on the PDHA, and 3 (2.3%) positively endorsed all 4 items on the PDHA.

Based upon these findings, a total of 15% of the participants in group 1 and 4.5% of the participants in group 2 positively endorsed two or more items on the PDHA in

relation to symptoms of PTSD; therefore, the hypothesis that approximately 28% to 44% of Marines will positively endorse two or more items on the PDHA in relation to symptoms of PTSD is not supported.

Hypothesis 3

The third hypothesis predicted that 4% of the Marines would be referred for mental health services based upon their scores of their PDHA. To test this hypothesis, a univariate analysis was conducted using SPSS to review the provider-identified mental health referrals for treatment for the PDHA in both groups of participants in order to identify those Marines who were referred to seek mental health services related to symptoms of PTSD.

Table 7

Comparison Between Groups of PDHA Referrals (Group 1 n=140, Group 2 n=133)

Age	Pay Grade	Group 1		Group 2	
		Referred	%	Referred	%
19-21	E-3	1	0.7	2	1.5
22-25	E-3	3	2.1	0	0
	E-4	1	0.7	0	0
	E-5	0	0	1	0.8
26-28	E-4	2	1.4	0	0
	E-5	1	0.7	0	0
29-34	E-5	1	0.7	1	0.8
	E-6	2	1.4	0	0
Total		11	7.9	4	3

Of group 1 participants, 7.9 % were referred for mental health services based upon their scores of their PDHA. Of group 2 participants, 3% were referred for mental health services based upon their PDHA scores. Of the combined two groups of participants (273 participants), 5.5% were referred for mental health services based off their PDHA scores. Based upon these findings, the hypothesis that 4% of the Marines would be referred for mental health services based up their PDHA scores is supported.

Hypothesis 4

The fourth hypothesis predicted that approximately 38% to 54% of the sample population would be identified as having symptoms of PTSD through the utilization of the PDHA and PCL-M. To test this hypothesis, descriptive statistics to analyze frequencies using SPSS was utilized to review the responses that the participants in group 1 gave on the PDHA and PCL-M for those Marines who self-identified experiencing symptoms of PTSD.

Table 8

17-item PCL-M Responses for Group 1(n=140)

Score	Frequency	Percent
17	78	55.7
18	3	2.1
19	7	5.0
20	11	7.9
21	4	2.9
22	2	1.4
23	4	2.9
24	2	1.4
25	1	.7
26	2	1.4
27	4	2.9
28	2	1.4
29	1	.7
30	4	2.9
31	1	.7
32	1	.7
34	4	2.9
36	1	.7
37	1	.7
38	1	.7
40	1	.7
42	1	.7
49	1	.7
51	1	.7
59	1	.7
72	1	.7
Total	140	100

Figure 8

A Histogram of the Distribution of the Total Scores for the PCL-M for Group 1 (n=140)

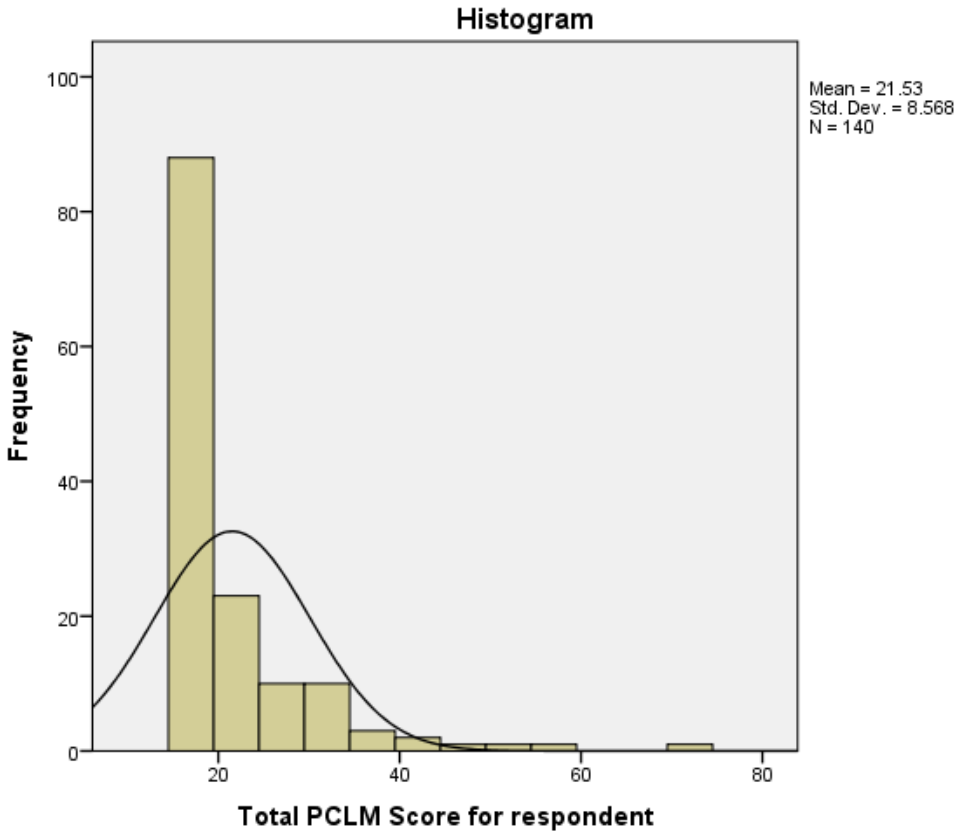


Table 8 and Figure 8 display the descriptive information for which group 1 participants endorsed the items on the PCL-M. The PCL-M scale had a possible range from 17 to 72 (m=29.53, SD=8.57). The majority of group 1 participants (55.7%) answered negatively to experiencing any symptoms of PTSD. A cutoff score of 31was utilized for this study when scoring the PCL-M. Of group 1 participants, 15 (10.7%) had a cumulative score of 31 or more on the PCL-M. As previously stated, a total of 21 (15%) participants in group 1 positively endorsed two or more items on the PDHA in relation to symptoms of PTSD. A total of 25.7% (15 participants from PCL-M score and

21 participants from PDHA score) of group 1 participants were identified as having symptoms of PTSD based upon their PDHA and PCL-M scores. Based upon these findings, the hypothesis that 38% to 54% of the sample population would be identified as having symptoms of PTSD through the utilization of the PDHA and PCL-M is not supported.

Hypothesis 5

The fifth hypothesis predicted that 6% of the Marine participants that were identified as having symptoms of PTSD, based upon their results of the PDHA and PCL-M, were referred for mental health services. To test this hypothesis, a univariate analysis was conducted using SPSS to review the responses that the participants of group 1 provided on the PDHA and the PCL-M for those Marines who self-identified experiencing symptoms of PTSD.

