COGNITIONS AND ANGER IN VETERANS WITH POST-TRAUMATIC STRESS DISORDER FROM MILITARY SEXUAL TRAUMA

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DEDICATION

I would like to thank, above all, my parents for their support, both financially and emotionally, throughout my 23 years of education. Secondly, I would like to express my greatest gratitude to Dr. Alina Suris, my mentor, and the members of my Graduate Committee, Dr. Carol North, Dr Julian Osuji, Dr. Heidi Koehler, and Dr. Alexandria Doyle, whose guidance, feedback, and kind support have enriched my knowledge of PTSD and taught me to be a more thoughtful researcher. Additionally, I would like to acknowledge the support of my husband, Dr. Manav Malik, and my two families (Dhingra and Malik) for being my cheerleaders every step of the way. Last, but certainly not least, I want to thank God for all of His blessings, which have kept me optimistic at all times.

COGNITIONS AND ANGER IN VETERANS WITH POST-TRAUMATIC STRESS DISORDER FROM MILITARY SEXUAL TRAUMA

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COGNITIONS AND ANGER IN VETERANS WITH POST-TRAUMATIC STRESS DISORDER FROM MILITARY SEXUAL TRAUMA

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Military sexual trauma affects both males and females in the military. Treatment for PTSD from MST follows from clinical trials of therapies among sexual trauma victims. However, research suggests that MST may be different from other traumatic events in the severity and manifestation of PTSD symptoms and sequelae. This study examined trauma-related cognitions and anger in PTSD from MST and how these PTSD-related sequelae manifest across genders, ethnicities, and sexual trauma history groups. Individuals with history of MST only and MST + childhood sexual trauma reported more negative cognitions about the self and self-blame for the trauma than individuals with MST + other adult sexual trauma. Male gender was associated a higher report of with inward expression of anger and overall expression of anger compared to females. African Americans and Hispanics reported more State Anger than Caucasians in the sample. PTSD-related cognitions and anger were examined together to assess correlation. Significant positive correlations were found between cognition scales and anger scales. Only anger control had a negative correlation with the report of negative cognitions of self. No significant differences were found in the analyses of PTSD severity and B, C, D symptom patterns across gender, ethnic groups, and sexual trauma history groups. A model assessing the independent contribution of anger, trauma-related cognitions, and sexual trauma group on PTSD severity revealed that a State Anger subscale and negative cognitions about self were significant in explaining PTSD severity. Non-significant findings on gender and ethnicity with qualitative differences on means implore the need for replication with larger sample sizes to increase power. Conclusions and implications are discussed.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

Among members of the armed forces, post-traumatic stress disorder (PTSD) associated with military sexual trauma (MST) can be a significant complication of military service. Often, aspects of the individual's background, such as prior history of victimization and other psychosocial vulnerabilities can exacerbate the effects of MST, leading to more prolonged symptoms and/or increased severity of resulting PTSD symptoms.

The past 15 years of research in MST has both raised awareness of MST and prompted interest in the development of treatments specialized for PTSD associated with MST. Recently, for the treatment of PTSD, the Veteran's Affairs (VA) Medical Center's adopted a therapy called Cognitive Processing Therapy (CPT), which was originally developed for treatment of PTSD associated with sexual trauma in the civilian population in the early 1990s. CPT is a treatment that combines aspects of psychoeducation, cognitive, and exposure therapies (Resick and Schnicke, 1992). CPT is efficacious in treating chronic PTSD associated with sexual trauma and is becoming one of the principal treatments for treating chronic PTSD associated with MST at VA Medical Centers in the United States (VA/DoD Clinical Practice Guideline for the Management of Posttraumatic Stress, 2004). However, because the treatment is still nascent in the VA system,

CPT's utility in specific demographic populations has not been evaluated and appropriate variations for treatment-matching have not yet been developed. Variability in symptom presentation and severity exists in PTSD across different demographic groups such as gender (Hanson et al, 2008; True and Lyons, 1999) and ethnicity (True and Lyons, 1999), as well as trauma history and type (Kelley et al, 2009; Bryant and Harvey, 1999; Long and Elhai, 2009). Further, PTSD-related sequelae such as trauma-related cognitions and anger-related emotions also manifest variably across demographic groups (Dunmore et al, 1999; Castillo et al, 2002; Maier et al, 2009). Successful clinical intervention requires sensitivity from practitioners to both within group and across group differences. These differences indicate a need for treatment adaptations that address variances in symptom presentation and severity of symptoms for different populations to best treat chronic PTSD across the board.

The purpose of this study is to examine the disparities in presentation of PTSD-related sequelae in a sample of men and women with PTSD associated with MST. Trauma-related cognitions as well as expression and control of anger, which can contribute to PTSD chronicity, were examined across demographic groups including gender, ethnicity, and trauma history. Further, an assessment of the symptom severity and symptom patterns across these same demographic groups was conducted to identify differences within and across these groups. The

long term goal is to utilize this knowledge to provide direction in developing appropriately focused treatment-matching components to cognitive processing therapy (CPT) for treating PTSD associated with MST across different demographic populations.

CHAPTER TWO
Review of the Literature

BACKGROUND AND LITERATURE REVIEW

Posttraumatic Stress Disorder (PTSD) Diagnosis

Military veterans returning from the Vietnam War approximately 50 years ago prompted the awareness of a psychological syndrome involving nightmares, flashbacks, anger outbursts, and increased rates of suicide which was later named post-traumatic stress disorder (PTSD) in the 3rd edition of the Diagnostic and Statistical Manual for psychiatric and psychological disorders (Scott, 1990; APA, 1980). The diagnosis of PTSD is unique when compared to other psychiatric disorders in that it requires an exposure to a traumatic event that precedes the presentation of psychological symptoms. Specifically, the 2000 DSM-IV TR (Fourth edition, Text Revision) states:

> **The person has been exposed to a traumatic event in which both of the following were present:**
>
> 1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
> 2. the person's response involved intense fear, helplessness, or horror. (pg 467)

