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Explaining Combat Related Posttraumatic Stress Disorder: An Integrated Mental Illness and Military Process Model

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by

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ABSTRACT

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The purpose of the current study was to examine a process model of combat-related and mental-illness related processes that explain increased likelihood of Posttraumatic Stress Disorder (PTSD). This dissertation proposed the development of PTSD may occur due to cultural, social, and self-related pathways associated with veterans' dual encounters with combat (i.e., severity) and mental illness symptoms. Participants were 195 military veterans recruited from multiple sites and strategies to maximize sample size and representation. Participants were asked to complete several self-administered assessment inventories, including: the Posttraumatic Stress Disorder Checklist-Military, the Trauma Symptom Checklist, the Combat Experiences scale, the Self-Stigma of Mental Illness Scale, an adapted version of the Iraq War Attitude Scale, a perceptions scale, an adapted version of the Likelihood of Disclosure Scale, the Unit Support Scale, the Post-Deployment Support Scale, the UCLA Loneliness Scale (Version 3), as well as covariates that included demographics and details of military service (e.g., deployment information). Overall, results revealed that the impaired social support indicator of social isolation was linked to PTSD, whereas impaired unit support and impaired postdeployment support were not predictive of PTSD. Results also revealed that it is the cultural stereotypes and stigma associated with military and war but not of mental illness that plays a role in social isolation and subsequently PTSD. Overall, evidence supports the combined explanations of combat-related processes and mental illness processes in understanding likelihood of PTSD.

DEDICATION

For my parents, Faye J. Deitz and Staff Sergeant Merriell M. Deitz, United States Army, Retired—Operation Enduring Freedom/Operation Iraqi Freedom Veteran (2003-2004), Desert Storm/Desert Shield Veteran (1990-1991), and Vietnam War Veteran (1966-1968).

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CHAPTER 1

INTRODUCTION

The purpose of the current study was to examine a process model of combat-related processes and mental illness symptom processes that explain increased likelihood of combat-related Posttraumatic Stress Disorder (PTSD). This researcher proposed that the development of PTSD may occur due to cultural, social, and self-related pathways associated with the dual encounters of combat (i.e., severity) and mental illness symptoms.

All soldiers are impacted in some way by their experiences in war. For many, surviving the challenges of war can be rewarding, maturing, and growth-promoting (e.g., greater self-efficacy, enhanced identity, and sense of purposefulness, pride, and camaraderie, etc.) (National Center for Post-Traumatic Stress Disorder, 2004). The demands, stressors, and conflicts of participation in war can also be traumatizing, culturally and self-stigmatizing, socially and morally devastating, and transformative in potentially damaging ways (National Center for Post-Traumatic Stress Disorder, 2004). For example, in the war-zone, soldiers are taxed physically and emotionally in ways that are unprecedented. Returning soldiers have likely been exposed to many combat stressors including roadside bombs, handling human remains, and being responsible for killing (Greene-Shortridge, Britt, & Castro, 2007). Experiencing these events may result in the development of mental illness symptoms such as nightmares and heightened sense of arousal (National Center for Post-Traumatic Stress Disorder, 2004). These symptoms carry negative meaning and increased stigmatization of soldiers who have difficulties as a result of their combat experiences. Veterans may encounter negative public attitudes about mental illness (e.g., they are to blame for their problems). Simultaneously, after returning home, soldiers may encounter public attitudes and stereotypes that are in opposition to the war. Subsequently,

soldiers may internalize these negative attitudes resulting in decreased self-views and feelings of shame due to their involvement in the war effort and mental illness symptoms they experience. This perceived stigmatization may in turn inhibit disclosure of these combat experiences as well as symptoms, therefore, resulting in impaired social support and social isolation. This entire process may result in increased likelihood of developing diagnosable PTSD.

Thus, the present research was an examination of the above cultural, social, and self variables to investigate how they may contribute to understanding the development of PTSD based on combat experience. The four categories or domains of variables examined and reviewed in the following pages include: cultural (i.e., cultural stereotypes about mental illness, cultural attitudes and stereotypes about military and war), social (i.e., social isolation and impaired social support), self (i.e., symptom nondisclosure, combat nondisclosure, perceived stigma about mental illness, perceived stigma about military and war), and severity of symptoms and of combat (i.e., mental illness symptom severity, combat severity).

Posttraumatic Stress Disorder

The American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders* (third edition; DSM-III; APA, 1980) formally established the term, posttraumatic stress disorder (PTSD). Prior to this, various other labels were used to explain combat-related stress, including battle fatigue, shell shock, soldier's irritable heart, and war neurosis (McKeever & Huff, 2003; Sauer & Bhugra, 2001). Early descriptions of PTSD placed a large amount of responsibility on the victims. Persons diagnosed with the disorder were believed to possess inherent flaws that caused them to respond to stressors in a pathological manner (Brewin, Andrews, & Valentine, 2000; McKeever & Huff, 2003; Sauer & Bhugra, 2001).

Although extremely controversial, some researchers view PTSD as a normal biological reaction to an abnormal, highly stressful event (Wilson, 2004).

Currently, the Diagnostic and Statistical Manual of Mental Disorders (fourth edition)-Text Revision (DSM-IV-TR; APA, 2000) describes PTSD as a group of symptoms that manifest after exposure to a severe traumatic event in which the individual directly experienced, observed, or was confronted with actual or impending death or life-threatening injury or an endangerment to the physical integrity of oneself or another person (criterion A1). The individual's reaction to the traumatic stressor involves profound fear, terror, or helplessness (criterion A2). Specific diagnostic criteria for PTSD symptom clusters consists of reliving or having nightmares about the traumatic experience (criterion B), continual avoidance of stimuli related to the trauma and deadening of overall responsiveness (criterion C), repeated symptoms of heightened arousal (criterion D), and the disturbance lasting more than 1 month (criterion E). In addition, the distress must produce substantial impairment in other essential areas of functioning (criterion F). Specifically, the traumatic event or circumstances include (but are not limited to) the following: actual or potential improvised explosive device (IED); vehicle-imbedded explosive device; incoming artillery, rocket, or mortar fire; small arms fire, including suspected sniper fire; and attack upon friendly aircraft (National Center for Post-Traumatic Stress Disorder, 2007). Importantly, factors in a combat situation can increase stress to an already stressful situation. Some of these factors include what your mission or job is in the war, the politics surrounding the war, where the war is fought, and the type of enemy (National Center for Post-Traumatic Stress Disorder, 2011).

Approximately 69% of adults (51.2% of females and 60.7% of males) in the United States experience at least one traumatic situation at some point in their lives (Gray & Lombardo,

2003; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Ozer, Weiss, Best, & Lipsey, 2003). Nevertheless, only 10% of females and 5% of males develop PTSD (Ozer & Weiss, 2004; Ozer et al., 2003). Like noncombat related trauma, the majority of soldiers who experience combat trauma readapt to their civilian lives without profound difficulty. Overall, only 15% of servicemen and women who see combat develop PTSD (Creamer & Forbes, 2004; Dekel, Solomon, Elklit, & Ginzburg, 2004). Recent research shows 15% to 17% of veterans returning from Iraq in 2004 experienced acute stress or symptoms of trauma (Greene-Shortridge et al., 2007). Among women veterans of the conflicts in Iraq and Afghanistan, Veterans Affairs data show that almost 20% have been diagnosed with PTSD (United States Government Accountability Office, 2009). Additionally, PTSD occurs in approximately 10% of Gulf War (Desert Storm) Veterans (National Center for Post-Traumatic Stress Disorder, 2011). Also, about 30% of Vietnam Veterans develop PTSD (National Center for Post-Traumatic Stress Disorder, 2011). The current study was an investigation of a theoretical model explaining combat veterans' likelihood of developing PTSD. It is important to note that PTSD is not specific to combat veterans. For instance, PTSD may result from such experiences as sexual assault and exposure to natural disasters. However, the scope of this dissertation is focused solely on combat-related PTSD.

Mental Illness Symptoms

The present study is an examination of the potential pathways by which veterans' experience of mental illness-related symptoms lead to diagnostic levels of PTSD. Responses to traumatic events such as combat may involve intense fear and helplessness, re-experiencing perceptions and emotions related to the trauma through distressing recollections and nightmares, and a heightened sense of arousal and an avoidance of circumstances connected to the trauma

(DSM-IV-TR; APA, 2000). Additional mental illness symptoms may include: inability to experience pleasure or joy, pessimistic or negative attitude, a belief that the world is unsafe and unpredictable, general distrust in others, and social detachment or withdrawal and avoidance. To clarify, symptoms of mental illness, as examined in the current study, do not indicate disorder or illness; rather, symptoms of mental illness indicate distress or clinical symptoms.

Examining mental illness symptoms as a predictor of disorder (i.e., PTSD) allows variability to be investigated. That is, not all individuals experiencing symptoms develop PTSD; therefore, by using general symptoms as a predictor permits testing of mediating mechanisms along the way to PTSD that explains greater likelihood of PTSD diagnosis. Thus, the starting points in the proposed model explaining PTSD include mental illness symptoms and combat severity. Symptoms are a necessary but not sufficient condition for PTSD.

Combat Severity

Although prewar factors have been examined in relation to PTSD risk, research has discovered that prewar risk factors (e.g., personality characteristics, family history of psychological disorders) alone have failed to predict PTSD (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993). Rather, level of combat exposure along with other traumatic military experiences tends to more accurately predict later development of PTSD (Bremner et al., 1993; Brewin et al., 2000; Foy, Resnick, Sipprelle, & Carroll, 1987). Nearly 40% of the difference in the development of trauma symptoms and PTSD can be forecasted by the extent of combat exposure alone. Because level of combat exposure may be the most significant military-related variable in the development of symptoms, the present study involves combat severity (defined by characteristics such as whether or not participants witnessed someone from their unit being killed

and whether or not they killed someone in combat) as well as covariates related to number of deployments.

Research with Vietnam veterans demonstrates a positive correlation between combat exposure and stress-related symptoms after returning home from duty (Foy et al., 1987). A study examining traumatic war stressors and psychopathology among World War II, Korean, and Vietnam War veterans shows the positive correlation between combat exposure and trauma symptoms was comparable across each of these three major U.S. wars. In other words, a large amount of the knowledge gained regarding the influence of distinct 20th century wars on veterans' mental health may be relevant to the impacts of modern combat overall. The most common factor thought to be predictive of subsequent trauma symptoms across all three wars was the combatant having the responsibility of killing the enemy. Liability for taking another human being's life tends to be the most invasive, disturbing experience of combat (Fontana & Rosenheck, 1994). Grossman (1995) maintains that being responsible for killing during combat (coupled with low social support after returning home) greatly amplifies one's risk of acquiring trauma symptoms. This may be due to the military training that soldiers receive (e.g., battlemind training) which in ways may be different from their moral code of conduct in relation to humanity such as being willing to kill the enemy (Grossman, 1995). Other factors associated with combat-related emotional disturbance include being a target of killing and having partaken in abusive violence such as rape and torture. Being a target of killing, however, causes less emotional distress than being responsible for killing. This finding is attributed to the idea that being a target requires the smallest amount of personal liability for imposing death on other individuals (Fontana & Rosenheck, 1994). Regarding the current war in Iraq, the most common stressors reported by soldiers during the war included roadside bombs, length of deployment,

number of previous deployments, handling human remains, killing the enemy, seeing dead or injured Americans, and being unable to stop a violent situation. Other possible stressors of soldiers include a constant state of not knowing who the enemy is, having no "safe zones", and the unpredictable nature of warfare (Greene-Shortridge et al., 2007). At least 90% of soldiers returning from Iraq reported encountering these stressors, with 12% of them reporting being wounded or injured (Greene-Shortridge et al., 2007).

Although combat is a strong explanation for the development of PTSD symptoms, much explanation is yet to be uncovered. The present dissertation involved an integration of other cultural, social, and self explanations for PTSD in veterans including self-related beliefs about holding mental illness symptoms themselves. For instance, given cultural stereotypes in the United States, several negative stereotypes exist about people with mental disorders or symptoms. These public beliefs may become particularly distressing to combat veterans because of the possibility of devaluation and discrimination (Link & Phelan, 2001). It is likely that individuals experiencing mental illness symptoms worry about rejection and unfair treatment because of holding a potentially stigmatizing identity (Link, 1987). Exposure to stigma circumstances may lead to the development of or more severe mental disorders (Link, 1987). However, this researcher proposed that veterans may be experiencing these cultural and self processes related to both combat and military as well as mental illness symptoms and these processes contribute to the development of PTSD.

Cultural Attitudes and Stereotypes About Military and War

Corrigan and Watson (2002) noted the differences between public and self-stigma stigma in relation to mental illness. Public stigma refers to the reaction of the general public toward individuals with mental illness, whereas self-stigma is the internalization of how the general

public portrays individuals with mental illness and the belief in this portrayal. Both public and self-stigma are composed of stereotypes, prejudice, and discrimination. Stereotypes are defined as knowledge structures that are learned by members of society (Corrigan & Penn, 1999). Stereotypes usually lead to prejudice—people engage in these knowledge structures and typically hold a negative view of a subpopulation (Corrigan & Watson, 2002). Discrimination is the behavioral reaction of prejudice (Corrigan & Watson, 2002). There are three primary themes reported in the stigma literature with regard to attitudes the public holds about individuals with mental illness (Corrigan & Penn, 1999). The first theme is authoritarianism—people with a mental illness are viewed as irresponsible and unable to care for themselves. The second theme refers to fear and exclusion—people with a mental illness should be feared and restricted from society. The third theme is benevolence—people with a mental illness are viewed as child-like, naïve, and innocent (Corrigan & Penn, 1999).

Also, Corrigan (2000) uses components of attribution theory to explain why society tends to stigmatize individuals with mental illness. Attribution theory focuses on understanding how individuals assign causality for different types of events (e.g., the development of a mental illness) and the consequences of these attributions for emotional and motivational reactions to the situation. Weiner, Perry, and Magnusson (1988) found that individuals with mental health problems were viewed as more responsible for their issues than those with physical problems and that attributions of controllability were related to decreased pity and increased anger toward people possessing the mental health problem. Indeed, research shows that the general public describes individuals with mental illness in pejorative terms such as dull, incompetent, dangerous, dirty, unpredictable, strange, weak, vulnerable, and worthless (Ben-Porath, 2002;

Corrigan & Wassel 2008). Psychological difficulties are still regarded by at least some of the public as a defect in character (Ben-Porath, 2002).