Table 9

PDHA and PCL-M Referrals for Group 1 (n=140)

Age	Pay Grade	PDHA		PCL-M	
		Referred	%	Referred	%
19-21	E-2	0	0	1	0.7
	E-3	1	0.7	2	1.4
22-25	E-3	3	2.1	1	0.7
	E-4	1	0.7	3	2.1
	E-5	0	0	1	0.7
26-28	E-4	2	1.4	0	0
	E-5	1	0.7	1	0.7
	O-2	0	0	1	0.7
29-34	E-5	1	0.7	0	0
	E-6	2	1.4	0	0
Total		11	7.9	10	7.1

Of group 1 participants, an additional 7.1% were referred for mental health services based upon their scores of their PCL-M. A total of 21 (15%) of group 1 participants were referred for mental health services based off their PDHA and PCL-M scores. Based upon these findings, the hypothesis that 6% of the Marine participants that were identified as having symptoms of PTSD, based upon their results of the PDHA and PCL-M, were referred for mental health services was supported.

Summary

The statistical analyses of this study supported two of the five hypothesis proposed. The Marine participants that were identified as having symptoms of PTSD

based on their results of their PDHA and PCL-M scores were referred for mental health services as suggested. Even though the proposed percentage of the Marine participants that would be identified as having symptoms of PTSD through the PDHA and PCL-M was not supported, more Marines were identified as having symptoms of PTSD through the utilization of both assessment instruments (PDHA and PCL-M) versus those identified using just the PDHA.

Both instruments proved to be effective when assessing symptoms of PTSD in active duty Marines in this study. The PDHA has shown to be useful in military screening settings due to time constraints and inconvenience of lengthy assessments; therefore, the shorter version of the PCL-M may prove to be a valuable assessment tool. Depending on what level of PTSD a health care provider determines to look for in a population may influence their decision on an assessment method and cut off values. Chapter 5 will further discuss and summarize the study and conclusions about the findings. Chapter 5 will also discuss the demographics and descriptive data of the participants and how that proved helpful in this study, social change implications of this study and future recommendations for research to be continued in this area.

Chapter 5: Discussion

Introduction

This study examined the items on the PDHA and PCL-M that were used to assess a sample population of Marines for symptoms of PTSD following their return from a combat deployment. The increase of PTSD in the active duty United States military forces due to the wars in Iraq and Afghanistan has identified the need for proper early identification of symptoms of PTSD for mental health referrals. Using the Item Response Theory (IRT) theoretical framework to investigate the items on the PCL-M and the PDHA helped to identify whether the assessment items were effective in measuring symptoms of PTSD and at which levels of symptom severity. Understanding the psychological complexities involved in the diagnosis of PTSD as well as the distinctiveness of the Marine Corps culture is necessary in being able to properly identify those Marines who evidence symptoms of the disorder and provide early intervention and proper mental health referrals.

Interpretation of Findings

As noted in the research study by Bliese et al. (2008), the PC-PTSD portion of the PDHA and the PCL functioned well together as screening instruments for symptoms of PTSD in the active duty U.S. Army population. This study showed that the full 17-item PCL-M and the PC-PTSD portion of the PDHA were effective tools to assess active-duty Marines for symptoms of PTSD upon their return from a combat deployment. In this study, there were 4-items on the PCL-M that were the most discriminate out of the 17 that were further assessed and compared to the full 17-item PCL-M. This comparison

showed that shortened 4-item PCL-M had no different accuracy estimate than that of the full PCL-M. The overall accuracy of the PDHA and the shortened version of the PCL-M were similar; however, some of the PCL-M's items are more precise to identify those respondents who scored higher levels of PTSD. Identifying the levels of PTSD in Marines is imperative as those Marines with lower-levels of PTSD are likely not referred for additional mental health services as needed. The ability to distinguish which item(s) on the assessment tools that are most effective at identifying symptoms of PTSD on varying levels is vital to health care providers when screening Marines for PTSD upon their return from a combat deployment. Additionally, distinguishing an appropriate cut-off score that is effective in the population being assessed will ensure optimal efficiency in order to effectively refer those individuals who may be experiencing symptoms of PTSD for further mental health treatment.

Demographics

The majority of the participants in this study were young enlisted Marines. Specifically, over three quarters of the study participants were enlisted Marines between 19-25 years of age. The young participant demographics are consistent with and representative of the Marine Corps population as a whole. In 2012, 70% of the Marines in the Marine Corps were serving in their first enlistment with an estimated 75% not re-enlisting for a second term of service; therefore, creating a more extensive younger population (Wetzel, 2012). Only 2.6% of the participants were Marine Officers. There were no female participants in this study as the participants were from a Marine Corps infantry unit in which female Marines are not yet able to serve in ground combat roles in

the Marine Corps. Starting in late 2014, a Ground Combat Integrated Task Force was created to study female Marines who volunteered to fill ground combat roles. The identification of challenges that the female Marines face when training to meet the requirements to fulfill a combat role are being analyzed in hope to refine job standards and successfully integrate female Marines into those ground combat jobs (Seck, 2014). There was a sufficient number of participants to statistically analyze and examine the secondary data collected from the participants' assessments to ensure this study's validity.

Item Characteristics and PTSD Levels

PTSD assessments can differ across settings depending on the population being assessed and the setting in which the people are being assessed. For example, there are three versions of the PCL that are available to utilize to assess for PTSD; one being geared towards the military population (military experiences), one geared towards the general civilian population (stressful experiences from the past), and one designed to assess any traumatic event (stressful experiences) (Fissette et al., 2013, p.2). Scoring of PTSD assessments also differs regarding the population being assessed and the varying levels of PTSD on the latent construct. Health care providers scoring PTSD assessments can look for a large number of items being endorsed by a person at low levels of PTSD or for a low number of items being endorsed by a person with high levels of PTSD. The levels of PTSD that the health care provider is looking for when identifying symptoms of PTSD is contingent upon the population they are assessing. Being able to tailor assessments and cut-off values (or scores) for the assessments will help to ensure those

who have symptoms of PTSD are properly identified. Understanding item characteristics and adapting those to the specific population being assessed is key to efficiently identify symptoms of PTSD in order to make appropriate and accurate mental health referrals for those who require help.