This specification of the PTSD diagnosis is called Criterion A, and comprises several different types of trauma exposures. Since its inclusion in the Diagnostic and Statistical Manual (DSM) 3rd revision, there has been much debate on the categorization and clinical description of PTSD (Marcus, 1990; North et al, 2009) due to the variability in types of exposure events, their severity, and variability in resulting symptomatology. Among veterans, two unique and potentially severe Criterion A events are combat (exposure to a war zone) and sexual trauma (including abuse and assault). As many as 41% in the military are exposed to a traumatic combat event (Frueh et al, 2005; Tanielian, 2009). Sexual trauma in the military is referred to as "Military Sexual Trauma" (MST), and is recognized as being inclusive of sexual assault and sexual harassment that occurs at any time during military service. On average, studies show that 23% of women and 1-3% of men experience military sexual trauma (Suris and Lind, 2008; Suris et al, 2004; Coyle et al, 1996; Butterfield et al, 1998; Sadler et al, 2000 and 2003; Martin et al, 1998 and 2000; Frayne et al, 1999 and 2003; Hankin et al, 1999; Smith et al, 1999; Murdoch et al, 2004; Kimerling et al, 2007). These percentages are somewhat misleading, however, given that the number of men in the military far exceeds the number of women in the military, such that the actual number of men who experience MST is equivalent to or slightly higher than the number of women who experience MST.

Kemp et al (1991) and Allen (2007) both describe differences between interpersonal and impersonal traumas. They state that impersonal traumas include events such as natural disasters and accidents while interpersonal traumas include physical and sexual assaults. Allen (2007) (pg 5-17) goes on to describe attachment traumas, which he denotes as interpersonal trauma in an attachment relationship, including events like childhood sexual abuse and the association of betrayal in an attachment relationship. Importantly, research indicates that interpersonal traumas result in more negative outcomes than impersonal traumas (Janoff-Bulman, 1992), suggesting that the type of trauma or Criterion A event can influence severity of PTSD symptoms that result.

Along with the diagnostic debate on posttraumatic stress disorder criterion A, researchers have also challenged the organization of the established B, C, and D clusters of re-experiencing, avoidance, and hyperarousal in the DSM because of the variation in clinical presentation and severity of PTSD symptoms observed across patients (Taylor et al, 1998; Foa et al, 1995; Asmundson et al, 2000).

The current B, C, and D criteria, as described in the DSM-IV TR (pg. 468) are:

> **B. The traumatic event is persistently reexperienced in one (or more) of the following ways:**
>
> 1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions

2. recurrent distressing dreams of the event

3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated)

4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma

2. efforts to avoid activities, places, or people that arouse recollections of the trauma

3. inability to recall an important aspect of the trauma

4. markedly diminished interest or participation in significant activities

5. feeling of detachment or estrangement from others

6. restricted range of affect (e.g., unable to have loving feelings)

7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1. difficulty falling or staying asleep

2. irritability or outbursts of anger
3. difficulty concentrating
4. hypervigilance
5. exaggerated startle response

The B, C, and D symptom clusters were originally developed based on expert consensus. However, empirical examination of how PTSD symptoms cluster using factor analysis of patients' reported PTSD symptoms have challenged the organization of symptoms within these clusters (Foa et al, 1995, Asmundson et al 2000; Taylor et al, 1998) by showing that some PTSD symptoms correlate better with other symptoms that are not in the same cluster. These findings are reviewed in the following section. Finally, the last two criteria (E and F) for PTSD are:

> E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month.
>
> F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Posttraumatic Stress Disorder (PTSD) Risk, Symptom Severity, and Symptom Patterns

Some of the risk factors associated with PTSD include: female gender (Kessler et al, 1995), history of prior trauma (Ozer et al, 2003), and more severe trauma (Buydens-Branchey et al, 1990). The data on ethnicity, socioeconomic status, and marital status is less conclusive, as there is inconsistency in the findings (Johnson, 2009 (p.90)). A consistent finding, however, is that individuals are more likely to develop PTSD if they have little support from family and friends or recent stressful life changes (Hyman et al, 2003; Solomon et al, 1988).

Foa et al (1995)a, based on the theory that the distinguishing factor between PTSD and other anxiety disorders is the alternation between intrusive re-experiencing of the trauma and denial/numbing of emotional responsiveness, suggested that the "numbing" of emotions in PTSD is a key symptom of PTSD that evolves independently of effortful avoidance symptoms (the cluster it is categorized under). The investigators suggested that while numbing and avoidance both represent methods of escaping from emotions, the mechanisms that bring about these symptoms are different. They further suggest that when effortful avoidance fails to ameliorate negative affective arousal, numbing occurs. This is consistent with their finding that victims in their study of females with

sexual and non sexual assault traumas who reported severe arousal and avoidance were more than 10 times more likely to report numbing symptoms than victims with mild arousal and avoidance symptoms. Finally, this study also showed that the report of numbing symptoms distinguished between victims with PTSD and victims without PTSD (Foa et al, 1995a). This finding was replicated in McMillen, North, and Smith (2000), where 130 earthquake survivors were assessed for PTSD symptoms using the Diagnostic Interview Schedule/Disaster Supplement (DIS/DS). They found that the survivors who met criteria for PTSD reported avoidance and numbing symptoms significantly more than those who did not have PTSD. Further, they found that all who met avoidance and numbing criteria also met re-experiencing and arousal criteria, suggesting that avoidance and numbing symptoms represent a marker of PTSD, while re-experiencing and arousal symptoms are more common, "normal" reactions to stress and do not signify pathology by themselves. Other studies have confirmed this finding (North & Pfefferbaum 2002; Ehlers et al 1998; Maes et al 1998; McMillen et al 2000; North et al 1999; Norris 1992; Breslau et al 2005).

Recently, PTSD researchers have begun to look at variability in symptom patterns that can emerge as a result of factors such as type of traumatic event, demographic characteristics, and trauma history. Some of this research has focused on variability in risk factors across demographic groups, while others

have examined specific PTSD symptom profiles that appear to be associated with a demographic subgroup.