There are also cultural attitudes and stereotypes surrounding the military, particularly related to the politics surrounding different wars. For instance, there is little doubt that World War II was widely viewed has having been a 'good war' with clear moral aims and a triumphant outcome (Wagner-Pacifici & Schwartz, 1991). Conversely, the Vietnam War left a much more negative impression on the public. The majority of people thought that it failed to accomplish any meaningful goal in spite of the loss of many American lives (Wagner-Pacifici & Schwartz, 1991). Regardless of different opinions as to why the Vietnam War was a mistake, the perception of a failed military participation and involvement in a distant Asian country is broadly held. This general attitude and belief is echoed in the Vietnam Memorial. For example, the long list of the dead and the lack of images and representations of victory denote something tragic to many who view it regardless of the diverse answers they might give as to why (Wagner-Pacifici & Schwartz, 1991). Moreover, a national survey showed that 89% of the American public regarded World War II as a 'just' and 'meaningful' war, while only 25% of the American public felt that the Vietnam War was 'just' and "meaningful" (Schuman & Rieger, 1992). Furthermore, Mueller (1973) showed that the public is sensitive to casualties and that, when the human costs of war increase, public approval of the war (and its leadership) decline. Specifically, Mueller (1973) found that as the number of casualties increased, public support decreased during both the Vietnam War and the Korean War. Research has also shown a negative association between public opinion and the outbreak of hostilities and the rate at which casualties increased (Gartner, Segura, & Wilkening, 1997). These findings are likely generalizable to other conflicts as well (Gartner & Myers, 1995). Indeed, public attitudes toward the war in Afghanistan and Iraq were

initially more positive but became more negative a year after the war began (Carnagey & Anderson, 2007).

As public views toward the war become increasingly negative, veterans may internalize these beliefs and experience a stronger sense of perceived stigma about their combat and military involvement. Veterans experiencing trauma symptoms and aware of public attitudes about the military may anticipate negative consequences of disclosure (Greene-Shortridge et al., 2007; Wagner-Pacifici & Schwartz, 1991). If soldiers fear social exclusion and ridicule because they have mental illness symptoms or were involved in combat, they may refrain from disclosing information about the traumatic event or their symptoms due to apprehension about public stigma and cultural stereotypes. Moreover, soldiers' perceptions or beliefs of society holding them accountable for their psychological problems may further impede disclosure. If the soldier comes to internalize or personally endorse the negative attitudes and attributions held by society, he or she will likely experience a heightened sense of perceived stigma, the consequences of which are considered next.

Perceived Stigma of Mental Illness and Military and War

Perceived stigma refers to stigmatized individuals' perception of their own stigmatized identity or condition. Perceived stigma encompasses self-stigma as well as public or anticipated public stigma. This perception of their stigmatizing identity may manifest in feelings of shame, embarrassment, humiliation, and devaluation as well as perceived or anticipated exclusion or isolation from others or from society (Gibbons, 1985; Jacoby, 1994; Link, Cullen, Struening, Shrout, & Dohrenwend, 1989; Mickelson, 2001). Additionally, perceived stigma, or individuals' self-perceptions of holding a stigmatized identity or condition, may shape social interactions or relationships with others (Goffman, 1963). Further, research suggests that increased anticipated

stigma, greater centrality of the stigmatized identity to the self, increased salience of the identity, and possession of a stigma that is more strongly culturally devalued all predict increased psychological distress (Quinn & Chaudoir, 2009). It has yet to be tested whether perceived stigma might also increase likelihood of PTSD, although one study indicated a relation between perceived stigma and trauma symptoms in the context of sexual assault trauma (Deitz, Williams, Rife, & Cantrell, manuscript submitted for publication). Current stigma research has recognized that there is vast variability in how individuals cope with and respond to stigmatized identities (Quinn & Chaudoir, 2009). Although stigma can impact many different types of life outcomes (such as employment, housing, and educational achievement) researchers have primarily focused on psychological outcomes such as self-esteem, life satisfaction, happiness, depression, and anxiety (Quinn & Chaudoir, 2009).

Much interest and research on concealable stigmatized identities has stemmed from studies investigating the self-stigma of mental illness—because mental illness is in essence a concealable identity. Self-stigma has been shown to have a damaging impact on the lives of individuals with mental illness (Corrigan, Watson, & Barr, 2006). Self-stigma refers to individuals with mental illness (or other stigmatized identities) who internalize stigma and experience decreased self-esteem and self-efficacy (Corrigan & Watson, 2002). A large portion of the research on the self-stigma of mental illness is based on a model by Link (Link, 1987; Link & Phelan, 2001). The Modified Labeling Theory proposed by Link et al. (1989) concentrates on personal consequences when an individual is diagnosed with a mental disorder. This theory differs from the original labeling theory perspective by Scheff (1966), which assesses the etiological potential of the label itself in the development of mental disorders. Link and colleagues (1989) suggest that labels impact primarily the course and outcome of mental

disorders. According to Link (1987) self-stigma begins when individuals develop a lay theory about mental illness from childhood conceptualizations that reflect cultural images or stereotypes of mental illness. Specifically, individuals develop negative beliefs of what it means to be a patient with a disorder and, therefore, form ideas about how others will view and ultimately treat someone with that condition or identity (Link et al., 1989). Typically, this collection of beliefs is entirely in place prior to an individual entering mental health treatment. Consequently, when patients enter treatment for the first time, they are likely to confront the impacts of stigma immediately because frequently they have internalized a generally negative view about what it means to have a mental disorder (Link et al., 1989).

Moreover, these individuals tend to engage in coping mechanisms such as secrecy and withdrawal. Over time their beliefs about the connotations of the label they hold and their way of managing it shape the quality of their social connectedness (Link et al., 1989). Those patients who are highly concerned with stigma are likely to have limited support systems consisting only of secure and trusted people on whom they rely extensively. These individuals typically have minimal support available from people outside their immediate family (Link et al., 1989).

Similarly, Corrigan and colleagues (2006) in their study of self-stigma of mental illness differentiated self-stigma from cultural stereotypes and proposed a three-level model or process that included stereotype agreement, self-concurrence, and self-esteem decrement (Corrigan et al., 2006). Findings indicate that individuals who apply stigma to themselves are automatically likely to experience decreased self-esteem (Ben-Porath, 2002; Corrigan et al., 2006; Link, 1987). Findings also show that simply because individuals endorse stigma related to mental illness does not imply they will internalize it and suffer decreased self-esteem and self-efficacy (Corrigan et al., 2006). Additionally, symptoms of depression, which are frequent among people with mental

illness, may explain the decreased self-esteem and self-efficacy experienced by individuals who report self-stigma as a result of mental illness. Overall, this model shows that self-stigma starts when the individual internalizes the public stigma and applies it to persons with mental illness and then to himself or herself (Corrigan et al., 2006). Importantly, individuals who perceive themselves as responsible for their mental illness also perceive a greater degree of stigma than those individuals who attribute their disorder to a cause not under personal control (Mechanic, McAlpince, Rosenfield, & Davis, 1994). Specifically, studies show that individuals with a mental illness who attribute their condition to a physical, medical, or biological condition will be more satisfied with their social relationships and life in general than those individuals who see themselves as being responsible for their disorder (Mechanic et al., 1994). The present study is an integration of distinctions in cultural and perceived stigma (i.e., self-stigma) and anticipated negative treatment as linked with level of disclosure, social support, isolation, and ultimately PTSD.

Level of Disclosure

It is evident that individuals often need to talk with others about both major and minor events in their lives. Indeed, about 85% of people exposed to a major life event feel the need to share their experience with others (Ersland, Weisaeth, & Sund, 1989). Although self-disclosure spans a wide range of phenomena from simple details to complex personally meaningful narratives, both positive and negative emotions seem to be subject to high levels of disclosure throughout life. Additionally, self-disclosure has been shown to improve both psychological and physical distress following exposure to potentially traumatic events (Pennebaker & Harber, 1993). Researchers have found that writing about traumatic events results in improvements in immune functioning, drops in physician visits for illnesses, and improved performance at school

and work (Pennebaker, 1993). Comparatively, research has shown that the failure to talk about or acknowledge traumatic experiences is linked to increased health problems, automatic activity, and ruminations (Wegner, 1994). Additionally, studies from cognitive and clinical psychology have revealed that experiencing traumatic events impact general cognitive and memory processes and the abilities to create lucid and rational accounts of the event (Mahoney, 1991).

Rime and colleagues (1994) examined participants following car accidents. They found that high levels of emotion sharing took place immediately after the accident. However, emotion sharing diminished over time for most individuals. This study showed that a poorer outcome was associated with less sharing and longer rumination. There is also evidence that even written disclosure of traumatic events is associated with a range of physiological and self-report measures suggestive of better health (Pennebaker, 1995). Research also suggests that failure or inhibition of the disclosure of emotional material is related to poorer health outcomes (Pennebaker, 1995). Specifically, Pennebaker (1995) theorized that the purposeful private retention of troubling material either as avoidance or as an inhibition of emotion requires energy and as such it depletes the individual of valuable resources and leads to increased psychological and physical health problems. A strong argument to account for the obvious necessity to self-disclose emotionally loaded material is that it helps people create a more coherent narrative of events (Foa & Kozak, 1986). Amir, Stafford, Freshman, and Foa (1998) found that the complexity and articulation of sexual assault victim narratives was negatively related to the degree of trauma symptoms. This finding indicates that individual differences in postassault emotional self-disclosure impact the development of symptoms of PTSD.

The majority of previous research focused on self-disclosure has used variations of the Pennebaker (1995) writing method, which entails asking people to write about their experiences.

Brewin and Lennard (1999) investigated the differences between handwritten or typed narrative content. Brown and Heimberg (2001) examined the level of elaboration of the trauma narrative as a predictive factor in the development of PTSD symptoms. Amir et al. (1998) investigated the association between the degree of articulation of the narrative and trauma. Although this research has produced interesting data, it lacks ecological validity with regard to the common therapeutic interaction of simply talking to another person.

Importantly, for the present study stigma has been linked with nondisclosure. Link and colleagues in their Modified Labeling Theory (1989) hypothesized that coping orientations and actual experiences played a role in the process of stigmatization. Studies that have focused on coping orientations and their effects have found that individuals labeled as mentally ill engage in defensive strategies such as withdrawal and secrecy (Link et al., 1989). However, these coping strategies are ineffective, and a defensive technique such as withdrawal further isolates the individual (Link et al., 1989). Another aspect of Modified Labeling Theory is the actual experiences of negative reactions from others (Link et al., 1989). Within this framework, it is suggested that the awareness of widespread negative stereotypes leads people to expect rejection and discrimination, which in turn leads them to avoid social interactions (such as disclosing information about symptoms or traumatic event) (Link et al., 1989; Mueller et al., 2006).

Studies show that Vietnam veterans who discussed their military experience were less likely to develop PTSD than those who did not disclose (Green, Grace, Lindy, Gleser, & Leonard, 1990; Solkoff, Gray, & Keill, 1986). There are several feasible explanations for the beneficial effects of disclosing. For instance, verbalizing feelings and thoughts about a potentially traumatic event is likely to impose a logical narrative structure onto memories that might otherwise be stored in a disorganized fashion and facilitate the integration of thoughts and

feelings about the event (Foa & Kozak, 1986). In other words, disclosure allows the individual to translate experiences into words. Therefore, the disclosure process itself may be more important than any feedback or reactions that the individual receives in response to disclosure (Pennebaker, 1995). Self-disclosure is also likely to expose the discloser to the intense emotions associated with the experience that may serve to facilitate the extinction of the intense emotional or affective tie to the event (Foa & Kozak, 1986). Bolton, Glenn, Orsillo, Roemer, and Litz (2003) explored the long-term impact of self-disclosure on the mental health of U.S. military personnel deployed to peacekeeping operations in Somalia. This study found that self-disclosure to partner or spouse, family, friends, and/or other military personnel was related to decreased levels of PTSD symptoms severity. Additionally, veterans who experienced a positive or validating reaction to their disclosures reported lower levels of symptom severity than did those who reported disclosing to no one or who reported experiencing a negative or nonvalidating reaction to their disclosures (Bolton et al., 2003). Furthermore, results from this study show that the reactions of some types of confidants were more consistently related to PTSD symptoms (i.e., partner or spouse, family). Positive support in response to self-disclosure within the peacekeepers' immediate environment may be an important factor to successful adaptation following exposure (Bolton et al., 2003). This finding is consistent with previous research in which interactions with a spouse were demonstrated to have the most pronounced impact on mental health (Major, Zubek, Cooper, Cozzarelli, & Richards, 1997).

Yet, much research on veterans finds nondisclosure of both emotions related to traumas as well as combat experiences. Hoyt and colleagues (2010) examined disclosure of events to close others in soldiers and first responders. This study found that groups at risk for PTSD (i.e., military personnel and first responders) were less likely to disclose emotions related to traumas

compared to a sample of college students. A possible explanation for veterans' nondisclosure is that it is without question stigmatizing for soldiers to openly share their feelings of fear and doubt and to reveal signs of diminished capacity. This is particularly true in the modern military with many veterans seeking to progress their military careers and advance in rank. It is also possible that some soldiers do not disclose difficulties because they feel shame and do not want to show vulnerability. Also, a general explanation for veterans' nondisclosure may be related to the culture of secrecy and stoicism in the military as well as the code of silence that is part of training or military culture (Britt, Adler, & Castro, 2006; Hall, 2011).

Further, decreased levels of disclosure in groups at risk for PTSD may signify relationship problems resulting from exposure to a traumatic event (Hoyt et al., 2010). An unwillingness to disclose events may undermine the maintenance of relationships, resulting in greater symptoms of PTSD (Fivush, Bohanek, Robertson, & Duke, 2004; Pasupathi, McLean, & Weeks, 2009). Research investigating the likelihood of disclosing traumatic events to others shows that common experience between the individual telling the story and the listener predicts whether or not disclosure occurs (Derlega, Winstead, Greene, Serovich, & Elwood, 2004; Serovich & Mosack, 2003). Hoyt et al. (2010) found that disclosure was most likely to those with common experience (e.g., fellow soldiers). However, disclosure to individuals without common experience was associated with less PTSD. One explanation for this finding may be that disclosing to individuals with common experience may result in a pattern of unstructured, ruminative disclosure (Hoyt & Pasupathi, 2008). Thus it appears the most helpful network members may not be chosen for disclosure.

Yet, although studies have examined help seeking among veterans (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004; Pietrzak, Johnson, Goldstein, Malley, &

Southwick, 2009;Wright et al., 2009), few have focused on whether or not the veteran disclosed details of the combat experience or trauma symptoms to a friend, family member, significant other, and/or fellow soldier, which the present study examined. The work done has shown many services members are reluctant to speak with anyone about their combat experiences (Hoge et al., 2004). Importantly, lack of disclosure can limit social support.