This study examined and compared the item characteristics used to assess for symptoms of PTSD using the PDHA between two groups of participants. Group 1 participants volunteered to take the PCL-M in addition to the PDHA, and the participants that took only the PDHA were considered group 2. The four items on the PDHA provided efficient in assessing symptoms of PTSD at low levels in the Marine participants of this study. The results indicated that the four items differed in difficulty and discrimination for both groups. Items 3 and 4 ("Were constantly on guard, watched, or easily startled" and "Felt numb or detached from others, activities, or your surroundings") on the PDHA had a higher probability of being endorsed than items 1 and 2 ("Have had nightmares about it or thought about it when you did not want to" and "Tried hard not to think about it or went out of your way to avoid situations that remind you of it") for the participants in this study. This study found that response cut-off scores for the PC-PTSD portion of the PDHA of two or three "yes" responses are reasonable as what was also found by the study conducted by Bliese et al. (2008). Response cut-off's of two and three "yes" responses are ideal as what was shown by the steepness of the discrimination curve for the PDHA in the graph in Figure 3 (p.70). The steep discrimination curve signifies that the items that are expected to be endorsed are sensitive to the levels of PTSD. The discrimination curve begins to smooth out after the 3rd item

shown on the discrimination parameter denoting that the cut-off of three "yes" responses still has an acceptable level of sensitivity when identifying symptoms of PTSD at a low level.

This study also explored and evaluated the item characteristics used to assess for symptoms of PTSD using the PCL-M for group 1. The examination of the PCL-M items provided four high information (most discriminating) items compared to the other 13 items in the assessment which were:

Item 8: "Trouble remembering important parts of a stressful military experience?"

Item 9: "Loss of interest in things you used to enjoy?"

Item 11: "Feeling emotionally numb or being unable to have loving feelings for those close to you?"

Item 14: "Feeling irritable or having angry outbursts?"

The outcome indicated that the four items differed in discrimination and difficulty and would prove successful in identifying symptoms of PTSD in those Marines with medium to high levels of PTSD. There were also items on the PCL-M that were not as effective in assessing Marines with medium to high levels of PTSD as shown in the graph for item 13 ("Trouble falling or staying asleep?"). The graph for item 13 (p.88) was shown as it had the lowest information (least discriminatory) out of the full 17-item PCL-M that could be used to identify individuals with medium to high levels of PTSD. The graph shows the probability of endorsement for item 13 would be low for individuals with medium to high levels of PTSD; instead, the probability of endorsing item 13 would

be higher at low levels of PTSD. The test characteristic curve for the full 17-item PCL-M as well as the shortened version shows the PCL-M is effective in identifying symptoms of PTSD at all levels of symptom severity. This study found that response cut-off scores between 7 and 8 for the 4-item PCL-M are reasonable as what was also similarly found by the study conducted by Bliese et al. (2008) when scoring their shortened version of the PCL-M (they utilized different items than the 4 that were used in this study). Response cut-off's of 7 and 8 are ideal as what was shown on the discrimination parameter in the graph in figure 5 (p.75). As what was described about the steep discrimination curve for the PDHA, the steep discrimination curve for the 4-item PCL-M signifies that the items that are expected to be endorsed are sensitive to the levels of PTSD. The discrimination curve begins to smooth out between the 7th and 8th item shown on the discrimination parameter denoting that the cut-off score between 7 and 8 still is an acceptable level of sensitivity when identifying symptoms of PTSD.

The PC-PTSD portion of the PDHA and the 4-item PCL-M proved to be effective in assessing symptoms of PTSD in active-duty Marines during the 30-day time period following a combat deployment. The four-item PCL-M included item 8 ("Trouble remembering important parts of a stressful military experience?"), item 9 ("Loss of interest in things you used to enjoy?"), item 11 ("Feeling emotionally numb or being unable to have loving feelings for those close to you?") and item 14 ("Feeling irritable or having angry outbursts?"). The full PDHA consists of ten pages; four pages in which Marines are required to complete that ask many questions touching on various topics such as injury, encountering dead bodies and/or injured people, illness, alcohol

consumption, and biological exposure. Included in the four pages is question number 15 which is modeled after the PC-PTSD that was designed to assess for symptoms of PTSD and was the focus of this study. The other six pages of the PDHA are to be completed by the health care provider to catalogue their review, interview, assessment, and recommendation for the individual Marine.

In the study conducted by Bliese et al. (2008), it was confirmed that the PC-PTSD functioned well as a screening instrument for an active duty U.S. Army sample population. This current research study supported a similar concept in affirming that the PC-PTSD portion of the PDHA is an effective stand-alone tool in assessing symptoms of PTSD during the 30 day time period following active duty Marines returning from a combat deployment; therefore disproving hypothesis #1. The test characteristic curves for the PDHA and PCL-M showed that the overall accuracy of these two assessment instruments were nearly equal and that the items used to assess for symptoms of PTSD on these instruments were sensitive to the levels of PTSD that were present in participants.

The items on the PDHA showed to be appropriate to identify persons with lower levels of PTSD whereas the items on the shortened PCL-M were suited to identify the participants with higher levels of PTSD. Therefore, if it was desired to specifically identify those individuals with higher PTSD symptom severity, the shortened PCL-M could be used. If one desired to identify individuals with lower PTSD symptom severity, the PDHA would be more suitable to utilize. This was what also found to be true by Fissette et al. (2013) when exploring item-level functioning for the PCL-M in order to determine which items would be appropriate when assessing military service members in

different environments. Hypothesis # 2 (which stated that 28% to 44% of the sample population would endorse two or more items on the PDHA) was not supported as only 15% of group 1 participants and 4.5% of group 2 participants positively endorsed two or more items on the PDHA in relation to assessing for PTSD. A total of 25.7% of group 1 participants were identified as having symptoms of PTSD based off their PDHA and PCL-M scores which did not support hypothesis #4 (which stated that 38% to 54% of the sample population would be identified as having symptoms of PTSD). It is reasonable to presume that more of the participants did not endorse items on the PDHA and/or PCL-M due to the negative stigma that the participants have regarding mental health treatment. Negative stigma-related concerns are a significant cause of underreporting mental health symptoms in the U.S. military (Bliese et al., 2009).

The active-duty Marine participants of this study had differing levels of posttraumatic stress in which the PDHA and PCL-M proved efficient and accurate to identify those varying levels present. Identifying Marines at all levels of symptom severity is important as those Marines with lower level PTSD scores tend to downplay their symptoms and are overlooked by the health care providers who are conducting the assessments. Even though there was no vast difference between the difficulty and discrimination of the items in the PDHA and shortened PCL-M, the shortened PCL-M may be beneficial to health care providers who are under time constraints or not in the appropriate settings to administer the full PCL-M or full PDHA. Using the PDHA in addition to the PCL-M when assessing for symptoms of PTSD in group 1 participants allowed the health care providers to recognize additional Marines with symptoms of

PTSD in this study within 30 days of participating in a combat deployment. Identifying additional Marines with PTSD symptoms permitted supplementary mental health referrals ensuring the Marines received additional services as necessary.