Trauma type

With regard to symptom profiles of PTSD, Kelley et al (2009) examined PTSD symptoms patterns across three different types of traumas in a civilian sample of women including motor vehicle accident (MVA), sexual assault, and sudden loss of a loved one. The investigators found that the groups differed in overall PTSD severity and displayed distinct symptom patterns, as assessed by the PTSD Checklist (PCL), a screening measure for PTSD. Notably, the most severe PTSD scores were found among those who had experienced sexual assault (mean of 43.5, compared to 31.6 for MVA, and 33.5 for "sudden loss of a loved one" on the PCL, $p<.001$). This suggests that a criterion A event of sexual assault may be associated with greater conditional risk for PTSD and higher levels of PTSD severity. Kelley and colleagues (2009) found differences in symptom patterns across the three trauma groups. Symptoms related to fear conditioning/avoidance were found to be more prevalent among those exposed to sexual trauma. Both the MVA and the "sudden loss of a loved one" groups reported similar severity of Cluster B and Cluster C symptoms and less severe Cluster D symptoms. The sexual abuse group, however, reported more Cluster C symptoms than any other

symptoms and less severe and similar severity of Cluster B and Cluster D symptoms.

Gender, Ethnicity, and Prior Trauma

With regard to gender differences, most studies do not find significant differences in symptom profiles of males and females (Chung and Breslau, 2008; Lipschitz, 2000; Green, 2003) aside from the finding that males tend to express more irritability (arousal, cluster D) than females (Green, 2003). Differences in symptom patterns of PTSD have been found across ethnic groups. The extant literature in PTSD indicates that most ethnic minority groups have a higher rate of PTSD than Caucasians (Frueh et al, 1998). Higher rates of PTSD among ethnic minorities when compared to Caucasians have been found among veterans as well (Loo, 2007). This may be explained, in part, by differences in the lifetime exposure to traumatic events and even the difference in types of traumatic events individuals are exposed to across ethnic groups (Perez Benitez et al., 2010). The variability in type of traumatic event experienced may also be associated with cultural aspects that affect level of social support and cognitions related to blame that contribute to PTSD. Clear et al (2006) conducted a study of differences in symptom presentation among sexually abused girls from Hispanic, African American, and Caucasian backgrounds. They found that African American girls had significantly more post-trauma avoidance symptoms (Cluster C) (as measured

by the Impact of Events Scale) than Hispanic girls but not more than Caucasian girls. The researchers stated that this finding is consistent with prior studies, which found that African American girls were more likely than Hispanic girls to use withdrawal or avoidance as a primary coping strategy after exposure to childhood sexual abuse. Andres-Hyman et al (2004) studied a group of women who had experienced childhood sexual abuse from Caucasian, Hispanic, and African American backgrounds. They found that Hispanic women reported less severe persistent re-experiencing (Criterion B) symptoms that either African Americans or Caucasians.

There are several theories explaining the variance in symptom patterns across ethnicities. For example, the increased rate of somatic symptoms reported among Hispanics when compared to other ethnicities in studies of depression (Dohrenwend and Dohrenwend, 1969) and *ataques de nervios* (characterized by mostly physical manifestations of anxiety) reaction to a fearful event has been explained as being associated with cultural stigma against mental illness and its treatment (Hough et al, 1996 in: Marsella et al, pg 329). With regard to symptom presentation among African Americans, Allen (1996: in Marsella et al, pg 212) suggests that differences are seen because characteristics such as racism and discrimination, may serve as prior traumas that contribute to more severe PTSD when traumatic events occur later in life. Marsella et al (1996, pg 106) argues

that differences found across ethnic groups in studies should be interpreted with caution, as cultural groups are heterogenous and vary extensively across factors that may also contribute to PTSD risk and presentation (such as education, social class, exposure to trauma, regional background, urban vs rural residence, etc.). Many times, the differences in symptom presentation can be related to ethnic background as well as cultural and social differences across groups that are associated with race/ethnicity. These findings point to the concept of culturally diverse symptom presentation within a diagnostic category, a phenomenon that suggests we may also see differences in symptom presentation of post-traumatic stress disorder across ethnicities associated with cultural differences related to race and ethnicity.

Anger and PTSD

Anger, as an emotion, often becomes activated as a result of trauma exposure (Novaco and Chemtob, 1998). Anger-related symptoms, such as irritability and outbursts, are represented in the arousal cluster (D) of PTSD. However, with recent examination of the PTSD diagnostic criteria during the development of the DSM-5, some investigators have suggested that anger is not only an arousal symptom, but also an avoidance symptom (Tull et al, 2007; Watson, 2009; Gardner et al, 2008). The association between anger and fear in PTSD represents a unique dysregulation of affective processes among anxiety

disorders. The "flight or fight" reaction to stress suggests a relationship between fear and 'flight' and a disparate relationship between anger and 'fight' (Cannon, 1929; Bracha et al, 2004). In PTSD, it is hypothesized that there is an inefficient regulation of psychophysiological arousal and subsequent elevated readiness to anger (Gardner et al, 2008; Olatunji et al, 2010; Watson, 2009). The relationship between PTSD and anger is stronger and more fixed than between anger and any other anxiety disorder (Olatunji et al, 2010). Two theories attempt to explain the relationship between fear and anger with PTSD. The *survival mode theory* states that individuals with PTSD have "a lowered threshold for threat perception, which activates a biologically prepared survival mode, including fear and flight and anger and fight responses" (Chemtob, 1997; Olatunji et al, 2010). The *fear-avoidance theory*, alternatively, suggests that individuals with PTSD "avoid trauma-based fear emotions that are elicited by trauma-based intrusive thoughts and that trauma-based anger is a preferred emotional state because it has more positive emotional valence than fear (Foa et al, 1995; Riggs et al, 1992; Olatunji et al, 2010). Lastly, Carver and Harmon-Jones (2009) offer that anger is expressed with approach tendencies when it is elicited in a pure state but is expressed with stronger avoidance qualities when it is mixed with anxiety. This is consistent with the duality of the anger emotion in PTSD.

Anger is a multidimensional construct and has multiple definitions in the literature. It is also sometimes used interchangeably with aggression and hostility. However, these terms are distinct and refer to independent constructs. For the purposes of this study, based on its extensive usage in clinical and research settings, definitions per Spielberger's conceptualization of anger constructs were employed. Spielberger (1991) described anger as "a more elementary concept than either hostility or aggression." He stated that anger is defined as "an emotional state that comprises feelings that vary in intensity from mild annoyance or aggravation to fury and rage, and that are accompanied by arousal of the autonomic system." He added that the anger emotion is a necessary but not sufficient cause for the development of attitudes of hostility and aggressive behavior.