Impaired Social Support and Social Isolation

There are four primary types of social support: esteem support, informational support, social companionship, and instrumental support (Cohen & Wills, 1985). Esteem or emotional support refers to information that a person is esteemed and accepted (Cohen & Wills, 1985). Informational support refers to help in defining, understanding, and coping with problematic events (Cohen & Wills, 1985). The social companionship dimension of social support refers to spending time with others in leisure and recreational activities (Cohen & Wills, 1985). Finally, instrumental support is the provision of financial aid, material resources, and needed services (Cohen & Wills, 1985).

Social support has the potential to buffer from the damaging effects of stressors on psychological and physical health (Ren, Skinner, Lee, & Kazis, 1999). Whereas a lack of social support or impaired support is a risk factor for PTSD for individuals regularly confronted with traumatic events such as military personnel (Brewin et al., 2000). Indeed, social support after returning home from combat duty has also been found to play a substantial role in the development of trauma symptoms (Foy et al., 1987; Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985; Ozer et al., 2003; Sutker, Uddo, Davis, & Ditta, 1995). Specifically, numerous studies of combat veterans demonstrating intact social supports, active coping, and positive homecoming experiences are linked with positive psychological adjustment (Fairbank, Hansen,

& Fitterling, 1991; Green et al., 1990; King, King, Foy, Keane, & Fairbank, 1999). Therefore, increased social support may serve as a buffer against the development of PTSD. Yet, as discussed above, veterans likely do not disclose to their support networks. Whereas disclosing stigmatizing traumas may result in a loss of social support due to the emotions it provokes in the confidante (Gielen, O'Campo, Faden, & Eke, 1997), withholding emotional experiences may undermine relationships (Pasupathi et al., 2009). Weakened support relations may lead to increased likelihood of PTSD.

Three specific social support factors that contributed to the development of stress symptoms among veterans include not receiving a hero's welcome, separation from civilian peers, and political opposition (Foy et al., 1987). Vietnam veterans who were exposed to traumatic military stressors indicate considerable decreases in the size of their social support systems over time. Specifically, reductions in emotional support were reported most often by veterans. Research also suggests that Vietnam veterans who later developed symptoms of trauma experienced decrements in social support shortly after their homecoming (Keane et al., 1985). According to Grossman (1995) the level of combat exposure and amount of social support form a synergistic relationship and tend to intensify each other.

Additionally, Pietrzak and colleagues (2010) examined associations between resilience, unit support, postdeployment social support, traumatic stress and depressive symptoms, and psychosocial functioning 2 years following return from deployment in a sample of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans. With regards to social support, this study found that unit support and postdeployment social support served as psychosocial buffers of PTSD and depressive symptoms and psychosocial difficulties at 2 years after deployment (Pietrzak et al., 2010). This finding suggests that social support plays a protective

role in preserving functioning in PTSD. It also shows that providing early social support may reduce the documented postdeployment increase in PTSD symptoms for OEF/OIF veterans. Social support may enhance functioning by fostering effective coping strategies, reducing involvement in high-risk behaviors or avoidance coping, promoting self-efficacy, and reducing loneliness (King, King, Fairbank, Keane, & Adams, 1998). Social support may also protect against PTSD by decreasing hypothalamic-pituitary-adrenal (HPA) axis reactivity and stress-related physiological arousal (Southwick, Vythilingam, & Charney, 2005). It may also promote task-oriented coping that enhances adaptation to stress by decreasing avoidance symptoms, behavioral withdrawal, and emotional disengagement (Southwick et al., 2005).

Yet, veterans may not have adequate social support, which in turn can put them at risk for PTSD. As previously noted, perceived stigmatization of individuals with mental illness impairs social relations (Corrigan et al., 2006; Link, 1987; Link et al., 1989). Additionally, Lepore, Evans, and Schneider (1991) suggested that the type of stressor and the context such as length of exposure (e.g., duration of combat exposure) may impact the association between the stressor and, in turn, the role of support. Specifically, stressful events that result in social withdrawal and isolation erode social support (Lepore et al., 1991). Importantly, studies show a strong positive correlation between combat exposure and a sense of isolation and social withdrawal after returning home from war (Foy et al., 1987). Additionally, other stigmatizing conditions (e.g., mental illness) may cause people in one's supportive network to become distant or overwhelmed (Lepore et al., 1991). Support network members' abilities to offer assistance may be further diminished if they are struggling with similar stressful circumstances (Lepore et al., 1991). This would likely be the case for soldiers serving together in the same military unit. Thus, the present study examined social support predicting that the preceding variables in the model (fully

described below) were linked with decreased levels of social support (presumably due to support deterioration or impairment).

Additional Models of Posttraumatic Stress Disorder

The model proposed in the current study is theoretically and empirically founded on previous models of the development of PTSD. A number of psychological paradigms provide frameworks for understanding PTSD, such as, cognitive theories (e.g., Foa & Rothbaum, 1997; Horowitz, 1986; Janoff-Bulman, 1985), attachment theory (e.g., Bowlby, 1969, 1973, 1980), and diathesis-stress (e.g., McKeever & Huff, 2003) models. A brief review of several earlier models and frameworks of PTSD is presented below.

Previous researchers have proposed and found evidence for models or pathways for the development of PTSD. Cognitive theories fall into two distinct categories. Social-cognitive theories (Horowitz, 1986; Janoff-Bulman, 1985) that empathize the impact of the trauma on individuals' lives and highlight the massive readjustments that often need to be made to integrate the traumatic experience into an individual's preexisting worldviews. By emphasizing the wider impact of the trauma and its consequences, they are able to explain other reactions such as anger, anxiety, and depression, which often accompany PTSD. In contrast, information-processing theories (Foa & Rothbaum, 1997; Foa, Steketee, & Rothbaum, 1989) focus more specifically on trauma-related threat, on how information is represented in the cognitive system, and how it is subsequently processed. These authors stated that posttraumatic symptoms resulted from the victim's difficulty in processing the emotional experience of a stressful event (Foa & Rothbaum, 1997).

The current model also stemmed from two cognitively-based clinical models that focus on the need to address other emotional responses, in particular shame and guilt, when assessing

and treating PTSD. These two clinical models are shame-based PTSD and guilt-based PTSD (Lee, Scragg, & Turner, 2001). These models highlight the importance of assessing meaning in the context of shame and guilt in the context of pre-existing schemas and address two pathways to the development of shame and guilt, including schema congruence and schema incongruence (Lee et al., 2001). Shame may be associated with the symptoms of PTSD as intrusive images in themselves carry meaning; they may be experienced by some people as shameful because they are taken to be a sign of weakness or not being able to cope. Shame may also be associated with underlying core beliefs (such as self as shameful or others as shaming) (Lee et al., 2001). These core beliefs or schema development is influenced by childhood experiences within a social, familial, and cultural context (Beck, 1976; Lee et al., 2001). Additionally, in the context of PTSD, pervasive feelings of guilt can arise when the meaning of the traumatic event conveys a violation or departure from standards of behavior or feeling of responsibility for causing harm to others. Often, these standards or rules for living are part of an individual's dysfunctional assumptions that have been established to avoid activation of the underlying core beliefs (Lee et al., 2001). To summarize, Lee and colleagues (2001) suggest that early maladaptive schemas shape perception, meaning, and causality of the traumatic event. Additionally, intrusive imagery may be a pathway to the assessment of emotional states and associated meaning of the event (Lee et al., 2001). Further, these researchers maintain that some individuals present with chronic PTSD characterized by intense feelings of shame, guilt, and humiliation, and these emotions can impede emotional processing of the event and may serve to exacerbate and perpetuate symptoms of PTSD (Lee et al., 2001). The shame- and guilt-based models of PTSD are similar to the current model in that shame and guilt are certainly part of perceived stigma; however, perceived stigma also encompasses self-stigma as well as public stigma. Self stigma may manifest in

feelings of shame and guilt. This model is also based on pre-existing cognitive schemas or worldviews, whereas the relations proposed in this paper are based on cultural, social, and self-related factors. Additionally, the self-related beliefs examined in this paper are similar to the cognitive aspects of the previous models that have included shame and guilt; however, the current paper is an examination of these beliefs in the contexts of actual public encounters with stigma and culturally based stereotypes.

In keeping with the attachment theory perspective, Renaud (2008) hypothesized that victims who experience other persons as a source of danger would create a conflict with the emotional interregulating functions of attachment. Additionally, chronic states of alarm may interfere with engaging other people in effective, emotionally regulating exchanges, either by pushing others away through emotional manifestations (e.g., anger, fear, numbness) or pulling away from others (Renaud, 2008). This may lead to the experience of emotional connectedness as unrewarding. Importantly, avoidance has several adaptive advantages for people with PTSD but at considerable interpersonal cost. For instance, attachment avoidance helps to maintain the protective function of hyperarousal by discouraging the formation of relationships that might result in a diminished perception of threat from the interpersonal environment (Renaud, 2008).

The model proposed in the current study also is grounded in the diathesis-stress model developed by McKeever and Huff, (2003). The stress pathway, which was originally termed "residual stress" by Figley (1978), reflects the immediate and lingering effects of experiencing a traumatic event. Similarly, according to Foy, Carroll, and Donahoe (1987) residual stress is a common negative psychological condition resulting from the experience of a traumatic event. Additionally, it is a common finding that PTSD develops in a minority of trauma survivors and this could be attributed to the variability in which certain risk factors are present (McKeever &

Huff, 2003). Substantial research has identified factors such as premorbid personality characteristics, childhood familial environments, social support, demographics, patterns of psychophysiological stress responses, and severity of trauma (Alarcon, Deering, Glover, Ready, & Eddleman, 1997; Figley, 1978; McKeever & Huff, 2003). According to McKeever and Huff (2003) the most prominent of these factors could be divided into three ecological pathways: residual (situational stress), ecological diatheses, and biological diathesis, all of which mutually influence each other. The diathesis-stress model of PTSD combines existing medical and psychological research data on etiological factors associated with PTSD into three causal pathways: residual stress, ecological, and biological (McKeever & Huff, 2003). Specifically, McKeever and Huff (2003) asserted that ecological and biological diatheses (or premorbid risk factors) interact with each other and with the residual stress pathway and constitute complex interaction effects in the development of PTSD. Additionally, although both ecological and biological pathways serve as diatheses, the residual pathway is the necessary catalyst for the potential onset of PTSD (McKeever & Huff, 2003).

Many models have been developed to explain the development of PTSD. The present, proposed model was grounded in this depth and breadth of literature. The current model specifically explored some new potential explanatory variables along with variables tested in prior research in an effort to examine whether stigma related factors relate to increased PTSD among veterans beyond the previously examined variables.

Proposed Model

The present study is a test of a model explaining likelihood of PTSD that integrates four domains of variables related to mental illness and military processes: cultural (cultural stereotypes about mental illness, cultural attitudes and stereotypes about military and war), social

(social isolation and impaired social support), self (symptom nondisclosure, combat nondisclosure, perceived stigma about mental illness, perceived stigma about military and war), and severity of combat exposure and mental illness symptoms. Figure 1 provides an illustration of the hypothesized relations among variables that were tested (note the model was not tested simultaneously). Researchers have emphasized that stigma is constructed at a contextual level through social relationships, cultures, and institutions (Quinn & Chaudoir, 2009); perceived stigma has rarely been examined as a predictor of PTSD and was included in the current study as a combination of self and anticipated public stigma or unfair treatment. On the basis of the above research, and aligned with paths depicted in Figure 1, study hypotheses included that:

H1: Combat severity, social isolation, and impaired social support would be related to a greater likelihood of PTSD.

H2: Mental illness symptom severity, perceived stigma about mental illness, symptom nondisclosure, combat severity, combat nondisclosure, and perceived stigma about military and war would be positively related to social isolation and impaired social support.

H3: Cultural stereotypes about mental illness, perceived stigma about mental illness, and mental illness symptom severity would be positively related to symptom nondisclosure, while cultural attitudes and stereotypes about military and war, perceived stigma about military and war, and combat severity would be positively related to combat nondisclosure.

H4: Cultural stereotypes about mental illness will be positively related to perceived stigma about mental illness, while cultural attitudes and stereotypes about military and war would be positively related to perceived stigma about military and war.

H5: Combat severity would be positively related to mental illness severity.

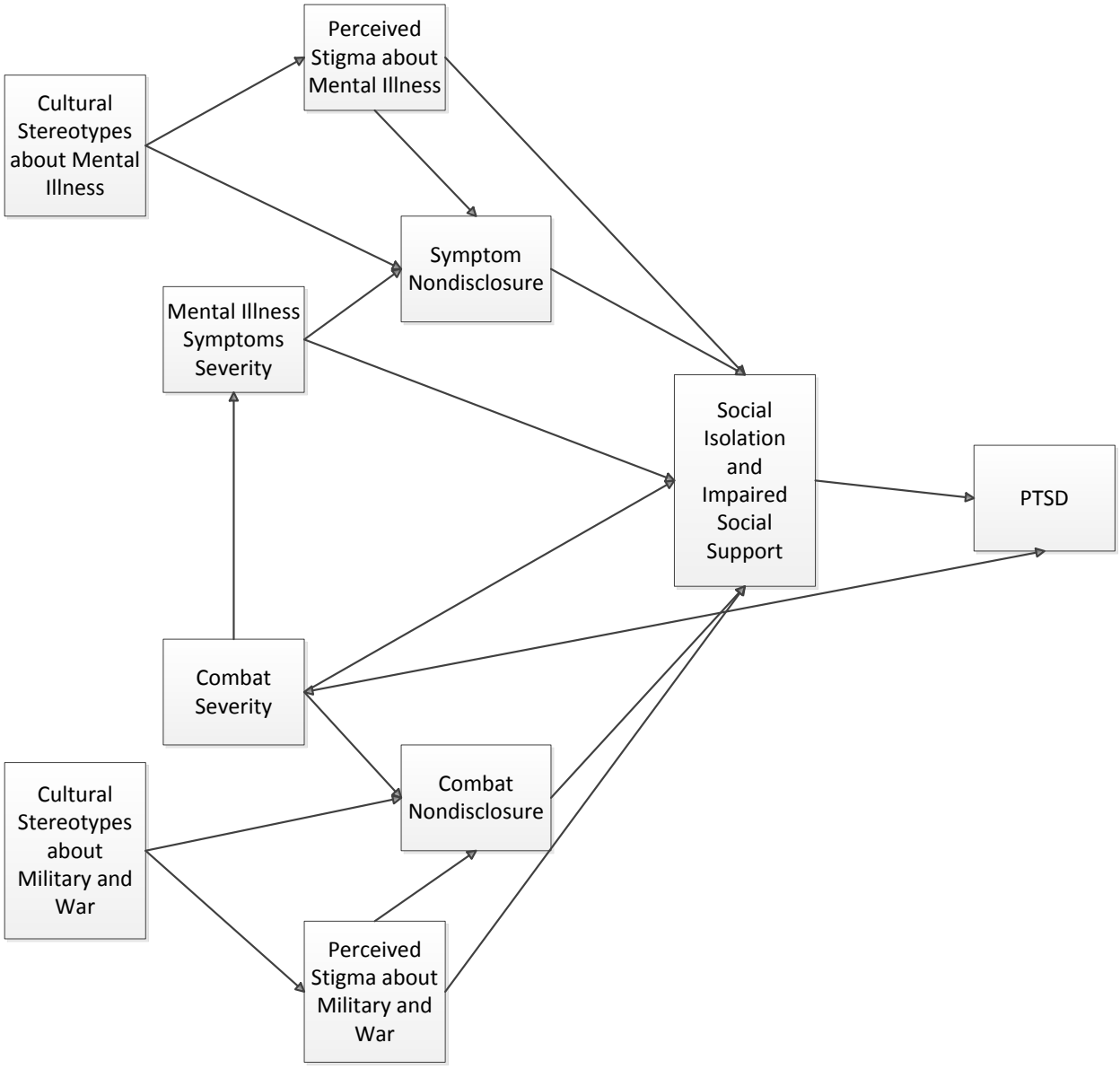

Figure 1. Integrated Mental Illness and Military Process Model explaining likelihood of PTSD, that integrates four domains of variables related to mental illness and military processes: cultural (cultural stereotypes about mental illness, cultural attitudes and stereotypes about military and war), social (social isolation and impaired social support), self (symptom nondisclosure, combat nondisclosure, perceived stigma about mental illness, perceived stigma about military and war), and severity of combat exposure and mental illness symptoms.