Referrals

This study compared the referrals made for mental health services amongst the 273 participants based off their PDHA and PCL-M scores. 5.5% of the Marine participants from both groups were referred for mental health services based off their PDHA scores, supporting hypothesis # 3 (that at least 4% of participants would be referred). An additional 7.1% of group 1 participants were referred for mental health services based off their PCL-M scores. A total of 15% of participants from group 1 were referred for mental health services based off their PDHA and PCL-M scores supporting hypothesis #5 (that at least 6% of the participants would be referred). Without the additional assessment being given (PCL-M) to group 1, ten Marines who had symptoms of PTSD would have been overlooked by the health care provider and would have not been referred for further services. Not being referred for further services could have been detrimental to those Marines because when symptoms of PTSD go untreated, those issues can have a negative effect on those Marines, their families, and the Marine Corps as a whole. Referrals provide Marines the opportunity to get the help and offer them the tools they need to effectively handle and address their mental health concerns once they return to a peacetime environment. Receiving referrals ensures timely mental health care to Marines which is important as to reduce and prevent negative long-lasting psychological consequences.

Cut-off scores and responses to the assessments in this study were consistent to what was utilized in past studies involving military participants for health care provider referrals. In this study, the health care provider referred Marines who had three or more "yes" responses for the PC-PTSD portion of the PDHA. For those Marines who had two "yes" responses on the PC-PTSD, the health care provider's referral was dependent on the results of the face-to-face interview that the health care provider had with the Marine. In the study conducted by Bliese et al. (2008) using active-duty Army participants, the cut-off scores of two to three "yes" responses had reasonable sensitivity and specificity whereas three "yes" responses was found to be favorable when assessing large populations at one time. A cutoff score of 31 was decided to be utilized for this study for the PCL-M by the health care provider as this score has been previously used in past military studies measuring symptoms of PTSD. The PCL-M cutoff scores that were used by the provider in this study were not significantly lower to what was found to be ideal as a result of the findings of this study. Score values between 32 and 40 for the full 17-item PCL-M were found to be efficient in the sample population used in this study in identifying symptoms of PTSD. These score values produced specificity values at or near .90 and yielded acceptable sensitivity values. Having high specificity and sensitivity values for an assessment ensures misdiagnoses is avoided and false reporting is low. Bliese et al. (2008) found scores ranging from 30 to 34 performed well when screening post combat active-duty soldiers as those scores had high specificity and sensitivity for that population that was screened; whereas Blanchard et al. (1996) found that scores between 44 and 50 performed well when screening Vietnam veterans in a primary care

setting. Lower score values when screening active-duty military members in military settings are appropriate as specificity and sensitivity values are great whereas higher score values used when screening individual veterans in primary care settings is suitable for the same reason. The differences in the score values for the PCL-M seem to be reliant on the population that is being assessed and the settings in which they are being assessed.

The results of this study highlight the crucial role the health care providers have by determining which score values are ideal when using the PCL-M to assess for symptoms of PTSD in different population depending on the population being assessed and the setting in which the assessments are being given. Assessing active-duty Marines for symptoms of PTSD, especially following the return from a combat deployment, is mandatory and some Marines may not desire treatment. Therefore, the concerns related to stigma are high and the desire to receive treatment is low. The cutoff scores found to be effective when assessing the population in this study can be used by the health care providers as a guide and reference when administering future assessments to Marines. Lower cutoff scores when using the PDHA and PCL-M in military environments when screening active-duty Marines returning from combat are optimal to identify those who require referral for further mental health treatment.

Limitations

There are limitations in this study due to the demographics of the Marine participants. Specifically, since the participants were from a Marine Corps infantry unit in which female Marines are unable to fill ground combat roles, there were only male participants. Even though the Marine Corps is predominantly male, there is a small

percentage of females present amongst its ranks. Therefore, gender was well represented in this study in regards to Marine Corps infantry units; however, gender was not well represented throughout the Marine Corps as a whole. Consequently, the recommended item characteristics and cut-off score values given due to the findings of this study many not generalize to female Marines. Additionally, Marine Officers of the O-3 and over pay grades and enlisted Marines of the E-7 and over pay grades were not represented well as there were a limited number of participants and/or there were no participants that fell into those particular pay grades that took part in this study and the data had to be excluded.

Another limitation in this study would be regarding the experiences the Marine participants had during their combat deployment. The participants that were used in this study all came from the same Marine Corps Battalion; however, different squads and platoons are assigned different missions while deployed in-theater offering assorted experiences in which the Marines encounter. Having different experiences may cause varying levels of risk which in turn can affect levels of PTSD amongst the Marines.

Even though this study used a sample population comprised of active-duty Marines, some of the findings can be generalized to other branches of the military. To begin with, the level of PTSD in which the health care providers are screening for can determine which assessment instrument would be most appropriate to utilize. It was found in this study that the items on the PDHA and the PCL-M were sensitive to differing levels of PTSD symptom severity. Establishing the level of PTSD in which the health care providers are looking for before they begin the assessment process can ensure the most efficient assessment instrument will be utilized. Next, it was found in this study as

well as past studies that cut-off scores for the PDHA and PCL-M should be tailored to the population being assessed. A high cut-off score may be appropriate to use in a primary care setting or when assessing veterans but a low cut-off score when screening active-duty military members returning from a combat deployment is more suitable. Having lower cut-off scores will help the health care provider identify those individuals who may be experiencing symptoms of PTSD and are not seeking treatment. Last, having short and accurate assessments that are suited to the environment in which the individuals are being assessed are ideal. Having an abundance of time to complete an assessment is usually not the case when it comes to assessing active-duty military members, especially post-combat. When the PDHA assessment is given to Marines while still in-theater, it is usually given when combat operations are complete and the preparations to return to their command base are in process. There is a limited amount of time set aside for this paperwork to be completed as there are many other critical tasks that must be complete before getting cleared to depart the country (accountability of personnel/equipment, tear-down/pack-up equipment, etc.). When taking a PDHA after returning from a combat deployment, the Marines are typically in a hurry to complete the required assessment as they want to see their families, take leave, vacation, etc., and do not desire to take an assessment that is going to demand a vast amount of their time. Concise, simple, and tailored assessments are the most appropriate to screen active-duty military members post-combat so as those with have symptoms of PTSD can be identified and prompt intervention provided.

Implications for Social Change and Recommendations for Action

PTSD in the Marine Corps is a topic that is common due to the increase in the number of reported cases over the past decade and will not dissipate any time in the near future. The general public has become aware of the severity of PTSD in Marines which has created concern and increased knowledge of how important mental health is in this population. One positive change that has occurred due to the public attention is the mandated post-deployment health assessment and reassessment for service members returning from a combat deployment. The results from this study are intended to further assist the Marine Corps as well as other branches of the U.S. military with their post-deployment screening for symptoms of PTSD. Efficient and effective assessment strategy for evaluating symptoms of PTSD is necessary in order to identify those service members in need of further mental health treatment. Efficient assessment tools are critical for the early identification of service members in need of mental health treatment. The findings from this study may provide a method, or additional methods, for health care providers to identify symptoms of PTSD. The PDHA is customarily given to the military member within 30 days of their return from a combat deployment. Based on the outcome of this study, it would be suggested that the PDHA or shortened PCL-M routinely be given in-theater to the service members in order to encourage early mental health intervention. The accurate and early recognition of symptoms of PTSD can provide timely referrals for mental health treatment which not only helps the service member as an individual, but will have a positive impact on the total U.S. military.