Anger's independent relationship to trauma has been studied at length. Orth and Wieland (2006) found that the correlation between PTSD and anger is not an artifact of anger being one of the diagnostic criteria for PTSD in a sample of female crime victims. Further, Tull et al (2007) found that avoidance and emotional numbing each accounted for a significant amount of independent variance in aggressive behavior beyond PTSD symptom severity and trait anger in a sample of 113 men with history of interpersonal violence.

Tolin and Foa's (2006) review of men and women with PTSD, found that male participants were more likely to express posttraumatic distress in the form of irritability, anger, and violent behavior when compared to women. These findings were consistent across age group and type of trauma. Jakupcak and Tull (2005) also found that men with trauma histories reported greater anger, hostility, and more aggressive acts than men without any trauma exposure in a non-clinical sample of college-aged men. Finally, Taft et al (2009) showed that among male Vietnam veterans with combat-related PTSD, 33% reported physical partner aggression and 91% reported psychological partner aggression. The rate of intimate partner aggression in this sample is comparable to other studies of veterans (Jordan et al, 1992) and is three times the rate of partner-aggression assessed in the civilian population (Strauss and Gelles, 1990). This data suggests a relationship between trauma, male gender, and aggression in PTSD that is not as prominent among women with PTSD.

Jakupcak and Tull (2005) examined reports of anger symptoms using the State-Trait Anger Inventory (STAXI), the Buss-Durkee Hostility Inventory (BDHI), and the Conflict Tactics Scale (CTS) in a sample of college-aged men and women. The researchers note that the levels of anger, aggression, and violence reported by the sample of men exposed to trauma in this study were lower than the rates shown among male veterans with PTSD but were still twice

as high as those in the subset of men who were not exposed to traumatic events. Overall, the investigators state that their findings provide evidence that men with PTSD symptoms experience more negative internal affect and outward expression of those emotions through aggression and violence than non-trauma victims. They add that women with PTSD also experience more negative internal affect than women without PTSD, but that they do not report more trait-anger, more outward expression of anger, or more hostile-aggressive behavior than women who are not exposed to a traumatic event. Moreover, Jakupcak and Tull (2005) found that civilian men with PTSD reported more severe internal negative affect (anger and hostility) and related expression of these emotions with aggression and violence than men without PTSD while women with PTSD tend to report more severe internal experiences of anger and hostility as well but do not display higher levels of trait-anger, externally expressed anger, or hostile-aggressive behavior than women without PTSD.

Newman et al (2006) suggest that women and men differ on aspects of anger because of gender role socialization, which teaches women to be more expressive regarding their emotions than men, with the exception of anger emotions, due to its incongruity with the feminine gender role. Conversely, men are taught to be less emotionally expressive than women, except for anger, which falls in line with the masculine gender role. Another study of male (with combat

PTSD) and female veterans (with sexual trauma PTSD) demonstrated that male veterans with PTSD related to combat scored higher on the BDHI Assault, Irritability, Negativism, and Verbal Hostility scales than male veterans with other psychiatric problems (Castillo et al, 2002). Further, they found that male veterans with combat PTSD scored higher than female veterans with sexual trauma related PTSD on the Assault, Indirect Hostility, Irritability, and Verbal Hostility scales of the BDHI. Both male and female veterans with PTSD scored similarly on subscales assessing Negativism, Guilt, Suspicion, and Resentment (Castillo et al, 2002). Note that the latter subscales are assessing cognitive constructs that are common in PTSD.

Moisan et al (1997) examined the relationship between anger and ethnicity among African American and Latino adolescent males who were victims of sexual abuse. They found that African American males had higher anger scores as assessed with the STAXI than Latino males. Further, African American males were more likely than Latino males to display symptoms of anger following the sexual abuse. The researchers hypothesized that this difference is associated with cultural differences. Specifically, they cite evidence that anger, rather than depression, is a more common response to stress among African Americans (Broman and Johnson, 1988; Moisan et al, 1997). Additionally, they note that African American children may be exposed to multiple traumas throughout their

lives, which can contribute to higher levels of anger and aggression. This is particularly true for individuals living in the low socio-economic status bracket, as they are more likely to be exposed to community violence, racism, oppression, and poverty. Conversely, among Latinos, collectivism is emphasized, in that there is an emphasis on responsibility to the group in the community rather than the self. This can, research shows, contribute to stronger beliefs in an external locus of control and subsequent depression in response to stress. However, family and social support, emphasized in collectivist values, can help reduce anxiety, which among trauma victims, is associated with anger and aggression.

Posttraumatic Stress Disorder (PTSD) and the Military

Military veterans experience psychological stress in various stages of involvement in the military including non-combat settings, during combat, and post-deployment (Watson et al, 1993; MacDonough, 1991). Since the inclusion of PTSD in the Diagnostic and Statistical Manual for Mental Disorders in 1990, much investigative effort has been invested in developing a thorough understanding of post-traumatic stress disorder, particularly among veterans. However, given that PTSD was originally identified among veterans as a combat-related sequela, veterans experiencing PTSD associated with sexual trauma in the military have been given less attention until recently (Grossman et al, 1997).

The lifetime prevalence of PTSD is 7.8% (5.0% among men and 10.4% among women) in the United States in the general population (Kessler et al, 1995). Alternatively, among veterans, lifetime prevalence of PTSD ranges from about 10 to 30% depending on the era (e.g.: 30.9% among male Vietnam veterans and 26.9% among female Vietnam veterans) (Magruder and Yeager, 2009; Weiss et al, 1992; Schlenger et al, 1992). What is apparent, however, is that the rate of PTSD among veterans is 1.5 to 3.5 times higher than the general population (Magruder and Yeager, 2009)

Data indicates that veterans are exposed to a high rate of traumatic stressors both while deployed (Ozer et al, 2003; Buydens-Branchey, 1990) and prior to deployment (Bolton et al, 2001). This is important because trauma is not solely related to deployment stressors but also to peacetime, training, and pre-deployment stressors. Further, research suggests that risk factors for the development of PTSD include: direct exposure to traumatic event, long lasting and/or severe traumatic event, being in danger during the event, and feeling helpless during the event (APA, 2000; Dietrich, 2001). These are risk factors that soldiers facing combat or sexual trauma can experience during their military service.