CHAPTER 2

METHOD

Participants

Participants were military veterans recruited from multiple sites using strategies to maximize sample size and representation. First, the percentages for general demographics are discussed (as shown in Table 1). The sample consisted of 195 veterans ages 18 and above who had served in the United States Military. The sample of 195 adults was largely men (78.5%; compared to 21.5% of women) and Caucasian (84.1%), although other racial groups are represented (5.3% African American, 4.1% Other, 3.2% Hispanic, 2.1% Asian, and 1.6% Alaskan/Native American). Further, 49.2% were married, 55.4% were nonstudents (compared to 44.1% of students. Further, 21.0% of the sample had an income of $10,000-$19,999 and 24.6% had 4 or 5 years of college education. Approximately 48% of the sample indicated they reside in rural areas and about 51% in nonrural areas. Additionally, approximately 68% reportedly grew up in the South and approximately 26% grew up in a town of between 25,000 and 100,000. Individuals of all racial and ethnic backgrounds were included in the study (Caucasian, African American, Hispanic, Asian, and Alaskan/Native American).

Second, the percentages for military demographics are presented (as shown in Table 2). Of the sample of 195 adults, 40.0% had one deployment, with 71.8% serving in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF). The length of the most recent deployment was 6 to 12 months (42.1%). Further, 44.6% of the sample served in the United States Army and 65.1% served in at least one war. Also, 20.5% of the sample of veterans reported that it had been more than a year to 3 years since they last served in combat.

Table 1

General Demographics

Demographics	**% (N)**
Sex	
Male	78.5 (153)
Female	21.5 (42)
Age	--
Race	
Caucasian/White	84.1 (164)
African American	5.3 (10)
Other	4.1 (8)
Hispanic	3.2 (6)
Asian	2.1 (4)
Alaskan/Native American	1.6 (3)
Majority	84.1 (164)
Minority	11.8 (23)
How Would You Classify the Area in Which You Grew Up?	
Rural	48.2 (94)
Suburban	33.8 (66)
Urban	17.4 (34)
Rural	48.2 (94)
Nonrural	51.3 (100)
How Would You Classify the Area in Which You Grew Up?	
A Town of Between 25,000 and 100,000	25.6 (50)
A Town of Between 5,000 and 25,000	21.5 (42)
A farm	15.4 (30)
A Town of Under 5,000	14.9 (29)
A Town of Between 100,000 and 500,000	13.8 (27)
A Town Larger than 500,000	8.2 (16)
How Would You Classify the Geographical Region in Which You Grew Up?	
South	68.2 (133)
Midwest	9.7 (19)
North	6.2 (12)
New England and East Coast	6.7 (13)
South West and West Coast	3.6 (7)

Table 1 (continued)

Relationship Status	
Married	49.2 (96)
Single	20.0 (39)
Committed Relationship or Cohabitating	15.4 (30)
Separated or Divorced or Widowed	15.4 (30)
Education	
Grade 12 or GED/High School Equivalent	12.8 (25)
College 1 (Year 13)	12.3 (24)
College 2 (Year 14)	21.0 (41)
College 3 (Year 15)	20.0 (39)
College 4 and College 5 (Year 16)	24.6 (48)
Graduate School 1 (Year 17)	4.6 (9)
Graduate School 2 (Year 18)	2.1 (4)
Graduate School 3 (Year 19)	.5 (1)
Graduate School 7 (Year 23)	2.1 (7)
Income	
Less than $10,000	14.9 (29)
$10,000-$19,999	21.0 (41)
$20,000-$29,999	17.4 (34)
$30,000-$39,999	9.7 (19)
$40,000-$49,999	10.3 (20)
$50,000-$59,999	8.2 (16)
$60,000-$69,999	7.2 (14)
$70,000-$79,999	2.1 (4)
$80,000-$89,999	3.6 (7)
$90,000-$99,999	0.5 (1)
$100,000-$149,999	1.5 (3)
$150,000 or More	1.5 (3)
Employment Status	
Student	44.1 (86)
Employed Full Time or Part Time	34.4 (67)
Unemployed/Looking for Work, Retired, or Homemaker	13.3 (26)
Student	44.1 (86)
Nonstudent	55.4 (108)

Note: Age was not included in Table 1 as it is the only continuous variable. The mean age = 33.7, SD = 10.9, and the range = 22-68.
Note: For analysis purposes, a dichotomous variable of Majority vs. Minority was used.
Note: For simplicity we chose to use rurality in the analysis.
*Note:*Education was recoded as a continuous variable.
Note: For analysis purposes, a dichotomous variable of Student vs. Nonstudent was used.

Table 2

Military Demographics

Military Demographics	**% (N)**
Number of Deployments	
0	14.9 (29)
1	40.0 (78)
2	20.5 (40)
3	9.2 (18)
4	5.1 (10)
5 or More	9.7 (19)
Length of Most Recent Deployments	
Less than 3 Months	5.6 (11)
3 to 6 Months	12.3 (24)
6 to 12 Months	42.1 (82)
12 to 15 Months	22.6 (44)
15 to 24 Months	3.6 (7)
More than 24 Months (or 2 Years)	4.1 (8)
Wars/Conflicts in Which You Served	
Iraq War (e.g., Operation Enduring Freedom/Operation Iraqi Freedom)	71.8 (140)
Afghanistan	24.6 (48)
Operation Desert Storm	11.3 (22)
Vietnam War	5.1 (10)
Korean War, World War I, World War II	0 (0)
Branch of Military Service	
US Army	44.6 (87)
US Marines	21.0 (41)
US Air Force	13.3 (26)
US Navy	10.3 (20)
US National Guard	4.6 (9)
US Reserves	3.6 (7)
US Coast Guard	.5 (1)
Number of Wars in Which You Served	
1	65.1 (127)
2	20.0 (39)
3	2.6 (5)

Table 2 (continued)

Time Since You Served in Combat	
1 year or less	6.2 (12)
More than a year to 3 years	20.5 (40)
More than 3 years to 6 years	13.8 (27)
More than 6 years to 9 years	10.8 (21)
More than 9 years to 45 years	2.1 (4)
Have You Received Treatment for Your Mental Illness Symptoms	
Professionally (e.g., Counselor, Psychologist, Psychiatrist	27.7 (54)
Other Self-Treatments	27.7 (54)
Medications	23.1 (45)
Do You Receive Disability Benefits	
No	58.4 (80)
Yes	41.6 (57)

Also, 27.7% of the sample received professional (e.g., counselor, psychologist, or psychiatrist) treatment for their mental illness symptoms and 27.7% of the sample also received other self-treatments for their mental illness symptoms. Additionally, 58.4% reportedly did not receive disability benefits (compared to 41.6% who did receive disability benefits).

Study Procedure

Prospective participants were identified through their connections with the Virginia Wounded Warrior Program (which includes involvement in the American Legion and/or Veterans of Foreign War Posts in Northeast Tennessee and Southwest Virginia as well as Veterans in the community) and through their membership in the Middle Tennessee State University (MTSU) and East Tennessee State University (ETSU) chapters of Student Veterans of America. To be eligible participants must have been a veteran of the United States Military. In addition, participants had to speak English and be at least 18 years of age. All individuals invited to participate signed an informed consent. Following informed consent, participants were asked to complete several self-administered assessment inventories: the Posttraumatic Stress Disorder Checklist-Military, the Trauma Symptoms Checklist, the Combat Experiences scale, the Self-Stigma of Mental Illness Scale, an adapted version of the Iraq War Attitude Scale, a perceptions scale, an adapted version of the Likelihood of Disclosure Scale, the Unit Support Scale, the Post-Deployment Support Scale, the UCLA Loneliness Scale (Version 3), as well as covariates that include demographics and details of military service (e.g., deployment information). It is unknown how many participants were from each of the recruitment sources as all participants opted to complete the anonymous survey that was accessible via Survey Monkey.

When recruiting participants associated with the Virginia Wounded Warrior Program, research personnel attended program sponsored events with the Veterans Resource Specialist and

VA Liaison (Jason Parsons) employed at Scott County Behavioral Health, a division of Frontier Health. Frontier Health is a leading provider of mental health services in Northeast Tennessee and Southwest Virginia. These events were held weekly in various venues (including American Legion and Veterans of Foreign Wars Posts throughout Northeast Tennessee and Southwest Virginia, regional universities and community colleges, and community events such as 5K races and fundraisers for local veterans). Potential participants were asked to complete the survey at the event. These participants also had the option to complete the survey online. When recruiting participants associated with the MTSU and ETSU chapters of Student Veterans of America, research personnel obtained email addresses for the active members from the faculty coordinators and then email members requesting that they complete an online survey. Survey Monkey was used to host the online survey option. The entire questionnaire took approximately 45 minutes to 1 hour to complete.

Measures

The study is an investigation of relationships among cultural, social, self, and deployment factors associated with the development of combat-related PTSD. A description of each instrument is provided below.

Demographics. A brief demographics questionnaire was used. Demographics included sex, age, race, rurality, relationship status, education, income, employment status, number of deployments, length of most recent deployment, number of wars or conflicts in which they served (i.e., Vietnam War, Operation Desert Storm, Operation Enduring Freedom/Operation Iraqi Freedom), time since they served in combat, treatment services received (e.g., psychological treatment, medication), and disability status (whether or not receiving disability services). See Tables 1 and 2 for descriptive information on all demographics.

Posttraumatic stress disorder checklist-military. The Posttraumatic Stress Disorder Checklist-Military (PCL-M; Weathers, Huska, & Keane, 1991) is a self-report rating scale that measures PTSD symptom severity in military veterans. The PCL-M is a 17-item self-report questionnaire. Items include: "How much have you been bothered by repeated, disturbing, *memories*, *thoughts*, or *images* of a stressful military experience in the past month?," "How much have you been bothered by repeated, disturbing *dreams* of a stressful military experience in the past month?," and "How much have you been bothered by feeling emotionally numb or being unable to have loving feelings for those close to you?" Participants respond using a 5-point scale that ranges from 1 (not at all) to 5 (extremely). The scale is scored by calculating a total score. This score is derived by adding the responses to all scale items. The total score may range from 17 to 85, where elevated scores suggest greater severity. Ratings are chosen according to how much the veteran has been disturbed by a particular traumatic military-related incident. The items included on the scale are based on current DSM criteria. In addition, the scale has proven useful with both male and female veteran populations (Weathers, Huska, & Keane, 1991).This scale has been shown to be both valid and reliable ($\alpha = .96$) in previous research (Adler, Bliese, McGurk, Hoge, & Castro, 2009; Hoge et al., 2004; Pietrzak et al., 2010; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). Furthermore, this scale has predominately been used to assess veterans and military personnel (Adler et al., 2009; Hoge et al., 2004; Pietrzak et al., 2010; Pietrzak et al., 2009). This scale has also been used in primary care settings to assess soldiers returning from combat (Bliese, Wright, Adler, Cabrera, Castro, & Hoge, 2008). The internal reliability for the sample used in the current study was .96. The PCL-M was scored by adding up all the items for a total severity score. A total score of 50 was considered to be PTSD positive in military populations (Weathers et al., 1991). Thus, the

dependent variable of PTSD was dichotomous (1=PTSD vs. 0=no PTSD).The percentage of participants that were in the PTSD group was 24.6% (compared to 68.7% that was classified as not having PTSD). See Table 3 for descriptive information on all main study variables.

Trauma symptom checklist. The Trauma Symptom Checklist (TSC; Briere, 1996) was used to measure mental illness symptoms. The TSC is a self-report measure that consists of 40 questions and uses a 4-point Likert scale to measure a wide variety of physical and psychological symptoms (e.g., stomach problems, headaches, sadness, diminished sex drive, nightmares, feeling isolated from others, trouble controlling your temper, memory problems, feelings of guilt, insomnia, and loneliness). Previous studies (e.g., Elliott & Briere, 1994; Lanktree & Briere, 1995; Singer, Anglin, Song, & Lunghofer, 1995) have found the TSC to be a highly valid and reliable measure (with αs in the mid to high 80s). Furthermore, this scale has been used to assess groups such as survivors of child sexual abuse (Elliott & Briere, 1994; Lanktree & Briere, 1995), adolescents exposed to violence (Singer, Anglin, Song, & Lunghofer, 1995), and adult survivors of sexual assault (Gold & Cardena, 1998). Prior to analysis, items were summed to create a total score of mental illness symptoms, with higher scores indicating more severe symptoms. The internal reliability for the sample used in the current study was .96.

Likelihood of disclosure scale. Disclosure was assessed using an adapted version of the Likelihood of Disclosure Scale (Hoyt et al., 2010). A set of five dichotomous items were used to evaluate whether participants discussed their combat experiences or mental illness symptoms with members of the following different categories of confidants: partner or spouse, family members, friends, and other military personnel. This is a 10-item (5 items assessed likelihood of disclosure about combat experience and 5 items assessed likelihood of disclosure about symptoms) self-report scale. Items are assessed using a 5-point Likert scale (1 = Not at all, 2 =

Table 3

Means, Standard Deviations, and Bivariate Correlations for Main Study Variables.