A recommendation for future research would be to compare the assessments given to service members at differing time periods following their return from an operational deployment. This study focused on assessing symptoms of PTSD of active-duty Marines within the 30-day time period following their return from a combat deployment. Future research could explore the comparison of the 30-day assessment of symptoms of PTSD in a sample military population to the 90-day re-assessment (Post-Deployment Health Reassessment (PDHRA)) that DOD currently mandates all service members, DOD civilian employees, and DOD contractor personnel take who have participated in an operational deployment. Comparing the evaluation of symptoms of PTSD identified at different time periods using the assessment tools could further pinpoint which item characteristics would be most effective in accurately identifying symptoms of PTSD in service members returning from a combat deployment.

Negative stigma that service members believe regarding mental health treatment hinders their desire and decision to accurately report their symptoms of PTSD and other mental health issues. Another recommendation for future research would be to explore what methods would be effective in defeating this negative stigma surrounding mental health treatment in the U.S. Military. Overcoming negative stigma is critical for the future identification and intervention efforts by health care providers providing services for mental health care to this population.

Conclusion

In conclusion, this study was conducted in an attempt to help to understand the mental health status of an under-researched population. This study was the first to

examine the item characteristics of the PC-PTSD portion of the PDHA and the PCL-M using an active-duty Marine Corps sample. Proving that the PDHA and PCL-M assessment instruments are effective when assessing for symptoms of PTSD in active-duty Marines within the first 30 days following their return from a combat deployment allows options for health care providers to utilize. Using short and easy to administer assessment tools can identify those Marines with symptoms of PTSD who can benefit from early intervention and subsequent referral for mental health treatment. The valuable concepts of simple, short assessment tools and early intervention can also be expanded to the other branches of the military which could aid and further develop their mental health programs they have currently in place.

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Appendix A: Title of Appendix

This form must be completed electronically. Handwritten forms will not be accepted.

POST DEPLOYMENT HEALTH ASSESSMENT (PDHA)

PRIVACY ACT STATEMENT

This statement serves to inform you of the purpose for collecting personally identifiable information through the DD Form 2796, Post-Deployment Health Assessment (PDHA).

AUTHORITY: 10 U.S.C. 136, Under Secretary of Defense for Personnel and Readiness; 10 U.S.C. 1074f, Medical Tracking System for Members Deployed Overseas; DoDI 1404.10, DoD Civilian Expeditionary Workforce; DoDI 6490.02E, Comprehensive Health Surveillance, and E.O. 9397 (SSN), as amended.

PURPOSE: To obtain information from an individual in order to assess the state of the individual's health after deployment outside the United States, its territories and possessions as part of a contingency, combat, or other operation and to assist health care providers in identifying and providing present and future medical care to the individual. The information provided may result in a referral for additional health care that may include medical, dental, or behavioral health care or diverse community support services.

ROUTINE USES: Your records may be disclosed to other Federal and State agencies and civilian health care providers, as necessary, in order to provide medical care and treatment. Use and disclosure of you records outside of DoD may also occur in accordance with 5 U.S.C. 552a(b) of the Privacy Act of 1974, as amended, which incorporates the DoD "Blanket Routine Uses" published at: http://dpclo.defense.gov/privacy/SORNs/blanket_routine_uses.html. Any protected health information (PHI) in your records may be used and disclosed generally as permitted by the HIPAA Privacy Rule (45 CFR Parts 160 and 164), as implemented within DoD by DoD 6025.18-R. Permitted uses and discloses of PHI include, but are not limited to, treatment, payment, and healthcare operations.

DISCLOSURE: Voluntary. If you chose not to provide information, comprehensive healthcare services may not be possible or administrative delays may occur. HOWEVER, CARE WILL NOT BE DENIED.

INSTRUCTIONS: You are encouraged to answer all questions. You must at least complete the first portion on who you are and when and where you deployed. If you do not understand a question, please discuss the question with a health care provider.

DEMOGRAPHICS

Last Name _____ **First Name** _____ **Middle Initial** ____

Social Security Number _____ **Today's Date** (*dd/mmm/yyyy*) _____

Date of Birth (*dd/mmm/yyyy*) _____ **Gender** O Male O Female

Service Branch
O Air Force
O Army
O Navy
O Marine Corps
O Coast Guard
O Civilian Expeditionary Workforce (CEW)
O USPHS
O Other Defense Agency List: _____

Component
O Active Duty
O National Guard
O Reserves
O Civilian Government Employee

Pay Grade
O E1 O E2 O E3 O E4 O E5 O E6 O E7 O E8 O E9
O O1 O O2 O O3 O O4 O O5 O O6 O O7 O O8 O O9 O O10
O W1 O W2 O W3 O W4 O W5
O Other

S A M P L E

Home station/unit: _____

Current contact information:
Phone: _____
Cell: _____
DSN: _____
Email: _____
Address: _____

Point of contact who can always reach you:
Name: _____
Phone: _____
Email: _____
Address: _____

PLEASE ANSWER ALL QUESTIONS BASED ON YOUR MOST RECENT DEPLOYMENT

Date arrived theater (*dd/mmm/yyyy*) _____ **Date departed theater** (*dd/mmm/yyyy*) _____

Location of operation
To what areas were you mainly deployed?
(Please list all that apply, including the number of months spent at each location.)

O Country 1 _____ Time at location (*months*) _____
O Country 2 _____ Time at location (*months*) _____
O Country 3 _____ Time at location (*months*) _____
O Country 4 _____ Time at location (months) _____
O Country 5 _____ Time at location (months) _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

1. **Overall, how would you rate your health during the PAST MONTH?**
   O Excellent O Very Good O Good O Fair O Poor

2. **Compared to before this deployment, how would you rate your health in general now?**
   O Much better now than before I deployed
   O Somewhat better now than before I deployed
   O About the same as before I deployed
   O Somewhat worse now than before I deployed Please explain: _____
   O Much worse now than before I deployed Please explain: _____

3. **How often did you smoke tobacco (for example cigarettes, cigars, pipe, or hookah) during your deployment?**
   O Just about every day O Some days O Not at all

4. **Were you wounded, injured, assaulted or otherwise hurt during your deployment?** O Yes O No

   If yes, are you still having any problems or concerns related to this event? O Yes O No

   If yes, please explain: _____

5. **During your deployment:**
   a. Did you ever feel like you were in great danger of being killed? O Yes O No
   b. Did you encounter dead bodies or see people killed or wounded during this deployment? O Yes O No
   c. Did you engage in direct combat where you discharged a weapon? O Yes O No