Bolton and her team (2001) assessed rate of exposure to potentially traumatic events among 2,947 military personnel prior to deployment on a peace-

keeping mission. They found that 74% of participants endorsed exposure to at least one traumatic event, and 60% reported exposure to more than one traumatic event. Comparatively, Kessler et al (1995) in the National Comorbidity Survey, found a rate of 60% exposure to traumatic events in a national, representative sample of men and women in the community. Moreover, Buydens-Branchey et al (1990) assessed the duration and severity of combat exposures among veterans with and without PTSD. The data suggests that there is a dose-response relationship between trauma intensity and duration and resulting PTSD pathology such that longer exposures and more intense combat experiences were associated with more severe PTSD pathology. Similarly, those who rated combat severity on the Laufer Combat Scale more severely were more likely to have PTSD than those who did not. Finally, studies have shown that among veterans, PTSD is characterized by early onset of anger-related symptoms in the development of PTSD (Orth and Wieland, 2006; Bremner et al, 1996; Novaco and Chemtob, 1998). Jakupcak et al (2007) also showed that higher initial anger levels predict later PTSD severity in a sample of combat veterans from the Afghanistan and Iraq wars. This provides further evidence that symptoms of PTSD can vary by subgroup, and possibly as a result of trauma type in the veteran population.

Another relevant finding is that studies have shown that childhood trauma, chronic adversity, and familial stressors increase risk for PTSD. Additionally,

these factors can also increase activation of existing biological markers of vulnerability to PTSD after a traumatic event in adulthood (Koenen, 2007; Otte et al, 2005; Resnick et al, 1993). Pflanz (2002) reported that while many studies focus on the stress-related mental health difficulties due to combat-related stress, recent evidence shows that military personnel experience significant distress during routine peacetime assignments as well. He related that periodic changes in stationing, overseas stationing, and lack of control over duty assignments were reported as stressors for these military personnel. Pflanz (2001), in a study of occupational stress among military mental health patients found that 52% of mental health patients in the military reported work stress as a source of significant emotional distress. Finally, rates of exposure are higher among veterans compared with civilians for combat trauma (naturally due to its association with the military) and sexual trauma (Suris et al, 2004; Suris and Lind, 2008).

These findings point to two important factors: 1. Among veterans, there is likely an increased duration, severity, and numbers of exposures to traumatic experiences compared with civilians, and 2. Life experiences (trauma, loss, chronic adversity, life/work stress, social support) are important in determining the severity, pattern, and chronicity of PTSD symptoms. These factors can contribute to increased risk of PTSD among military personnel and the potential

for disparate presentation of PTSD symptoms among veterans compared to civilians.

Military Sexual Trauma (MST)

History of MST

Although Military Sexual Trauma (MST) has been an issue throughout history during all wars, these acts were not widely recognized until the Tailhook scandal in 1991, at which time over 100 Navy and Marine aviation officers were accused of sexual assault and harassment by 83 women and 7 men at the 35th annual Tailhook Association Symposium in Las Vegas, NV. Since then, awareness of the plight of victims of MST has increasingly become a focus of research.

MST refers to "physical assault of a sexual nature, battery of a sexual nature, or sexual harassment [repeated, unsolicited verbal or physical contact of a sexual nature which is threatening in character] that occurred while a veteran was serving on active duty or active duty for training (US Public Law 102-585, 1992; 108-422, 2004)." It can occur at any time while in the military including peacetime, training, and war. Because of the Tailhook scandal, in July of 1992, the Senate Veterans Affairs Committee held hearings addressing MST. Congress responded to these hearings by passing Public Law 102-585 in November of the same year (Veterans Health Care Act of 1992). Further, Public Law 102-805

authorized health care and counseling services for women veterans to treat psychological trauma resulting from sexual assault or sexual harassment during their military service. Later laws, (Pub. L. 103-452; Pub. L. 106-117; and Pub. L. 108-422), expanded these benefits to both male and female veterans, expanded the focus on MST Programs to include outreach, extended VA's authority to provide MST programs until December 2004, extended the VA's authority permanently, and extended MST counseling and related treatment to active duty and training service members. Following the passage of these laws, a series of VA directives mandated universal screening of all veterans for a history of military sexual trauma and mandated that each VA facility identify a Military Sexual Trauma Coordinator to oversee the screening and treatment referral process.

Studies show that the prevalence rate of military sexual trauma (MST) among women in the VA system is most often found to be about 23% (Department of Defense, 2002; Coyle et al, 1996). Among men in the VA system, the rate of MST is found to be approximately 1.8% (Kimerling et al, 2007; Suris and Lind, 2008). Note, as mentioned above, that proportionately, the number of male veterans is about 20 times the number of women veterans. Therefore, the actual number of VA-utilizing women and men who report sexual trauma in the military is almost equivalent (Suris and Lind, 2008). Thus far,

research on MST has focused predominantly on women, but men are just as affected by MST as women.

Characteristics of Sexual Trauma in the Military

Both men and women in the military are at increased risk of exposure to trauma and higher rates of PTSD compared with civilians (Zinzow et al, 2008). Men and women in the military are also at an increased risk of exposure sexual trauma when compared to civilians (Sadler et al, 2001 and 2003; Goodman et al, 1998). Sadler and colleagues (2003) found that MST perpetrators of women were mostly male, non-commissioned officers and peers of similar rank. Sexual trauma that occurs in the military setting most often occurs in the same place where the victim resides and works. This can result in the victim having to live and work closely with their perpetrators, leading to increased feelings of helplessness, powerlessness, and a risk of further victimization (Street and Stafford, 2006). Moreover, in the military setting, victims often rely upon their perpetrators or their similarly-ranked colleagues to provide them with basic needs like medical care and psychological care. Perpetrators in the military setting are also often peers or supervisors who are responsible for making decisions about evaluations and promotions (Fontana and Rosenheck, 1998). In these instances, victims are often forced to choose between their military careers (and continued

interaction with their perpetrators) or sacrificing their career goals to protect themselves from future victimization (Street and Stafford, 2006). These kinds of dynamics can reduce victims' perceived ability to speak out about the trauma, and further, can lead to repeated victimization.