Main Study Variable	M	SD	% PTSD/ No PTSD	1	2	3	4	5	6	7	8	9	10	11	12
1. PTSD vs. No PTSD	---	---	24.6/ 68.7	---	.60**	.08	.41**	.06	.02	.33**	.53**	.70**	-.32**	.25**	.41**
2. Loneliness and Social Isolation	2.42	.63	---	.60**	---	.36**	.66**	.24**	.17*	.28**	.57**	.71**	.22**	.31**	.41**
3. Impaired Unit Support	2.44	1.01	---	.08	.36**	---	.33**	-.23**	-.23**	.10	.20*	.17*	.29**	.04	.11
4. Impaired Postdeployment Support	2.60	.72	---	.41**	.66**	.33**	---	.33**	.25**	.15	.40**	.44**	.15	.30**	.40**
5. Symptom Nondisclosure	4.06	.63	---	.06	.24**	.17*	.33**	---	.58**	.14	.26**	.05	.05	.12	.08
6.Combat Nondisclosure	3.99	.67	---	.02	.17*	.16*	.25**	.58**	---	.05	.15	.04	-.02	.23**	.16
7. Perceived Stigma about Mental Illness	2.23	1.69	---	.33**	.28**	.10	.15	.15	.05	---	.25**	.35**	.08	.16	.13
8. Perceived Stigma about Military and War	2.58	1.09	---	.53**	.57**	.20*	.40**	.26**	.15	.25**	---	.58**	.36**	.22*	.35**
9. Mental Illness Symptom Severity	77.98	23.61	---	.70**	.71**	.17*	.44**	.05	.04	.35**	.58**	---	.30**	.34**	.36**
10. Combat Severity	6.32	4.61	---	.32**	.22**	-.28**	.14	.05	-.02	.07	.36**	.30**	---	.22*	.22**
11. Cultural Stereotypes about Mental Illness	6.44	1.53	---	.25**	.31**	.04	.30**	.12	.23**	.16	.22*	.34**	.22*	---	.39**
12.Cultural attitudes and stereotypes about Military and War	3.58	.64	---	.41**	.41**	.11	.40**	.08	.16	.13	.35**	.36**	.22**	.39**	---

Note: $p < .05$. * $p < .01$.** $p < .001$.***

Somewhat, 3 = Moderately, 4 = Quite a bit, 5 = Definitely). Items include: “How likely would you be to discuss your combat experiences with your spouse or significant other?,” “How likely would you be to discuss your symptoms of mental illness with your spouse or significant other?,” and “How likely would you be to discuss your combat experiences with friends or peers who have been through a similar experience (fellow service-men and women)?”. Studies have found this scale to be both valid and reliable ($\alpha = .82$) (Hoyt et al., 2010). Furthermore, this scale has been used in different groups such as soldiers, first responders, and college students (Hoyt et al., 2010). A mean rating of combat nondisclosure was calculated prior to analysis, with higher scores indicating less disclosure. Also, a mean rating of symptom nondisclosure was calculated prior to analysis, with higher scores indicating less disclosure. The internal reliability for the likelihood of disclosure about mental illness symptoms items for the sample used in the current study was .86. The internal reliability for the likelihood of disclosure about combat experience items for the sample used in the current study was .88. The internal reliability for the full likelihood of disclosure scale for the sample used in the current study was .93.

Deployment risk and resilience inventory. The Deployment Risk and Resilience Inventory (DRRI; King, King, & Vogt, 2003) was used to assess combat experiences and social support. The Combat Experiences Scale is a 15-tem self-report scale that measures soldiers experiences during deployment. Items are assessed by circling “yes” if the statement is true and “no” if the statement is false. Items include: “I or members of my unit encountered land or water mines and/or booby traps,” “I personally witnessed someone from my unit or an ally unit being seriously wounded or killed,” and “I killed or think I killed someone in combat.” Studies have found this scale to be both valid and reliable ($\alpha = .85$) (King et al., 2003). Furthermore, this scale has predominately been used with soldiers recently returning from combat, veterans, and military

personnel (Keane, Street, & Stafford, 2004; King et al., 2003). A total for combat severity was calculated prior to analysis, with higher scores indicating more severe combat experiences. A mean rating of combat severity was calculated prior to analysis. The internal reliability of the items for the sample used in the current study was .84.

Social support was assessed using two scales from the DRRI (King et al., 2003). First, the Unit Support scale is a 12-item self-report instrument that was used to measure the nature of professional relationships and cohesion between the soldier and his or her unit. Items are assessed using a 5-point Likert scale. The internal reliability for these items is .93. Items include "My unit was like a family to me," "I could go to most people in my unit for help when I had a personal problem," and "My superiors made a real attempt to treat me as a person." The internal reliability of the items for the sample used in the current study was .94. Second, the Post-Deployment Support Scale is a 15-item self-report measure from the DRRI (King et al., 2003) and was used to measure the extent to which family, friends, coworkers, employers, and community provide postdeployment emotional and instrumental support. Items are assessed using a 5-point Likert scale. The internal reliability for these items is .82. Items include "The reception I received when I returned from my deployment made me feel appreciated for my efforts," "The American people made me feel at home when I returned," and "I have problems that I can't discuss with family or friends." Studies have found these scales to be both valid and reliable (King et al., 2003; Pietrzak et al., 2009). Furthermore, these scales have predominately been used with soldiers recently returning from combat, veterans, and military personnel (Keane et al., 2004; King et al., 2003). Mean ratings of impaired social support were calculated prior to analysis, with higher scores indicating more impaired postdeployment and unit support. The internal reliability of the items for the sample used in the current study was .79.

Self-stigma of mental illness scale. The Self-Stigma of Mental Illness Scale *(*SSMI; Corrigan, 2000) was used to assess cultural stereotypes about mental illness and perceived stigma about mental illness. This is a self-report scale that that consists of 40 items and measures public attitudes about mental illness including cultural stereotypes and perceived stigma. Items were assessed using a 9-point Likert scale (I strongly disagree, Neither agree nor disagree, I strongly agree). Sample items for cultural stereotypes include: "I think the public believes most persons with mental illness cannot be trusted," "I think the public believes that most persons with mental illness are disgusting," "I think the public believes that most persons with mental illness are to blame for their problems," and "I think the public believes that most persons with mental illness are unpredictable". The internal reliability of the items for the sample used in the current study was .93. Sample items for perceived stigma include: "Because I have a mental illness I cannot be trusted," Because I have a mental illness I am to blame for my problems," and "Because I have a mental illness I am unpredictable". The internal reliability of the items for the full scale for the sample used in the current study was .93.This scale has been shown to be both valid and reliable (cultural stereotypes $\alpha = .85$; perceived stigma $\alpha = .72$) (Corrigan & Penn, 1999; Corrigan et al., 2006, Corrigan & Wassel, 2008). Furthermore, this scale has been used to assess groups such as individuals with psychiatric illnesses, including depression, schizophrenia, and bipolar disorder (Corrigan & Penn, 1999; Corrigan & Watson, 2002; Corrigan et al., 2006). Internal reliability of the items for the sample used in the current study was .94. Mean ratings of cultural stereotypes and perceived stigma were calculated prior to analysis, with higher scores indicating greater awareness of stereotypes and more perceived stigma.

Iraq war attitude scale. The Iraq War Attitude Scale (Fairchild, Hallam, Mao, Yuen, & Fajinmi, unpublished) was used to assess cultural attitudes and stereotypes about military and

war. This construct was assessed using an adapted version of this scale. This is a 12-item questionnaire that assesses public attitudes toward war. Items measure public attitudes toward military personnel and assess public attitudes toward different wars. Items are answered using a 5-point scale (1 = Strongly Disagree, 2 = Disagree; 3 = Disagree/Agree, 4 = Agree, and 5 = Strongly Agree). Items include: "I think the public believes that war is a mistake," "I think the public believes that those who served in the Vietnam War are baby killers," and "I think the public believes that the invasion in Iraq was based on lies and misinformation." It is important to emphasize that these are beliefs that could impact the treatment of soldiers and veterans. A mean score of negative cultural attitudes was calculated prior to analysis. This scale has been shown to be both valid and reliable ($\alpha = .92$). Furthermore, this scale has been used to assess groups such as students at several private liberal arts colleges on the West Coast, at predominantly African American and Latino churches, and in urban communities on the West Coast (Fairchild et al., unpublished). The internal reliability of the items for the sample used in the current study was .85.

Perceived stigma. The Perceived Stigma Scale (Mickelson, 2001) was used to assess perceived stigma about military and war. This is an 8-item self-report measure that assesses participants' perceptions, feelings, and emotions about their combat experience. The items were adapted from Mickelson (2001), associating perceptions of stigma with prior experiences of sexual assault. In the current study only four of the scale items were used (items 1, 2, 3, and 5) as these items specifically measure self-stigma. This allowed the measurement of self-stigma of combat experience to be consistent with the measurement of the self-stigma of mental illness. Participants indicated whether they Definitely Disagree, Somewhat Disagree, Neither Agree/Nor Disagree, Somewhat Agree, or Definitely Agree with statements. Items include: "I have felt

odd/abnormal because of my combat experiences or military involvement," "I never have felt embarrassed or ashamed of my combat experiences or military involvement," and "I never have felt self-conscious in public because of my combat experiences or military involvement." This scale has been shown to be reliable (α = .76). (i.e., Williams & Mickelson, 2008). Furthermore, this scale has been used to assess groups such as parents of children with special needs (Mickelson, 2001) and low income women (Williams & Mickelson, 2008). A mean rating of perceived stigma was calculated prior to analysis, with higher scores indicating more perceived stigma. The internal reliability of the items for the sample used in the current study was .72.

UCLA loneliness scale. The UCLA Loneliness Scale (Version 3; Hays & DiMatteo, 1987) was used to assess social isolation. This is a validated instrument designed to measure a person's level of loneliness. This is a 20-item self-report instrument. Each statement describes how people sometimes feel. For each statement, participants are asked to indicate how often (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Always) they feel the way described by writing a number in the space provided. Items include: "How often do you feel that you lack companionship?," "How often do you feel isolated from others?," and "How often do you feel that there are people you can turn to?" Studies have found this scale to be both valid and reliable (α = .94) (Russell, 1996). Furthermore, this scale has been used to assess groups such as older chronically ill Appalachians (Theeke, Goins, Moore, & Campbell, 2012) and individuals with substance abuse and dependence (Britton & Conner, 2007). A mean rating of social isolation was calculated prior to analysis, with higher scores indicating more isolation. The internal reliability of the items for the sample used in the current study was .95.

Analyses

Preliminary analyses were conducted to determine whether or not 15 variables such as sample and recruitment strategy, time since served in combat, prior mental health treatment, and other demographic characteristics need to be included as a covariate, along with demographics, in the main analysis. This preliminary test was conducted using a logistic multiple regression with all potential covariates as predictor variables and PTSD as outcome.

Path analysis with multiple regression was used to determine the significance of proposed relations (see Figure 1). In the figure a single-headed arrow points from predictors to outcomes. Therefore, 10 multiple regression analyses were used to test the model. First, increased levels of combat severity, social isolation, and impaired social support were hypothesized to predict increased likelihood of PTSD (H1). Therefore, PTSD was regressed on combat severity, social isolation, and impaired social support using logistic regression. Because PTSD is a dichotomous variable, (i.e., PTSD vs. No PTSD), a logistic regression was used for this analysis.

Because logistic regression is interpreted differently than linear regression, I provide here a brief summary to aid in interpretation of findings for H1. When using a dichotomous dependent variable, the concept of *odds* is considered, which are equal to the probability of being a member in the target group divided by the probability of being a member in the other group. Whereas probabilities can range from 0 to 1, an odds value can range from 0 to infinity. Odds indicate how much more likely it is that an observation is a member of the target group (e.g., PTSD) as opposed to being a member of the other group (e.g., no PTSD). Also, similar to a correlation coefficient, a positive regression coefficient indicates that the odds of the outcome increase as the predictor values increase (similarly, a negative coefficient means that the predicted odds decrease as the predictor increases (Wright, 1995). Importantly, although odds are interpreted

such that the larger the value, the greater the size of the odds, causality is not intended. That is, due to the cross-sectional design of the study the odds do not speak to whether the development of PTSD is *because of* exposure to combat and increased social isolation.

Second, increased levels of mental illness symptom severity, perceived stigma about mental illness, symptom nondisclosure, combat severity, combat nondisclosure, and perceived stigma about military and war were hypothesized to predict increased levels of social isolation and impaired social support (separately) (H2). Therefore, social isolation and impaired social support were regressed on mental illness symptom severity, perceived stigma about mental illness, symptom nondisclosure, combat severity, combat nondisclosure, and perceived stigma about military and war using linear regression.

Third, increased levels of cultural stereotypes about mental illness, perceived stigma about mental illness, and mental illness symptom severity were hypothesized to predict symptom nondisclosure; whereas, cultural attitudes and stereotypes about military and war, perceived stigma about military and war, and combat severity were hypothesized to predict combat nondisclosure (separately) (H3). Therefore, symptom nondisclosure was regressed on cultural stereotypes about mental illness, perceived stigma about mental illness, and mental illness symptom severity using linear regression. And, combat nondisclosure was regressed on cultural attitudes and stereotypes about military and war, perceived stigma about military and war, and combat severity using linear regression.

Fourth, increased degrees of cultural stereotypes about mental illness were hypothesized to predict increased levels of perceived stigma about mental illness; whereas, increased degrees of cultural attitudes and stereotypes about military and war were hypothesized to predict increased levels of perceive stigma about military and war (separately) (H4). Therefore,

perceived stigma about mental illness was regressed on cultural stereotypes about mental illness and perceived stigma about military and war was regressed on cultural attitudes and stereotypes about military and war using linear regression.

Fifth, combat severity was hypothesized to predict mental illness severity (H5). Therefore, mental illness severity was regressed on combat severity using linear regression.

Power Analyses

Power analyses were conducted using the statistical software program G*Power (version 3.1; Faul, Erdfelder, Lang, & Buchner, 2009) based on an alpha of .05, and an expected medium effect size (.15), and the most saturated model of a possible 24 predictor variables (18 potential covariates and 6 main study variables. The power analysis indicated that a minimum of 169 veterans were required to meet adequate power (.80).

CHAPTER 3

RESULTS

Preliminary logistic regression analyses were conducted to examine whether any general (e.g., age, race, income, education, relationship status) or military-specific demographics (e.g., branch of military service, number of deployments, length of most recent deployment) predicted Posttraumatic Stress Disorder (PTSD) and should be used as covariates in the main analyses. Results revealed none of the general demographics significantly related to PTSD. However, medication treatment for mental illness symptoms (a military demographic variable) significantly related to PTSD. This variable was controlled for in the main analyses.