6. **How many times during your deployment did you visit a health care provider for a medical or dental health problem/concern?**
   O No visits O 1 visit O 2-3 visits O 4-5 visits O 6 or more

7. **During this deployment did you receive care for combat stress or a mental health problem/concern?** O Yes O No

   If yes, please explain: _____

8. **During this deployment, did you have to spend one or more nights in a hospital as a patient?** O Yes O No

   Reason/dates: _____

9. **During the PAST MONTH, how difficult have physical health problems *(illness or injury)* made it for you to do your work or other regular daily activities?**
   O Not difficult at all O Somewhat difficult O Very difficult O Extremely difficult

10.a. **During this deployment, did any of the following events happen to you?** (Mark all that apply)
   (1) Blast or explosion (e.g., IED, RPG, EFP, land mine, grenade, etc.)? O Yes O No
   If yes, please estimate your distance from the closest blast or explosion:
   O Less than 25 meters (82 feet)
   O 25-50 meters (82-164 feet)
   O 50-100 meters (164-328 feet)
   O More than 100 meters (328 feet)
   (2) Vehicular accident/crash (any vehicle including aircraft)? O Yes O No
   (3) Fragment wound or bullet wound?
   a. Head or neck O Yes O No
   b. Rest of body O Yes O No
   (4) Other injury (e.g., sports injury, accidental fall, etc.)? O Yes O No

   If yes to any of the above, please explain: _____

10.b. **As a result of any of the events in 10.a., did you receive a jolt or blow to your head that IMMEDIATELY resulted in:**
   (1) Losing consciousness ("knocked out")? O Yes O No
   If yes, for about how long were you knocked out?
   O Less than 5 min O 5-30 min O more than 30 min
   (2) Losing memory of events before or after the injury? O Yes O No
   (3) Seeing stars, becoming disoriented, functioning differently, or nearly blacking out? O Yes O No

10.c. **How many total times during this deployment did you receive a blow or jolt to your head?**
   (only answer if you had a yes to any of the questions on 10a.)
   O 0 O 1 O 2 O 3 O more than 3 (list number of times) _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

11. During the PAST MONTH, how much have you been bothered by any of the following problems?

Symptom	Not bothered at all	Bothered a little	Bothered a lot
a. Stomach pain	O	O	O
b. Back pain	O	O	O
c. Pain in the arms, legs, or joints (knees, hips, etc.)	O	O	O
d. Menstrual cramps or other problems with your periods (Women only)	O	O	O
e. Headaches	O	O	O
f. Chest pain	O	O	O
g. Dizziness	O	O	O
h. Fainting spells	O	O	O
i. Feeling your heart pound or race	O	O	O
j. Shortness of breath	O	O	O
k. Pain or problems during sexual intercourse	O	O	O
l. Constipation, loose bowels, or diarrhea	O	O	O
m. Nausea, gas, or indigestion	O	O	O
n. Feeling tired or having low energy	O	O	O
o. Trouble sleeping	O	O	O
p. Trouble concentrating on things (such as reading a newspaper or watching television)	O	O	O
q. Memory problems	O	O	O
r. Balance problems	O	O	O
s. Noises in your head or ears (such as ringing, buzzing, crickets, humming, tone, etc.)	O	O	O
t. Trouble hearing	O	O	O
u. Sensitivity to bright light	O	O	O
v. Becoming easily annoyed or irritable	O	O	O
w. Fever	O	O	O
x. Cough lasting more than 3 weeks	O	O	O
y. Numbness or tingling in the hands or feet	O	O	O
z. Hard to make up your mind or make decisions	O	O	O
aa. Watery, red eyes	O	O	O
bb. Dimming of vision, like the lights were going out	O	O	O
cc. Skin rash and/or lesion	O	O	O
dd. Pain with urination, frequency of urination, or strong urge to urinate	O	O	O
ee. Bleeding gums, tooth pain, or broken tooth	O	O	O

12. a. Over the PAST MONTH, what major life stressors have you experienced that are a cause of significant concern or make it difficult for you to do your work, take care of things at home, or get along with other people (for example, serious conflicts with others, relationship problems, or a legal, disciplinary or financial problem)?

O None or
O Please list and explain: _____

_____

_____

b. Are you currently in treatment or getting professional help for this concern? O Yes O No

13. What prescription or over-the-counter medications (including herbals/supplements) for sleep, pain, combat stress, or a mental health problem are you CURRENTLY taking?

O Please list: _____

_____

O None

14. a. How often do you have a drink containing alcohol?
O Never O Monthly or less O 2-4 times a month O 2-3 times per week O 4 or more times a week

b. How many drinks containing alcohol do you have on a typical day when you are drinking?
O 1 or 2 O 3 or 4 O 5 or 6 O 7 to 9 O 10 or more

c. How often do you have six or more drinks on one occasion?
O Never O Less than monthly O Monthly O Weekly O Daily or almost daily

15. Have you ever had any experience that was so frightening, horrible, or upsetting that, in the PAST MONTH, you:

a. Have had nightmares about it or thought about it when you did not want to?	O Yes	O No
b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it?	O Yes	O No
c. Were constantly on guard, watchful or easily startled?	O Yes	O No
d. Felt numb or detached from others, activities, or your surroundings?	O Yes	O No

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

16. Over the LAST 2 WEEKS, how often have you been bothered by the following problems?

	Not at all	Few or several days	More than half the days	Nearly every day
a. Little interest or pleasure in doing things	O	O	O	O
b. Feeling down, depressed, or hopeless	O	O	O	O

17. Are you worried about your health because you believe you were exposed to something in the environment while deployed? O Yes O No

If yes, please explain: _____

18. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment? O Yes O No

If yes, please explain: _____

19. Were you in a vehicle hit by a depleted uranium (DU) round; inside a destroyed vehicle that contained DU; or closely inspect such a vehicle? O Yes O No O Don't know

If yes, please explain: _____

20. Were you told to take medicines to prevent malaria? O Yes O No

If yes, please indicate which medicines you took and whether you took all pills as directed. (Mark all that apply)

Anti-malarial medications received	Took all pills?
O Chloroquine (Aralen®)	O Yes O No
O Doxycycline (Vibramycin®)	O Yes O No
O Malarone®	O Yes O No
O Mefloquine (Lariam®)	O Yes O No
O Primaquine	O Yes O No
O Other: _____	O Yes O No
O Given pills but do not know drug name	O Yes O No

21. Were you bitten or scratched by an animal during your deployment? O Yes O No

If yes, please explain what kind of animal was involved, your injury, and what happened:

_____

_____

22. Would you like to schedule an appointment with a health care provider to discuss any health concern(s)? O Yes O No

23. Are you interested in receiving information or assistance for a stress, emotional or alcohol concern? O Yes O No

24. Are you interested in receiving assistance for a family or relationship concern? O Yes O No

25. Would you like to schedule a visit with a chaplain or a community support counselor? O Yes O No

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

Health Care Provider Only – Provider Review, Interview, Assessment, and Recommendations:

Deployer reports arriving in theater on: _____ **Deployer reports departing theater on:** _____

1. Address concerns identified on deployer questions 1 and 2.

Deployer question	Not answered	Deployer indicated concern	Deployer's response or concern	Provider comments (if indicated)
Self health rating	O	O		
Change in health post-deployment	O	O		

2. Address wounds, injuries, assaults, etc., occurring during deployment as reported on deployer question 4.

a. Did deployer mark that he/she is still having a problem or concern related to a wound, injury, or assault that occurred during their deployment?
- O Yes
- O No (*go to block 3*)
- O Not answered by deployer

b. Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

3. Deployment experiences as reported in deployer question 5. Consider in overall assessment; ask follow-up questions as indicated.