Military groups are characterized by high unit cohesion. There is a collection of research on institutionalized settings such as jails, the military, colleges, and churches, and the high rate of sexual abuse in these environments (Lin, 2006). The literature largely points to cohesion in these institutions that serves to silence victims and refrains members from reporting peers' misconduct (Lin, 2006; Street and Stafford, 2006). Sadler et al (2003) found that perpetrators and/or victims were often reported to have been under the influence of alcohol or drugs during the assault. These factors serve to limit sexual abuse victims' ability and also their willingness to speak out against their perpetrators. Moreover, when they do speak out, they are often ignored or even blamed for the trauma (Street and Stafford, 2006). These circumstances result in poorer outcomes and additional problems for the victim's psychological health and adjustment.

Sexual Trauma and Gender

There is an array of research on gender differences in PTSD for victims of abuse. Breslau et al (1998) found that 36% of civilian women and 6% of civilian

men exposed to assaultive violence (including rape, being held captive, tortured, or kidnapped, being shot or stabbed, experiencing sexual assault other than rape, being mugged or threatened with a weapon, or being badly beaten up) developed PTSD. In this study, the authors also found that women exposed to assaultive violence had more symptoms of PTSD than men who were exposed to assaultive violence. Breslau et al (2009) conducted a similar study of women and men in a university setting and found both males (23.2%) and females (21.4%) were equally exposed to assaultive violence while 7.1% of men who experienced assaultive violence met criteria for PTSD and 23.5% of women who experienced assaultive violence met criteria for PTSD. The probability of developing PTSD did not differ between men (6.6%) and women (7.5%) exposed to non-assaultive trauma (including accidents, disasters, witnessing violence, discovering a dead body, learning about the sudden unexpected death of a close friend or relative, and learning of traumatic events suffered by close friend or relative).

Based on a study of civilian men and women with mixed traumas (sexual, nonsexual, accidents, combat, child abuse), from multiple databases, Tolin and Foa (2006), reported that there was no overall gender difference in PTSD rate for male and female survivors of sexual assault in adulthood. They also found no significant difference in PTSD rate for men and women with history of childhood sexual abuse. The investigators found that, across studies, the rate of PTSD was

higher among females when compared to males. However, they found that males experienced more exposures to traumatic events than females did. They did find, however, that females were more likely than males to experience sexual assault and child sexual abuse, which they suggested was a more strongly associated with the development of PTSD than other traumatic events, explaining the higher rates of PTSD among females (Tolin and Foa, 2006). Notably, Tolin and Foa (2006) also found that when compared to men, women are more likely to seek treatment and may respond better to treatment than men.

With regard to symptom severity, Ullman et al (2007) found that trauma history, perceived life threat during the assault, characterological self-blame after assault, avoidance coping, and negative social reactions from others were all related to greater PTSD symptom severity in sample of female victims of sexual assault. Kelley et al (2009), in a study comparing civilian women with three different types of trauma (motor vehicle accident, sexual trauma, or sudden loss of a loved one) found that those exposed to sexual assault and sudden loss of a loved one (as opposed to those exposed to motor vehicle accidents) experienced a change in socially-related meaning structures, including beliefs about interpersonal loss and the benevolence of others. In other words, participants exhibited unique cognitive schemas and related PTSD symptoms based on the type of trauma to which they were exposed.

Among men who are victimized by sexual trauma 86% of perpetrators are other men (Whealin, 2005). Subsequently, men who have been sexually abused by men may experience confusion about their sexuality and gender roles. Feelings of shame, stigmatization, and predicted negative reactions from others can emerge as a result of social taboos and societal gender expectations (Street and Stafford, 2006). Victimization can lead to men feeling emasculated and weak because sexual assault is largely a display of power and aggression. Speaking out against the victimization can be thwarted by confusion related to socially-sanctioned internalized thoughts about the need for a man to be strong versus the feelings of hopelessness, fear, and anger that result from the sexual assault (Street and Stafford, 2006). Many times, men who are victimized by sexual abuse choose not to speak out or receive treatment because of the stigma and confusion (Calhoun et al, 2002[a] and 2002[b]). The resulting psychopathology can involve many outcomes including increased depression and anxiety (as noted above), and also hyper-masculine (as a compensation for feelings of weakness), aggressive, and even self-destructive behavior (Street and Stafford, 2006; Martin et al, 1998; Schnurr et al, 2000; Calhoun et al, 2002[a]).

These data suggest how trauma related to interpersonal violence results in differential outcomes of PTSD sequelae for men compared with women. However, the way in which military sexual trauma affects PTSD outcomes in men compared with women may or may not follow similar patterns of expression.

MST and Gender

Men and women with MST have both similarities and differences as victims of sexual trauma in the military. Deleterious effects including negative mental and physical health consequences are a similar outcome, however, the types of perpetrators (same sex in men vs. opposite sex in women), reactions to the trauma (immediate actions, thoughts, and emotions), and resulting posttraumatic symptomatology can all vary between genders.

Kessler et al (1995) examined PTSD prevalence by type of trauma among women and men in the military. His team found that the prevalence of PTSD among women who had been raped was 46% (for women who had been molested it was 27%), while the prevalence of PTSD among men who had been raped was 65% (for men who had been molested, the prevalence of PTSD was 22%).

Women veterans affected by MST are at 4-9 times greater risk of developing PTSD than women veterans with no sexual assault history (Kimerling et al, 2007; Suris and Lind, 2008). Victims of MST are also found to have four times greater risk of developing PTSD compared to other types of military trauma, including war-zone events (Fontana and Rosenheck, 1998; Yaeger et al, 2006).

Comparisons of relative risk of PTSD associated with specific traumas have not been systematically assessed among men. However, Kessler et al (1995) found that among male veterans who experienced rape, 62.1% developed PTSD compared to 57.7% of male veterans who experienced combat trauma (the next most severe traumatic event among the veterans assessed). Additionally, Street et al (2008), found that about 12% of male reservists who reported MST had current PTSD and about 27% of males who reported MST had lifetime PTSD. This can be compared to rates of PTSD associated with combat among male veterans, which is 9.1% for current PTSD and 18.7% for lifetime PTSD as assessed in a sample of Vietnam veterans (Dohrenwend et al, 2006). These data suggest that, at least clinically, MST results in higher rates of PTSD than combat does among male veterans.