Testing Hypothesis 1: Predicting PTSD

In order to assist with interpretation of findings, results of regression analyses testing main study hypotheses for H1 are shown in Table 4, and significant pathways are depicted in Figure 2. In testing H1 PTSD was regressed on combat severity, social isolation, and impaired social support while controlling for medication treatment for mental illness symptoms. The model overall accounted for 59% of the variance in PTSD. As shown, in partial support of H1, combat severity (β= .15, se = .06, p = .02) and social isolation (β = 3.29, se = .78, p = .00) was significantly and positively related to PTSD. Specifically, the odds of developing PTSD is 1.16 times more likely for those who had experienced severe combat situations compared to veterans who had not experienced severe combat situations. Also, the odds of developing PTSD is 26.71 times greater for those who had experienced increased social isolation compared to veterans who had not experienced increased social isolation. However, impaired postdeployment support (p = .79) and impaired unit support (p = .32) were not significantly related to PTSD.

Table 4

Logistic Regression Analysis for Combat Severity, Social Isolation, and Impaired Social Support Predicting Posttraumatic Stress Disorder (H1)

	Posttraumatic Stress Disorder			
	β	SE	Odds Ratio	95% C.I.
Step 1				
Medication Treatment for Mental Illness Symptoms	.99	.54	2.70	.93-7.84
Step 2				
Combat Severity	.15*	.06	1.16	1.03-1.31
Social Isolation	3.29***	.78	26.71	5.75-124.04
Impaired Postdeployment Support	-.11	.42	.89	.37-2.07
Impaired Unit Support	-.30	.30	.74	.41-1.34

Note: $p < .05$. * $p < .01$.** $p < .001$.***
Note: CI = confidence interval.

Testing Hypothesis 2: Predicting Impaired Social Support

Second (H2), impaired social support was regressed on mental illness symptom severity, perceived stigma about mental illness, symptom nondisclosure, combat severity, combat nondisclosure, and perceived stigma about military and war while controlling for medication treatment for mental illness symptoms. Because impaired support consisted of three individual variables, in order to test H2, three separate regressions were conducted. Results of regression analyses testing H2 are shown in Table 5, and significant pathways are depicted in Figure 2.

When social isolation was regressed on mental illness symptom severity, perceived stigma about mental illness, combat severity, perceived stigma about military and war, symptom nondisclosure, and combat nondisclosure while controlling for medication treatment for mental illness symptoms, results showed partial support of H2 (shown in Table 5, and significant pathways depicted in Figure 2). The model overall accounted for 59% of the variance in social isolation. Specifically, mental illness symptom severity ($b = .02$, $se = .00$, $\beta = .62$, $p = .00$) and perceived stigma about military war ($b = .11$, $se = .04$, $\beta = .19$, $p = .01$) were significantly and positively related to social isolation. Symptom nondisclosure ($p = .09$), perceived stigma about mental illness ($p = .85$), combat nondisclosure (.94), and combat severity ($p = .10$) were not significantly related to social isolation.

Next in testing H2, impaired unit support was regressed on mental illness symptom severity, perceived stigma about mental illness, combat severity, perceived stigma about military and war, symptom nondisclosure, and combat nondisclosure while controlling for medication treatment for mental illness symptoms (shown in Table 5, and significant pathways depicted in Figure 2).

Table 5

Linear Regression Analysis for Mental Illness Symptom Severity, Perceived Stigma about Mental Illness, Combat Severity, Perceived Stigma about Military and War, Symptom Nondisclosure, and Combat Nondisclosure Predicting Social Isolation and Impaired Social Support (H2)

	Social Isolation			Impaired Unit Support			Impaired Postdeployment Support		
	b	SE	β	b	SE	β	b	SE	B
Step 1 Medication Treatment for Mental Illness Symptoms	.07	.09	.06	.20	.20	.09	.04	.14	.03
Step 2 Mental Illness Symptom Severity	.02	.00	.62***	.01	.01	.18	.01	.00	.40***
Perceived Stigma about Mental Illness	-.00	.02	-.01	-.01	.05	-.02	-.03	.04	-.06
Combat Severity	-.02	.01	-.11	-.11	.02	-.48***	-.01	.01	-.04
Perceived Stigma about Military and War	.11	.04	.19*	.19	.09	.20*	.08	.07	.12
Symptom Nondisclosure	.13	.08	.12	.17	.16	.10	.34	.11	.28***
Combat Nondisclosure	.01	.07	.01	.10	.14	.07	.01	.10	.01

Note: $p < .05$. * $p < .01$.** $p < .001$.***

The model overall accounted for 28% of the variance in impaired unit support. As shown, in partial support of H2, perceived stigma about military and war (b = .18, se =.09, β = .20, p = .05) was significantly and positively related to impaired unit support. Combat severity (b = -.11, se = .02, β = .48 p = .00) was significantly and negatively related to impaired unit support. However, symptom nondisclosure (p = .30), combat nondisclosure (p = .47), mental illness symptom severity (p = .10) and perceived stigma about mental illness (p = .81) were not significantly related to impaired unit support.

For the third regression analysis in H2, impaired postdeployment support was regressed on mental illness symptom severity, perceived stigma about mental illness, combat severity, perceived stigma about military and war, symptom nondisclosure, and combat nondisclosure, while controlling for medication treatment for mental illness symptoms (shown in Table 5, and significant pathways depicted in Figure 2). The model overall accounted for 32% of the variance in postdeployment support. Specifically, in partial support of H2, mental illness symptom severity (b = .01, se = .00, β = .40, p = .00) and symptom nondisclosure (b = .34, se = .11, p = .00) were significantly and positively related to impaired postdeployment support. However, perceived stigma about mental illness, (p = .44), combat severity (p = .63), combat nondisclosure (p = .89), and perceived stigma about military and war (p = .24) were not significantly related to impaired postdeployment support.

Testing Hypothesis 3: Predicting Nondisclosure

For the third study hypothesis (H3), symptom nondisclosure and combat nondisclosure were regressed separately on study variables. Specifically, symptom nondisclosure was regressed on cultural stereotypes about mental illness, perceived stigma about mental illness, and mental illness symptom severity while controlling for medication treatment for mental illness symptoms

(shown in Table 6). Results did not support H3. As shown, the model overall accounted for only 5.1% of the variance in symptom nondisclosure. In addition, cultural stereotypes about mental illness ($p = .16$), perceived stigma about mental illness ($p = .12$), and mental illness symptom severity ($p = .21$) were not significantly related to symptom nondisclosure.

Next, combat nondisclosure was regressed on cultural attitudes and stereotypes about military and war, perceived stigma about military and war, and combat severity while controlling for medication treatment for mental illness symptoms (shown in Table 7). Results did not support H3. The model overall accounted for only 4.9% of the variance in combat nondisclosure. In addition, cultural attitudes and stereotypes about military and war ($p = .15$), perceived stigma about military and war ($p = .15$), combat severity ($p = .13$) were not significantly related to combat nondisclosure.

Testing Hypothesis 4: Predicting Perceived Stigma

For the fourth study hypothesis (H4), perceived stigma about mental illness and military and war were regressed separately on study variables. Specifically, perceived stigma about mental illness was regressed on cultural stereotypes about mental illness while controlling for medication treatment for mental illness symptoms (as shown in Table 8). Results did not support H4. As shown, the model overall accounted for only 5.1% of the variance in perceived stigma about mental illness. In addition, cultural stereotypes about mental illness was not significantly related to perceived stigma about mental illness ($p = .11$).

Next, perceived stigma about military and war was regressed on cultural attitudes and stereotypes about military and war while controlling for medication treatment for mental illness symptoms.

Table 6

Linear Regression Analysis for Cultural Stereotypes about Mental Illness, Perceived Stigma about Mental Illness, and Mental Illness Symptom Severity Predicting Symptom Nondisclosure (H3)

	Symptom Nondisclosure		
	B	SE	β
Step 1			
Medication Treatment for Mental Illness Symptoms	.20	.13	.15
Step 2			
Cultural Stereotypes about Mental Illness	.05	.04	.13
Perceived Stigma about Mental Illness	.05	.03	.14
Mental Illness Symptom Severity	-.00	.00	-.14

Note: $p < .05$. * $p < .01$.** $p < .001$.***

Table 7

Linear Regression Analysis for Cultural Attitudes and Stereotypes about Military and War, Perceived Stigma about Military and War, and Combat Severity Predicting Combat Nondisclosure (H3)

	Combat Nondisclosure		
	B	SE	B
Step 1			
Medication Treatment for Mental Illness Symptoms	.03	.13	.02
Step 2			
Cultural attitudes and stereotypes about Military and War	.14	.10	.13
Perceived Stigma about Military and War	.09	.06	.14
Combat Severity	-.02	.01	-.14

Note: $p < .05$. * $p < .01$.** $p < .001$.***

Table 8

Linear Regression Analysis for Cultural Stereotypes about Mental Illness Predicting Perceived Stigma about Mental Illness and Cultural Attitudes and Stereotypes about Military and War Predicting Perceived Stigma about Military and War (H4)

	Perceived Stigma about Mental Illness			Perceived Stigma about Military and War		
	b	SE	β	b	SE	β
Step 1						
Medication Treatment for Mental Illness Symptoms	.64	.30	.18	.84	.18	.36
Step 2						
Cultural Stereotypes about Mental Illness	.15	.09	.14	---	---	---
Cultural attitudes and stereotypes about Military and War	---	---	---	.48	.13	.28***

Note: $p < .05$. * $p < .01$.** $p < .001$.***

Results showed support for H4 (shown in Table 8, and significant pathways depicted in Figure 2). The model overall accounted for 20% of the variance in perceived stigma about military and war. Specifically, cultural attitudes and stereotypes about military and war was significantly and positively related to perceived stigma about military and war (b = .48, se = .13, β = .28, p = .00).

Testing Hypothesis 5: Predicting Symptom Severity

For the fifth study hypothesis (H5) mental illness symptom severity was regressed on combat severity while controlling for medication treatment for mental illness symptoms (shown in Table 9, and significant pathways depicted in Figure 2). The model overall accounted for 26% of the variance in mental illness symptoms severity. In support of H5 combat severity was significantly and positively related to mental illness symptom severity (b = 1.25, se = .33, β = .25, p = .00). Medication treatment of mental illness symptoms was also significantly and positively related to mental illness symptom severity (b = 21.41, se = 3.49, β = .41, p = .00).

Summary of Findings

To assist with the interpretation of findings, a brief paragraph is provided here summarizing the significant relations. These relationships are also depicted in Figure 2. Increased social isolation and severity of the combat experience were linked to increased likelihood of PTSD. Increased social isolation was explained by increased mental illness symptoms and perceived stigma about the military and war. Although increased severity of the combat experience and perceived stigma of the military and war were linked to impaired unit support, such impaired support did not explain greater PTSD. Similarly, increased mental illness symptoms and nondisclosure of symptoms were linked to impaired postdeployment support, but such impaired support did not explain greater PTSD. Finally, increased severity of the combat

experience was linked with increased mental illness symptoms. However, cultural stereotypes about the military were linked to greater perceived stigma about the military and war.

Table 9

Linear Regression Analysis for Combat Severity Predicting Mental Illness Symptom Severity (H5)

	Mental Illness Symptom Severity		
	B	SE	β
Step 1			
Medication Treatment for Mental Illness Symptoms	21.41	3.49	.41***
Step 2			
Combat Severity	1.25	.34	.25***

Note: $p < .05$. * $p < .01$.** $p < .001$.***

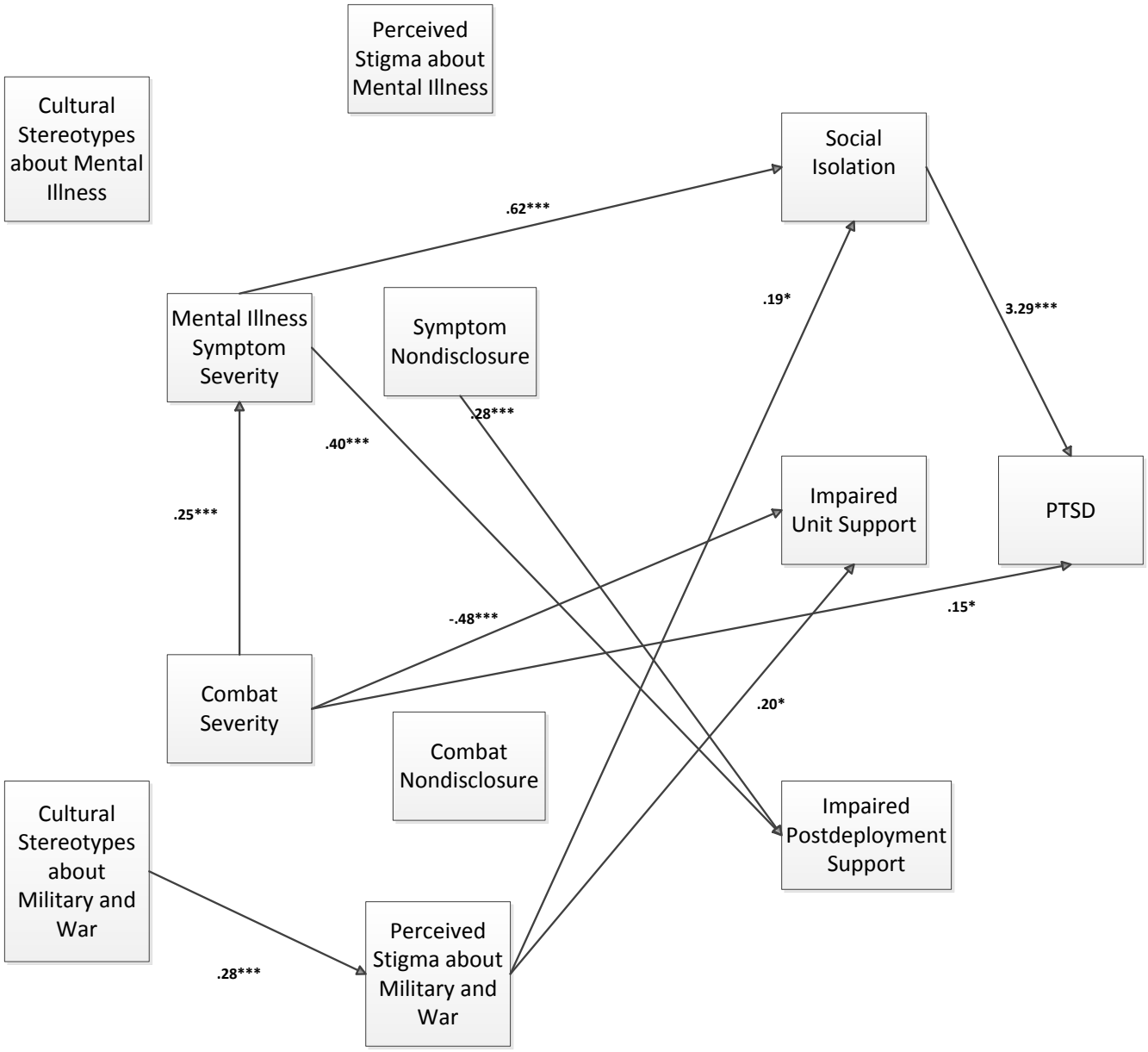

Figure 2. Depicting Statistically Significant Relations in the Integrated Mental Illness and Military Process Model explaining likelihood of PTSD. Arrows were included only for the relations where significant effects were found.