Deployer question	Not answered	Yes response	Provider comments (if indicated)
Danger of being killed	O	O	
Encountered bodies or saw people killed or wounded	O	O	
In direct combat and discharged weapon	O	O	

4. Address concerns identified on deployer questions 6 through 9.

Deployer question	Not answered	Deployer indicated concern	Deployer's response or concern	Provider comments (if indicated)
Health care visits during deployment	O	O		
Care for combat stress/mental health	O	O		
Hospitalized during deployment	O	O		
Physical limitations/problems	O	O		

5. Deployment injury and concussion risk assessment.

a. Did deployer have an injury based on their responses to question 10.a.?
- O Yes
- O No (*go to block 6*)

b. Did deployer have a possible concussion based on their responses to questions 10.a. through 10.c.?
- O Yes
- O No (*go to block 6*)

c. Evaluate injury history and concussion-related experiences and symptoms.

Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

6. **Post-deployment general symptoms/health concerns.**

List of symptoms reported as "Bothered a Lot" on Deployer Questions 11a. through 11ee.
List of symptoms reported as "Bothered a Little" on Deployer Questions 11a. through 11ee.

Physical symptom (PHQ-15) severity score for Deployer Questions 11a. through 11o.				
	Minimal < 4	Low 5 - 9	Medium 10 - 14	High ≥ 15
Deployer's total	____	____	____	____

a. Does deployer have evidence of high generalized post-deployment physical symptoms (a score of ≥ 15 on the PHQ-15 physical symptoms scale - deployer questions 11a. - 11c.) or is "bothered a lot" by specific symptoms listed in 11a. – 11ee.?
- O Yes
- O No
- O Not answered by deployer

b. Based on deployer's responses to deployer questions 11a. through 11ee. is a referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

7. **Major life stressor as reported on deployer question 12.**

a. Did deployer mark they have a concern or a difficulty with a major life stressor?
- O Yes Deployer's concern: _____
- O No (*go to block 8*)
- O Not answered by deployer

b. If yes, ask additional questions to determine level of problem: _____

c. Consider need for referral. Referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O Other reason (explain): _____

8. **Self-reported history of prescription or over-the-counter medications as described on deployer question 13.**

Deployer question	Not answered	Yes response	Deployer's response	Provider comments (if indicated)
Medications	O	O		

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

9. Alcohol use as reported in deployer question 14.

a. Deployer's AUDIT-C screening score was _____. *(If score between 0-4 (men) or 0-3 (women) nothing required, go to block 10).* O Not answered

Number of drinks per week: _____ Maximum number of drinks per occasion: _____

Based on the AUDIT-C score and assessment of alcohol use, follow the guidance below:

Alcohol Use Intervention Matrix		
Assess Alcohol Use	**AUDIT-C Score Men 5 - 7 Women 4 - 7**	**AUDIT-C Score Men and Women ≥ 8**
Alcohol use WITHIN recommended limits: Men: ≤ 14 drinks per week **OR** ≤ 4 drinks on any occasion Women: ≤ 7 drinks per week **OR** ≤ 3 drinks on any occasion	Advise patient to stay below recommended limits	Refer if indicated for further evaluation AND conduct BRIEF counseling*
Alcohol use EXCEEDS recommended limits: Men: > 14 drinks per week or > 4 drinks on any occasion Women: > 7 drinks per week or > 3 drinks on any occasion	Conduct BRIEF counseling* AND consider referral for further evaluation	

* **BRIEF** counseling: **B**ring attention to elevated level of drinking; **R**ecommend limiting use or abstaining; **I**nform about the effects of alcohol on health; **E**xplore and help/support in choosing a drinking goal; **F**ollow-up referral for specialty treatment, if indicated.

b. Referral indicated for evaluation?
O Yes (complete blocks 19 and 20)
O No Provide education/awareness as needed.
State reason if AUDIT-C score was 8+:
O *Already under care*
O *Already has referral*
O *No significant impairment*
O *Other reason (explain):* _____

10. PTSD screening as reported in deployer question 15.

a. Are two or more of the deployer's responses to questions 15a. through 15d. "yes?"
O Yes
O No *(go to block 11)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

11. Depression screening as reported in deployer question 16.

a. Did deployer mark "more than half the days" or "nearly every day" on question 16a. or 16b.?
O Yes
O No *(go to block 12)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem; briefly describe results: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

12. Environmental and exposure concern/assessment as reported in deployer questions 17 and 18.

a. Did deployer indicate a worry or possible exposure? O Yes O No (go to block 13)

If yes, mark deployer's exposure concern(s)	
O Animal bites	O Paints
O Animal bodies (dead)	O Pesticides
O Chlorine gas	O Radar/Microwaves
O Depleted uranium	O Sand/dust
O Excessive vibration	O Smoke from burning trash or feces
O Fog oils (smoke screen)	O Smoke from oil fire
O Garbage	O Solvents
O Human blood, body fluids, body parts, or dead bodies	O Tent heater smoke
O Industrial pollution	O Vehicle or truck exhaust fumes
O Insect bites	O Chemical, biological, radiological warfare agent
O Ionizing radiation	O Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc. Please list:
O JP8 or other fuels	
O Lasers	
O Loud noises	

b. If yes, referral indicated?
O Yes (complete blocks 19 and 20)
O No (provide risk education)
O *Already under care*
O *Already has referral*
O *No significant impairment*
O *Other reason (explain):* _____

13. Depleted uranium (DU) as reported in deployer question 19.

a. Did deployer mark either "yes" or "don't know to questions [illegible]?
O Yes
O No *(go to block 14)*

b. If yes, based on details of event and extent of exposure is referral to PCM for completion of DD Form 2872 (DU Questionnaire) and possible 24-hour urinalysis indicated?
O Yes (complete blocks 19 and 20)
O No (provide risk education)
O *Already under care*
O *Already has referral*
O *No significant impairment*
O Other *reason (explain):* _____