Regarding characteristics of victims, Sadler et al (2003) found that among women veterans from Vietnam and Persian Gulf eras, women who experience MST are more often younger and less educated than women who did not experience MST while in the military. Non-veteran military personnel experience MST as well and can provide further insight into characteristics of victims and perpetrators of MST in the military. Street et al (2008) also noted that women reservists who reported MST were younger than those who did not report MST, but found that the women who reported MST were more highly educated than

those who did not report MST. Conversely, among male veterans with MST, Street et al (2008) reported that reservist men who reported MST did not differ from men who did not report MST on age, race, marital status, or level of education.

Studies have shown that MST is associated with physical consequences, often some of the symptoms victims of MST present with initially when seeking help. Studies have also shown that women veterans with history of MST report more health problems (26%) than women veterans with no MST history (11%) (Frayne et al, 2004; Street et al, 2008). MST has been found to be associated with physical symptoms such as pelvic pain, menstrual problems, back pain, headaches, gastrointestinal problems, and chronic fatigue (Suris and Lind, 2008). Sadler et al (2000) similarly found that women veterans who experienced MST were more likely to report chronic health problems, lower health quality of life, and prescription medication use for emotional problems when compared to women without MST, even when demographic variables and trauma history were controlled for. Medical conditions such as liver disease, pulmonary disease, obesity, and hypertension, conditions associated with negative health behaviors, are also associated with MST for men and women (Frayne et al, 1999; Kimerling et al, 2007; Hyun et al, 2009). Additionally, Sadler et al (2000) found that health-related quality of life significantly poorer among women with MST and medical

problems related to MST when compared to women in the military with no MST history. One other important finding is that studies have shown a graded relationship between the severity of sexual trauma (none vs. harassment vs. assault vs. both harassment and assault) and increased risk of developing PTSD in both men and women (Kang et al, 2005).

MST is associated with a variety of psychiatric symptoms and disorders. Suris and Lind (2008), in a review of MST studies with mostly female veterans, identified associations between MST and psychological symptoms (depression, alcohol abuse, anxiety), severe psychological symptoms, and risk for PTSD. Additionally, emotional disturbance is common among victims of MST, as they report higher rates of anxiety disorders, depressive disorders, and substance abuse disorders than others. This has been found among Vietnam veterans (Skinner et al, 2000) as well as veterans returning recently from Iraq and Afghanistan (Kimerling, 2010). Street et al (2008) indicated that male reservists who reported MST had five times higher rates of depression and 6 times higher report of somatic symptoms than males who did not report MST. Kimerling et al (2010) conducted a study of men and women veterans deployed to Iraq and Afghanistan. They found that MST was associated with increased risk of mental disorders (PTSD, other anxiety disorders, depression, and substance abuse disorders) among men and women.

Emotional responses to MST have also been examined. Sadler et al (2003) reported that women veterans from Vietnam and Persian Gulf eras who were victims of MST, experienced a sense of shame, futility, or fear of the possible negative effects of officially reporting rape, which prevented them from reporting the assault. Valente and Wight (2007) reported that the same is true for male veterans in that embarrassment and trauma prevent report of abuse due to fears that they would not be believed, that their careers would be disrupted, that they would be harassed or punished by their attackers for speaking out, or that they would be told to "suck it up." The researchers added that veterans often don't seek help until they are so desperate that they consider suicide to be their only other option. Zak (2003) in her dissertation research on women veterans, found that women with PTSD associated with MST used significantly more "avoidant coping" techniques than women who did not endorse MST. Women who did not endorse MST utilized more "approach coping" strategies when compared to women with history of MST. In a sample of 175 male and female veterans with MST, O'Brien and colleagues (2008) found that problems with identifying emotions was associated with chronicity of sexual abuse trauma symptoms, dissociative symptoms, and anxiety. They added that men exhibited more persistent problems overall (when compared to women) including more chronic sexual problems and more sexual abuse trauma symptoms. O'Brien et al, 2008 and Shipherd et al, 2009, studies that assessed differences between men and

women with MST in the same sample, found that men reported more PTSD symptoms than women, more persistent sexual problems than women, and worse perceptions of physical health than women. Additionally, Nowacki-Butzen (2009) found that women veterans with more severe MST had poorer self-concept and more anxious attachments than women with less severe MST. These findings suggest a difference in PTSD susceptibility to PTSD and trauma-related cognitions between those who have experienced MST compared with those who have not.

It is probable that men who experience MST are different in their presentation and coping strategies of emotional symptoms following the trauma due to their difference from women in gender roles and life experience (Skinner et al, 2000). Smith et al (1999) conducted a study among male combat veterans in which they identified trauma history including combat, sexual assault (during and before combat), and non-sexual assault. They found that while 12% reported history of sexual assault, only one male reported sexual assault while in the military. Smith and colleagues suggested that the low report rate of MST in this study could be related to reluctance to disclose these experiences on direct inquiry and/or underreporting of sexual trauma to improve veterans' pursuit of service connected disability payments from the VA for PTSD associated with combat trauma.

Differences between men and women's sexual abuse experiences in the military and observed differences in post-traumatic sequelae between men and women suggest there may be variance in the manifestation of PTSD symptom patterns associated with MST. However, because most studies of MST have been conducted with women exclusively, the similarities and differences in PTSD severity, symptom patterns, and trauma history between men and women who have experienced MST is an area that has not been thoroughly explored. Once examined, however, findings could provide insight into identifying vulnerabilities and coping deficits for these two groups.

Early Life Sexual Trauma and Re-victimization

Studies have shown that individuals with history of early life sexual trauma are at greater risk of adult sexual victimization for both women (Arata, 2000; Anderson et al, 2005) and men (Stermac et al, 2002; Muehlenhard, et al, 1998), which could possibly relate to vulnerability to manipulation and coercion, self-blame and shame from the assault, low social support, and more high-risk sexual behavior (Arata, 2000; Anderson et al, 2005). Nevertheless, researchers have shown that individuals with early life sexual trauma are at five times more risk of developing PTSD than those who have not experienced any early sexual life trauma (Coid et al, 2003; Saunders et al, 1999). Therefore, early life sexual

trauma is likely related to PTSD but may or may not have an additive affect on PTSD risk among those who experience adult sexual trauma.