CHAPTER 4

DISCUSSION

The present research was an examination of cultural, social, and self-related variables to investigate how they may contribute to understanding the development of PTSD based on combat experience. The four categories or domains of variables examined included: cultural (i.e., cultural stereotypes about mental illness, cultural attitudes and stereotypes about military and war), social (i.e., social isolation and impaired social support), self (i.e., symptom nondisclosure, combat nondisclosure, perceived stigma about mental illness, perceived stigma about military and war), and severity of symptoms and of combat (i.e., mental illness symptom severity, combat severity). This study specifically was an extension of prior research by assessing stigma variables in the context of other variables that have been examined related to PTSD risk (e.g., combat exposure, mental illness symptom severity, and social variables). For instance, perceived stigma has rarely been examined as a predictor of PTSD and was included in the current study as a combination of self and anticipated public stigma or unfair treatment. Overall, the findings from the present study showed partial support for the proposed model, with some pathways significant and some not. Among the findings, impaired social support in the form of social isolation (but not impaired unit support and impaired postdeployment support) most strongly linked to PTSD. Further, it was the stigma associated with war (i.e., cultural attitudes and stereotypes about military and war and perceived stigma about military and war), rather than stigma associated with mental illness symptoms, that played a role in social isolation and ultimately PTSD. As expected, severity of combat experience was directly linked to both impaired unit support and PTSD. Additionally, symptom nondisclosure (but not combat nondisclosure) was directly linked to impaired postdeployment support but not other forms of impaired support. Also, the findings

that mental illness symptom severity was linked directly to social isolation and impaired postdeployment support are also noteworthy. The significant pathways identified by this initial test of the proposed model are suggestive of clinical implications in work with veterans and future areas of research among veterans on their likelihood of developing PTSD.

In order to facilitate discussion of complex results, the following paragraphs are organized by focusing on significant relations of study variables followed by nonsignificant findings. Subsequently, possible implications of study findings, future research, limitations, and conclusions are provided. Because the five hypotheses were intended to test the proposed model, which ultimately explains the development of PTSD, I focus the discussion below on main study findings as they may be ultimately linked to PTSD.

Explaining Likelihood of Posttraumatic Stress Disorder

Findings from the present study suggest that the impaired social support indicator of *social isolation* is most strongly linked to PTSD, whereas unit support and postdeployment support were not significantly predictive of PTSD. This finding is in line with previous research on social isolation (e.g., Fairbank et al., 1991; Green et al., 1990; King et al., 1999) that suggests that if a veteran withdraws from close others (such as spouses, children, family, and friends) this social isolation may contribute to the development of PTSD. The finding that social isolation is strongly linked to PTSD is also supported by previous models of PTSD. For example, the diathesis-stress model developed by McKeever and Huff (2003) suggests that the presence of certain risk factors, such as social isolation, may make trauma survivors more likely to develop PTSD. Additionally, the finding that social isolation is strongly linked to PTSD is also supported by attachment theory (Bowlby, 1969, 1973, 1980), which provides a framework for understanding the social impairment associated with combat-related PTSD. In keeping with the

attachment theory perspective, which stresses the connection between chronic states of alarm and interference with engaging other people in effective, emotionally regulating exchanges, either by pushing others away through emotional manifestations (e.g., anger, fear, numbness) or pulling away from others (Renaud, 2008).

Contrary to previous studies (e.g., Brewin et al., 2000), findings from the present study showed that impaired postdeployment support and impaired unit support were not significantly related to PTSD. It may be that the veterans who participated in the current study had intact social support systems, which also buffered them from the harmful effects of traumatic combat experiences. For instance, numerous studies of combat veterans demonstrating intact social supports, active coping, and positive homecoming experiences are linked with positive psychological adjustments (Fairbank et al., 1991; Green et al., 1990; King et al., 1999). However, correlations in Table 3 reveal that at the bivariate level the relation between PTSD and impaired postdeployment support actually is statistically significant (r=.41). Thus, it is only when all three forms of support are considered simultaneously that social isolation emerges as the sole contributor to PTSD. Prior studies have not included all three forms of support simultaneously; therefore, this study exposes social isolation as a possible unique explanatory mechanism in PTSD.

This study's finding that severe combat experiences are linked with increased likelihood of PTSD is consistent with previous research, which has found combat exposure to be positively related to trauma symptoms and PTSD (Bremner et al., 1993; Brewin et al., 2000; Foy et al., 1987). According to this previous research (e.g., Fontana & Rosenheck, 1994; Grossman, 1995), being responsible for killing during combat coupled especially in combination with low social support after returning home greatly amplifies one's risk of acquiring trauma symptoms. Indeed,

prior research has found that nearly 40% of the difference in the development of trauma symptoms and PTSD can be forecasted by the extent of combat alone (Bremner et al., 1993; Brewin et al., 2000; Foy et al., 1987). Importantly, about 15% of participants in the current study did not see combat and these noncombat participants likely added error variance to the current study's findings related to combat severity. It may be important to screen veterans for severe combat experiences upon entry into the Veterans Affairs system as this may help identify those more likely to develop PTSD. This implication is considered further below.

Stereotypes, Stigma, and Social Isolation

Another main finding from the present study indicated that it is stigma associated with war (i.e., cultural attitudes and stereotypes about military and war and perceived stigma about military and war) but not stigma associated with mental illness symptoms that links to social isolation and subsequently PTSD. It is important to emphasize here that previous studies had not examined military stigma in a model of PTSD, whereas the current study included stigma and found support for its importance. Of the limited but related research, one recent study specifically examined the link between military public and military self-stigma as factors that may interfere with a soldier's decision to seek mental health services (Skopp et al., 2012). Similar to the current study's finding about the stigma associated with war, the research by Skopp et al. (2012) found that increases in military public and military self-stigma contributed to active duty personnel's decision to not seek mental health services. Thus, this study contributes to prior literature by providing evidence for military-related stereotypes and stigma playing a role in impaired social support and ultimately likelihood of PTSD among veterans.

Findings that cultural stereotypes about the military are linked to perceived stigma about military and war and then to social isolation suggest that soldiers may feel isolated (or isolate

themselves) in part because of the negative stereotypes about the military they perceive the public to hold and the perceptions of stigma they themselves hold. Prior research has linked veterans' trauma symptoms with stronger feelings of loneliness or social isolation (Greene-Shortridge et al., 2007; Wagner-Pacifici & Schwartz, 1991). But it is the perception of being treated differently and feeling negatively toward the self related to their participation in the military and war that links to this cognitive state of loneliness, or social isolation. Research on stigma supports the link between perceived stigma and isolation and withdrawal (Livingston & Boyd, 2010). Moreover, the findings of this study related to perceived stigma lend further support to two cognitively-based clinical models of PTSD: shame-based PTSD and guilt-based PTSD (Lee et al., 2001). These models suggest that in the context of PTSD pervasive feelings of shame and guilt can arise when the meaning of the traumatic event conveys a violation or departure from standards of behavior or feelings of responsibility for causing harm to others (Lee et al., 2001). The shame- and guilt-based models of PTSD are similar to the current model in that shame and guilt related constructs to perceived stigma. And, research on perceived stigma indicates that perceptions of a stigmatizing identity may manifest in feelings of shame, guilt, and devaluation as well as perceived or anticipated exclusion or isolation from others or from society (Gibbons, 1985; Jacoby, 1994; Link et al., 1989; Mickelson, 2001).

That cultural attitudes and stereotypes about military and war were significantly and positively related to perceived stigma about military and war is in line with previous research that suggests that there are cultural stereotypes surrounding the military particularly related to the politics surrounding different wars (Wagner-Pacifici & Schwartz, 1991). Further, as public views toward the war become increasingly negative, veterans may internalize these beliefs and experience a stronger sense of perceived stigma about their combat and military involvement. As

reviewed above, stigma literature shows a strong link between awareness of cultural stereotypes and the internalization of those stereotypes to apply toward the self and to anticipate unfair treatment (e.g., Corrigan et al., 2006; Link, 1987).

Surprisingly, cultural stereotypes about mental illness was not significantly related to perceived stigma about mental illness. Both rationale and prior studies (Ben-Porath, 2002; Corrigan; 2000; Corrigan & Penn, 1999; Corrigan & Wassel, 2008; Corrigan & Watson, 2002) would suggest that mental illness stigma and stereotypes would contribute to the development of PTSD; however, this was not the case in the current study. The lack of significant findings here may suggest that public attitudes of veterans with mental illness are more positive (compared to the general population or civilians struggling with mental illness). These negative cultural stereotypes that usually exist for civilians with mental illness do not exist or are not as prevalent for veterans and, therefore, veterans do not internalize these beliefs. In other words, the cultural conventions about mental illness may not apply to veterans given this very specific social context of the military due to possible public belief that soldiers did not create or cause their mental health issues (i.e., soldiers' mental health problems may be due to their combat experience); whereas, the public may believe that civilians are responsible or are to blame for their mental health issues as they have not encountered such stressful situations.

Although stigma of mental illness did not play a role in the current study, findings did indicate that mental illness symptoms themselves partially explained increased social isolation. This finding suggests that as veterans' mental illness symptoms increase, they experience increased feelings of loneliness. It is possible that veterans experience increased loneliness and social isolation due to the culture of stoicism in the military in addition to the code of silence, which are part of training or military culture (Britt et al., 2006; Hall, 2011). Having symptoms of

mental illness may be viewed as weak and not living up to the standards of war. Another possible explanation surrounds the experience of the symptoms themselves. That is, depending on the types of symptoms experienced by veterans, social isolation may be a consequence. For instance, if veterans are experiencing depressive symptoms, they may be limiting their social contact and therefore literally be isolated due to the symptoms (Brewin et al., 2000; McKeever & Huff, 2003; Sauer & Bhugra, 2001).

Combat and Symptom Nondisclosure

Combat nondisclosure was not significantly related to social isolation, impaired unit support, or impaired postdeployment support. This lack of significant findings is contradictory to previous research that suggests that decreased levels of disclosure in groups at risk for PTSD may signify relationship problems resulting from exposure to a traumatic event (Hoyt et al., 2010). Being unwilling to disclose events may undermine the maintenance of relationships, resulting in greater symptoms of PTSD (Fivush et al., 2004; Pasupathi et al., 2009). Similarly, combat nondisclosure was not significantly related to cultural attitudes and stereotypes about military and war, perceived stigma about military and war, or combat severity.

Furthermore, findings from the current study showed that cultural stereotypes and perceived stigma were not significantly related to nondisclosure. These findings suggest that even if veterans are aware of cultural stereotypes and perceived stigma they are not deterred from disclosing their mental illness symptoms. It may be that veterans have at least some close others perhaps with similar experiences in the military with which disclosure may be made easier. In this way, they may have strong postdeployment social support networks as suggested also by the lack of significant relation between impaired postdeployment support and PTSD. Future research might delineate between specific support network members to whom veterans

disclose and the quality of the relationships in order to delve deeper into the role of nondisclosure among veterans.

Predicting Impaired Unit Support

Results of this study indicate veterans may be somewhat distanced from their war comrades as combat severity increases. This study found impaired unit support in the context of combat severity that may indicate members of the same military unit may not be available or able to provide adequate support due to struggling with their own traumatic experiences. For instance, previous research indicates that support network members' abilities to offer assistance may be further diminished if they are struggling with similar stressful circumstances (Lepore et al., 1991), which may be likely be the case for soldiers serving together in the same military unit. In addition, their support network may erode over time with chronic stress (Lepore et al., 1991).

In addition to impaired support because of a presumed burdened network of unit comrades, stigma may further explain decreased unit support. For example, perceived stigma about military and war was significantly and positively related to impaired unit support in the present study. Thus, veterans who internalize stigma related to their war experience may be less likely to perceive support from other military personnel. Importantly, it is not stigma in general keeping veterans from their network. Cultural stereotypes of mental illness were not linked to perceived stigma about mental illness, which was not significantly related to impaired unit support. This finding may suggest that public attitudes of veterans experiencing mental illness are more positive (such as compared to the general population or civilians struggling with mental illness). These negative cultural stereotypes that usually exist for civilians with mental illness may not be as prevalent for veterans as the public may expect veterans to experience mental illness given the atrocities encountered in war.

Predicting Impaired Postdeployment Support

The less that veterans disclosed about their symptoms the more impaired their social support networks as evidenced by the link between symptom nondisclosure and impaired postdeployment support. A possible reason for this finding may be that withholding emotional experiences may undermine relationships (Pasupathi et al., 2009). This lack of disclosure may limit social support from friends, family members, and significant others. However, this nondisclosure is not across the board. Combat nondisclosure was not linked to impaired postdeployment support. Although previous research suggests that many service members are reluctant to speak to anyone about their combat experiences (Hoge et al., 2004), this study suggests that when veterans refrain from disclosing their mental illness symptoms that they do not have as much support around them. Importantly, because these data are cross-sectional, it may also be the case that veterans are not disclosing as much due to the limited social support network postdeployment. This limitation is discussed further below.

Similar to the findings noted above, perceived stigma about mental illness was not significantly related to impaired postdeployment support. Again, this finding may suggest that public attitudes of veterans with mental illness symptoms are more positive (as compared to the general population or civilians struggling with mental illness). These negative cultural stereotypes that usually exist for civilians with mental illness may not be as prevalent for veterans given the expectation that war is profound and veterans may be expected to have mental health consequences. Thus, some veterans may not experience perceived stigma about their mental illness and, in turn, this does not impact their social support network.

Combat and Mental Illness Severity

Finally, findings from the current study showed that combat severity was significantly related to increased mental illness symptom severity, which suggests that severe combat experiences may be linked to increased mental illness symptom severity. This relation is consistent with previous research with Vietnam veterans that demonstrates a positive correlation between combat exposure and stress-related symptoms after returning home from duty (Foy et al., 1987). Additionally, a study examining traumatic war stressors and psychopatholoy among World War II, Korean, and Vietnam War veterans shows the positive correlation between combat exposure and mental illness symptoms was comparable across each of these three major U.S. wars (Fontana & Rosenheck, 1994). However, contrary to hypotheses and previous research, combat severity was not significantly related to postdeployment support. Previous research suggests that level of combat exposure and amount of social support form a synergistic relationship and tend to intensify each other (Grossman, 1995).