14. Malaria prophylaxis review as reported in deployer question 20.

Deployer reports having deployed to: _____

a. Deployment location required malaria prophylaxis? O Yes O No *(go to block 15)*

b. Did deployer receive anti-malarial prophylaxis AND report compliance? O Yes *(go to block 15)* O No

c. If no, determine need for prophylaxis. Prescription indicated?
O Yes (complete blocks 19 and 20)
O No (briefly state reason): _____

15. Animal bite (rabies risk) as reported on deployer question 21.

a. Did deployer mark "yes" on animal bite/scratch?
O Yes
O No *(go to block 16)*

b. If yes, based on details of event and care received is a referral and/or follow-up indicated?
Note: Rabies incubation period can be months to years. Rabies prophylaxis can begin at anytime.
O Yes (complete blocks 19 and 20)
O No (provide risk education)
O *Was appropriately treated*
O *Already under care*
O *Already has referral*
O *Situation was not a risk for rabies*
O Other *reason (explain):* _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

16. Suicide risk evaluation.

a. **Ask** "Over the **PAST MONTH**, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way?"
- O Yes
- O No (go to block 17)

b. If 16.a. was yes, **ask:** "How often have you been bothered by these thoughts?"
- O Few or several days
- O More than half of the time
- O Nearly every day

c. If 16.a. was yes, **ask:** "Have you had thoughts of actually hurting yourself?"
- O Yes **(If yes, ask questions 16d. through 16g.)**
- O No (If no thoughts of self-harm, go to block 17)

d. **Ask** "Have you thought about how you might actually hurt yourself?"
- O Yes How? _____
- O No

e. **Ask** "There's a big difference between having a thought and acting on a thought. How likely do you think it is that you will act on these thoughts about hurting yourself or ending your life over the next month?"
- O Not at all likely
- O Somewhat likely
- O Very likely

f. **Ask** "Is there anything that would prevent or keep you from harming yourself?"
- O Yes What? _____
- O No

g. **Ask** "Have you ever attempted to harm yourself in the past?"
- O Yes How? _____
- O No

h. **Conduct further risk assessment** (e.g., interpersonal conflicts, social isolation, alcohol/substance abuse, hopelessness, severe agitation/anxiety, diagnosis of depression or other psychiatric disorder, recent loss, financial stress, legal disciplinary problems, or serious physical illness)

Comments: _____

i. Does deployer pose a current risk for harming self?
- O Yes (complete blocks 19 and 20)
- O No

17. Violence/harm risk evaluation.

a. **Ask,** "Over the past month have you had thoughts or concerns that you might hurt or lose control with someone?"
- O Yes
- O No *(go to block 18)*

If yes, **ask** additional questions to determine extent of problem (target, plan, intent, past history) Comments: _____

b. Does member pose a current risk to others?
- O Yes (complete blocks 19 and 20)
- O No (briefly state reason): _____

This form must be completed electronically. Handwritten forms will not be accepted.

Deployer's SSN (Last 4 digits): _____

18. Deployer issues with this assessment (mark as appropriate):
O Deployer declined to complete form
O Deployer declined to complete interview/assessment

Assessment and Referral: After review of deployer's responses and interview with the deployer, the assessment and need for further evaluation is indicated in blocks 19 through 22.

19. Summary of provider's identified concerns needing referral <Mark all that apply>	Yes	No
a. None Identified O		
b. Physical health	O	O
c. Dental health	O	O
d. Concussion	O	O
e. Mental health symptoms	O	O
f. Alcohol use	O	O
g. PTSD symptoms	O	O
h. Depression symptoms	O	O
i. Environment/work exposure	O	O
j. Depleted uranium	O	O
k. Malaria prophylaxis	O	O
l. Risk of self-harm	O	O
m. Risk of violence	O	O
n. Other, list:	O	O

20. Recommended referral(s) <Mark all that apply even if deployer does not desire>	Within 24 hours	Within 7 days	Within 30 days
a. Primary Care, Family Practice, Internal Medicine	O	O	O
b. Behavioral Health in Primary Care	O	O	O
c. Mental Health Specialty Care	O	O	O
d. Dental	O	O	O
e. Other specialty care:	O	O	O
Audiology	O	O	O
Dermatology	O	O	O
OB/GYN	O	O	O
Physical Therapy	O	O	O
TBI/Rehab Med	O	O	O
Podiatry	O	O	O
Other, list	O	O	O
f. Case Manager / Care Manager	O	O	O
g. Substance Abuse Program	O	O	O
h. Immunization clinic	O	O	O
i. Laboratory	O	O	O
j. Other, list:	O	O	O

21. Comments: _____

22. Address requests as reported on deployer questions 22 through 25.

Deployer question	Not answered	Yes response	Comments (if indicated)
Request medical appointment	O	O	
Request info on stress/emotional/alcohol	O	O	
Family/relationship concern assistance	O	O	
Chaplain/counselor visit request	O	O	

23. Supplemental services recommended / information provided	
O Appointment Assistance	O Family Support
O Information on post-deployment blood specimen requirement	O Military One Source
O Contract Support: _____	O TRICARE Provider
O Community Service: _____	O VA Medical Center or Community Clinic
O Chaplain	O Vet Center
O Health Education and Information	O Other, list:
O Health Care Benefits and Resources Information	
O In Transition	

Provider's Name: _____ Date (*dd/mmm/yyyy*) _____

Title: O MD or DO O PA O Nurse Practitioner O Adv Practice Nurse O IDMT O IDC O IDHS

I certify that this review process has been completed. **This visit is coded by V70.5 _ E**

Appendix B: Title of Appendix

PTSD Checklist – Military Version (PCL-M)

Name: _____ Unit: _____
Best contact number and/or email: _____
Deployed location: _____

Instructions: Below is a list of problems and complaints that veterans sometimes have in response to a stressful military experience. Please read each one carefully, put an "X" in the box.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1.	Repeated, disturbing *memories, thoughts, or images* of a stressful military experience?					
2.	Repeated, disturbing *dreams* of a stressful military experience?					
3.	Suddenly *acting* or *feeling* as if a stressful military experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful military experience?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful military experience?					
6.	Avoid *thinking about* or *talking about* a stressful military experience or avoid *having feelings* related to it?					
7.	Avoid *activities* or *talking about* a stressful military experience or avoid *having feelings* related to it?					
8.	Trouble *remembering important parts* of a stressful military experience?					
9.	Loss of *interest* in things that you used to enjoy?					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble *falling* or *staying* asleep?					
14.	Feeling *irritable* or having *angry outbursts*?					
15.	Having *difficulty* concentrating?					
16.	Being "*super alert*" or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Has anyone indicated that you've changed since the stressful military experience? Yes __ No__