Potential Clinical Implications

A few implications may be derived from the above findings linking cultural, social, and self-related variables to the development of PTSD. One possible implication of study findings is the need to implement screening for social isolation or loneliness and perceived military stigma as well as measures of combat severity in Veterans Affairs Medical Centers (VAMC). Such screeners would be particularly useful to implement in primary care clinics in VAMCs because the majority of screening currently occurs in mental health or psychology clinics in VAMCs, which are already tapping more severe mental health issues. Implementing screeners in primary care clinics in VAMCs may help medical providers to identify those at risk for developing PTSD and to address those self-related and social constructs in treatment or make referrals to mental

health. Implementation of such screeners following deployment or shortly after a combat-related traumatic event occurs may be a proactive way for the military to become involved in possible prevention of PTSD. Successful treatment of stigma within the military may ultimately decrease the burden on the Veterans Affairs Healthcare System, which has increased dramatically since the inception of the conflicts in Iraq and Afghanistan (Seal et al., 2009). Additionally, screening veterans for severe combat experiences when they enter the Veterans Affairs system may help to identify early on those who may be in need of treatment for PTSD.

Most treatments of PTSD focus on how the traumatic event is construed and coped with by the individual; however, it may assist veterans to incorporate a focus on social isolation and loneliness and stigma into these treatments. For instance, Cognitive Processing Therapy (CPT; Resick, Monson, & Chard, 2008), an empirically-supported treatment, has been shown to be one of the most effective treatments for veterans with combat-related PTSD and is commonly used in Veterans Affairs Medical Centers. This treatment is based on social cognitive (Horowitz, 1986; Janoff-Bulman, 1985) and emotional processing theories or models of PTSD (Foa & Rothbaum, 1997; Foa et al., 1989). As such, this treatment model focuses more on the content of cognitions and the effect that distorted cognitions have on emotional responses and behavior. Because the perception of social isolation/loneliness is a cognitive state, it would be beneficial to address these cognitions in the phase of CPT that focuses on helping veterans become aware of their thoughts and feelings (this usually occurs in session 3) and challenge them to work to change these perceptions, although they are likely based in reality (because stigma significantly predicts social isolation). Additionally, although not widely used in the Veterans Affairs Medical Center setting, Acceptance and Commitment Therapy (ACT) has been shown to be effective in altering stigmatizing attitudes as well as in treating PTSD (Masuda et al., 2007). Implementing ACT into

veterans' treatment of PTSD may prove effective for decreasing stigma associated with the military by teaching veterans to accept people's negative perceptions and to learn not to judge themselves.

Clinical implications may also include elements of social change or strategies to reduce cultural attitudes and stereotypes about military and war experience, which in turn may also help to reduce veterans' perceived stigma about military and war experience (and, ultimately decrease veterans' social isolation and development of PTSD, given the links found in this study). Although cultural attitudes about mental illness are being addressed by interventions such as protest, education, and contact with those diagnosed with mental illness (see Corrigan & Kosyluk, 2013; Corrigan, Morris, Michaels, Rafacz, & Rusch, 2012), no studies have been aimed at decreasing negative attitudes toward the military and war. Furthermore, this idea of reducing negative attitudes about war may be controversial, as many believe that peace between nations may be built better using strategies other than war (Mueller, 1973; Schuman & Rieger, 1992; Wagner-Pacifici & Schwartz, 1991). However, results of this study appear to indicate that culture's negative attitude about the military and war may be impacting – at least indirectly – the social and mental health experience of veterans. Thus, some type of culturally-based intervention to increase acceptance of veterans may benefit veterans.

Limitations and Future Directions

The results and implications must be interpreted in the context of study limitations. The main limitation of the present work is the cross-sectional nature of the data, which prohibits conclusions regarding causality of relations tested in the proposed model. The information was collected at one point in time. Therefore, temporal relations are impossible to determine. For example, it is unable to be determined whether the development of PTSD is due to exposure to

social isolation or whether having PTSD causes or increases the likelihood of social isolation. To measure causality, data must be examined over time to see how individuals and/or groups actually change. Although many of the proposed relations are supported by the correlational data and by prior theoretical and empirical work, future longitudinal work or prospective studies will be needed to confirm causality. Such longitudinal work would allow for more complex analysis that might include Structural Equation Modeling testing the direct and indirect pathways simultaneously to determine change over time.

A second potential limitation of the study is the retrospective nature of self-report data. For instance, reports of combat severity and unit support may have been biased due to the inability to recall and remember events. Any inability to recall specific details of traumatic combat events may result in participants either failing to report experiencing the event or reporting that they experienced an event when, in fact, the event did not occur in the way it was remembered by the participant. These impairments in memory recall may lead to under- or over-reporting of main study variables. For instance, studies from cognitive and clinical psychology have revealed that experiencing traumatic events may impact general cognitive and memory processes and accounts of the event (Mahoney, 1991). Although part of PTSD may be reliving the traumatic experiences, retrospective reporting of perceptions like social support and disclosure may also be impacted by retrospective reporting.

A third potential limitation is the specific sample recruited for this study. For example, the percentage of people who participated in the study versus the percentage of people to whom the study was advertised was not recorded. The response rate was presumably small. For instance, when recruiting participants from the MTSU chapter of Student Veterans of America, the link to the study was emailed to 1,200 members (not including the other organizations that

were used to recruit participants); however, there were only 195 participants in the study, which indicates a small response rate. Finally, participants self-selected into the study. Those who participated in the current study may have been systematically different (e.g., higher functioning) than those who did not. This limitation is considered further below.

In addition, participants from the present study were students from a university veteran organization (i.e., Student Veterans of America) or community-based veteran organizations (i.e., Wounded Warrior Program). It may be that veterans who participated in the current study were higher functioning or more educated compared to those in the general population. For example, study participants may have had less severe symptoms or combat experiences or be less impacted by mental illness stigma. In addition, those more highly educated may be more informed about mental illness and stigma. Indeed, in the present study awareness of cultural stereotypes of mental illness was not related to personal experiences of stigma related to symptoms. And, stigma of mental illness was not related to veterans' experience of their social support or disclosure. These findings make it plausible that the current sample may be limited to those more highly educated about mental illness symptoms and stigma or that they had less severe symptoms. Also, approximately 42% of the sample was on disability; however, it is unknown as to whether or not these participants were on disability for mental health or other medical reasons. It currently is unknown whether veterans' concept of stigma of mental health symptoms are different due to the monetary benefit of disability status. Future research should examine generalizability of the model and current findings to larger, more representative samples of veterans from different wars.

Conclusions

The purpose of the current study was to examine a process model of combat-related processes and mental illness symptom processes that explain increased likelihood of PTSD. This researcher proposed that the development of PTSD may occur due to cultural, social, and self-related pathways associated with the dual encounters of combat (i.e., severity) and mental illness symptoms. The overarching findings of the current study indicate that social variables in the form of impaired social support (perceived social isolation in particular) and the cultural and self variables of stereotypes and stigma about the military and war, in addition to severity of combat experiences and symptoms, may explain greater likelihood of PTSD among veterans. Indeed, overall evidence supports the combined explanations of combat-related processes and mental illness processes in understanding likelihood of PTSD.

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APPENDICES

Appendix A

Informed Consent Form

The Study of Cultural, Social, and Self Factors related to Combat Experience

Dear Participant:

The purpose of this research study is to attempt understand the range of experiences of veterans in terms of combat as well as social relationships, mental health, and self beliefs.

We are asking any adult who is at least 18 years of age and is a military veteran to complete a survey that contains questions about public attitudes as well as self-perceptions related to your military/combat experiences. These items include general public attitudes, personal experiences encountering the attitudes, symptoms of mental illness, combat experiences, and social support. Our intent is to use this information to gain a better understanding of the experiences of veterans in terms of combat as well as social relationships, mental health, and self beliefs. We estimate the time required to complete the questionnaire survey to be approximately one hour.

This survey is completely anonymous and confidential. In other words, there will be no way to connect your name with your responses. Your rights and privacy will be maintained, with only the Secretary of the Department of Health and Human Services, the ETSU Internal Review Board (IRB), and personnel particular to this research have access to the study records.

Participation in this research study is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, there will not be consequences.

The only risk is that survey questions may evoke distressing memories/recollections related to your military/combat experiences. There are no other known or anticipated risks in having you participate in this study. To reiterate, **you may choose not to participate** in this study at any time.

And, although there are no other direct benefits, you may feel satisfaction for contributing to research that may provide new understanding regarding the range of experiences of veterans in terms of combat as well as social relationships, mental health, and self beliefs. Research and future individuals/veterans may benefit from this information and knowledge.

If you have any research-related questions or problems, you may contact Stacey Williams, PhD, at 423-439-4615**.** Also, the chair of the Institutional Review Board at East Tennessee State University is available at (423) 439-6054 if you have questions about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423/439-6055 or 423/439/6002. Additionally, if you are experiencing emotional or psychological problems, you may contact the Counseling Center at ETSU at 423-439-1171,

the Counseling Center at MTSU at 615-898-2670, or Mental Health Services at the James H. Quillen VAMC at 423-926-1171 x7248/x2961.

Thank you!

By clicking on the following link, you are agreeing that you are at least 18 years of age and are a military veteran providing your consent for participation, and will be taken to the survey: https://www.surveymonkey.com/s/MGZL9DF

Appendix B

Demographic Questions

Sex:

___ Male
___ Female

Age: ___

Race:

___ Alaskan/Native American
___ African American
___ Asian
___ Caucasian/White
___ Hispanic
___ Other (please specify:_____)

Current Zip Code: _____

How would you classify the area in which you grew up?

___ a farm
___ a town under 5,000
___ a town of between 5,000 and 25,000
___ a town of between 25,000 and 100,000
___ a town of between 100,000 and 500,000
___ a town larger than 500,000

How would you classify the area in which you grew up?

___ Rural
___ Urban
___ Suburban

How would you classify the geographical region in which you grew up?

___South
___ North
___ Midwest
___ South West
___ West Coast
___ Other
___ New England
___ East Coast

Relationship Status:

___ Single
___ Committed Relationship
___ Cohabitating
___ Married
___ Separated
___ Divorced
___ Widowed

Education:

How many years of school did you complete? Mark highest grade completed.

Grade: 7 8 9 10 11 12 or GED high school equivalent
College: 1 2 3 4 5
Graduate School: 1 2 3 4 5 6 7

Income:

___Less than $10,000
___$10,000 to $19,999
___$20,000 to $29,999
___$30,000 to $39,999
___$40,000 to $49,999
___$50,000 to $59,999
___$60,000 to $69,999
___$70,000 to $79,999
___$80,000 to $89,999
___$90,000 to $99,999
___$100,000 to $149,999
___$150,000 or more

Employment Status:

___Employed full time
___Employed part time
___Unemployed / Looking for work
___Student
___Homemaker
___Retired

Number of Deployments:

___0
___1
___2
___3
___4
___5
___More than 5

Length of Most Recent Deployment:

___Less than 3 Months
___3 to 6 Months
___6 to 12 Months
___12 to 15 Months
___15 to 24 Months
___More than 24 Months (or 2 years)

Wars/Conflicts in which You Served:

___World War I
___World War II
___Korean War
___Vietnam War
___Operation Desert Storm
___Iraq War (e.g., Operation Enduring Freedom/Operation Iraqi Freedom)

Time Since You Served in Combat:

Years: ____ Months: ____

Have you Received Treatment for your mental illness symptoms:

___Professionally (e.g., psychologist, psychiatrist)
___Medications
___Other Self-Treatments

Do you Receive Disability Benefits?

___Yes
___No

VITA

MANDI FAYE DEITZ

Education:
Ph.D., Clinical Psychology, East Tennessee State University
2007-2014
M.A., Clinical Psychology, East Tennessee State University
2005-2007
B.S., Psychology, Western Carolina University
2001-2005

Clinical Experience:
Boise VA Medical Center Boise, ID
July 2013-Present
Specialized Crisis Responder/Suicide Risk Assessment and Prevention
2012-2013
Outpatient Trauma-Focused and Behavioral Health Services
2011-2012
Behavioral Health and Primary Care Integration
Fall 2010
Outpatient PTSD and Trauma-Focused Services
2009-2010
General Child and Adult Psychopathology
2007-2011
Rural Behavioral Health and Primary Care Integration
2008-2009
Rural General Adult Psychopathology/Substance Abuse
2007-2008
Inpatient Substance Abuse, PTSD, and Psychiatric Services
Summer 2007
Grief Counseling and Family Support Services
Spring 2007

Research Experience:
Center of Excellence in Primary Care Education
2013-Present
Doctoral Dissertation
May 2013
James H. Quillen VA Medical Center Mountain Home, TN
2011-2013
Preliminary Examination Project
June 2011
Comprehensive Examination Project
June 2010
Master's Thesis
March 2010

Publications/Manuscripts:

Deitz, M.F., Williams, S.L., Rife, S.C., & Cantrell, P.J. (2012). Examining cultural, social, and self-related aspects of stigma in relation to sexual assault and trauma symptoms, *Violence Against Women,* Manuscript accepted for publication.

Abel, M.H. &**Deitz, M.F.** (2008). Smiling, job qualifications, and ratings of job applicants. *American Journal of Psychological Research*, *4*, 45-57.

Professional Presentations:

Deitz, M.F., Chandler, S., & Williams, S.L. (2012, April). *An integrated cultural, social, and self model of sexual assault and trauma symptom severity.* Presented at the 2nd Annual Collaborative Conference on Rural Mental Health: Looking to the Future of the Rural Mental Health Care. Boone, NC.

Deitz, M.F. & Williams, S.L. (2010, November). *Multiple traumas and psychiatric disorders in South Africa: The South Africa stress and health study.* Presented at the International Society for Traumatic Stress Studies 26th Annual Meeting. Montreal, Canada.

Deitz, M.F. (2008, November). *Rural integrated primary care psychology.* Presented at Rural Connections 2008: Health Partners in Concert, Rural Health Association of Tennessee 14th Annual Conference. Pigeon Forge, TN.

Deitz, M.F.& Williams, S.L. (2008, November). *Support seeking and network response among sexual assault victims who perceive stigma.* Presented at the Annual Convention of the Tennessee Psychological Association Graduate Poster Session. Nashville, TN.

Rahman, Z.U., Shields, A.L., **Deitz, M.,** Floyd, M.R., Click, I., Holt, J.D., Kauzlarich, M., & Greenfield, S.F. (2007). *Extent and impact of alcohol use disorders among patients seeking primary care treatment.* Paper presented at the ETSU Primary Care Research Day. Johnson City, TN.

Shields, A.L., **Deitz, M.**, Floyd, M.R., Holt, J.D., Kauzlarich, M., Zia Ur Rahman, & Greenfield, S.F. (2007, June). *Integration and performance of the Alcohol Use Disorders Identification Test among rural primary care patients.* Community Connections: Using Research Results to Reduce Health Disparities, Wintergreen, VA.