Early Life Sexual Trauma and MST

With regard to MST, Sadler et al (2004) also found evidence that childhood exposure to physical and/or sexual violence was associated with re-victimization in the military. Merrill et al (1999), in a study of 1,093 female Navy recruits, found that women who had experienced childhood sexual abuse (regardless of whether or not they had experienced childhood physical abuse) were about 5 times more likely to experience MST than women who had no history of childhood sexual abuse. Neither alcohol use nor number of sexual partners was found to mediate this relationship. Women veterans with early life sexual trauma can experience helplessness and powerlessness, which may make them more susceptible to re-victimization, in this case, MST (Merrill et al, 1999).

Cognitions and Trauma

Ehlers and Clark (2000) proposed that a victim's appraisal of the traumatic event and the consequences therein contribute to the persistence and severity of PTSD symptoms. This is based on the fact that after a traumatic event, many victims experience some symptoms of PTSD, but only a subset experience long term difficulties. Ehlers and Clark (2000) speculated that victims of traumatic

events who develop PTSD do so because they tend towards making negative appraisals of the event and its sequelae, resulting in the development of a perception of ongoing threat. A significant association between catastrophic cognitive style, as assessed by the Post-traumatic Cognitions Inventory (PTCI) and the development of pathological post-trauma symptoms for various trauma experiences has been found for motor-vehicle accidents (Nixon and Bryant, 2005), physical assault (Elwood and Williams, 2007; Nixon and Bryant, 2005), and sexual assault (Fairbrother et al, 2006; Olatunji et al, 2008; Elwood and Williams, 2007). Nixon and Bryant (2005) suggested that type of trauma may influence the types of negative cognitions that emerge. Nixon and Bryant (2005) also suggested that these findings indicate a need for researchers to assess specific appraisals made after different types of trauma to determine the nature and etiology of the variability in type of cognitions following distinct traumatic events.

Moser, Cahill, and Foa (2010) remarked that Paul (1967) had called for determining "what works for whom" in treating patients more than 40 years ago. They note that despite evidence from studies that not all patients benefit significantly from existing therapies, few studies have attempted match specific treatments to specific persons. With regard to gender, Nixon and Nishith (2005), in a study of men and women at an undergraduate university in the Midwest,

assessed various measures related to trauma after the 9/11 terrorist attacks. In their preliminary analyses, they found that men scored significantly lower than women on the "negative cognitions about self" subscale of the post-traumatic cognitions inventory (PTCI). Sciancalepore and Motta (2004) assessed "gender-related correlates" of post-traumatic stress symptoms in a similar sample located in Long Island, NY. They found that female victims had more PTSD symptoms than males but did not find that this relationship was mediated by ruminative coping, gender role characteristics, or trauma-related cognitions.

Few studies have assessed differences in trauma-related cognitions across ethnicities. Given the variation in rates of PTSD across ethnic groups (Kessler et al, 1995) and differences in severity across these groups (Perilla et al, 2002), differences in trauma-related cognitions may also exist. In a study of men and women, including refugees and trauma victims in Australia, Jobson and O'Kearney (2008) found that trauma victims from independent cultures (Australian, Western European, American) endorsed more items related to "trauma-defined personal identity" when compared to trauma victims from interdependent cultures (Asian, African, Middle Eastern, Eastern European, and Latin American). The researchers suggested that their findings show that there is a cultural variability in the need to maintain self-consistency in personal schema among independent cultures compared to interdependent cultures. It is theorized

that the social role of a trauma victim/survivor is culturally sanctioned in independent cultures due to its alignment with cultural expectations of self, personal identity, and individualism but it is not in line with interdependent cultures, where collectivism is emphasized. Specifically, they urge that attention be brought to the fact that cultural factors moderate the impact of traumatic events on identity and self-definition. Lemos-Miller and Kearney (2006) found that, among adolescents with trauma history, race has some effect on the relationship between PTSD-related cognitions and the development of depression.

Anger cognitions in PTSD

The avoidance cluster of PTSD consists of symptoms related to avoiding thought, feelings, and conversations related to the trauma, avoiding activities, places, and people that trigger the trauma memory, inability to recall important aspects of the trauma, diminished interest in activities, feelings of detachment or estrangement from others, restricted range of affect, and a sense of foreshortened future. As described in the section above, "Anger and PTSD," anger expression and control have a strong relationship with PTSD, and is being examined by PTSD investigators in regard to PTSD diagnosis as being both an arousal and avoidance symptom of PTSD (Tull et al, 2007; Watson, 2009; Gardner et al, 2008). Despite the evidence that anger-related emotions and beliefs are associated with PTSD, especially among veterans (Novaco and Chemtob, 1998),

and that it is associated with the chronicity of PTSD (Orth and Wieland, 2006), anger-related treatment, such as the reduction of anger-related cognitions that motivate aggression and angry emotions has not been a focus of evidence-based PTSD treatments.

A few studies have examined cognitions related to anger in PTSD. Mayou et al (2002) found that, among victims of motor-vehicle accidents, those who had persisting symptoms of PTSD at 3-year follow-up had more anger-related cognitions, as assessed by questions related to how angry they got when memories of the event emerged. Orth and Maerker (2009) conducted a study with 219 male and female crime victims (non-sexual and sexual assault) with PTSD, in which they assessed participants' level of anger toward objects including the perpetrator, the criminal justice system, third persons, and the self using a scale developed by the research team. They found that anger was most strongly directed toward the perpetrator and the self. Anger was similarly associated with PTSD. This suggests that anger towards self and the perpetrator represents cognitions that are prevalent among individuals with PTSD associated with sexual and non-sexual assaults. Furthermore, Dyer et al (2009) described hostility as "the cognitive component of trait aggression, reflecting attitudes of bitterness, resentment, and ill will" (p.1109). They noted that these kinds of cognitions are common among individuals with PTSD, as they found high or very high rates of

hostility in a sample of 35 male and 9 female adults with PTSD or Current Complex PTSD as assessed by the Aggression Questionnaire – Short Form (Buss and Warren, 2000). Additionally, Dyer and colleagues found that "alterations in self-perception" were associated with anger, aggression, re-experiencing, avoidance, and arousal, as well as being the sole predictor of aggression. This "alterations of self-perception" construct consisted of shame, guilt, ineffectiveness, responsibility, isolation, and thoughts of being permanently damaged.

Differences in PTSD symptoms and forms of anger expression that may be related to ethnocultural variables, particularly among veterans with PTSD and anger management difficulties have been identified (Monnier, et al, 2002; Keane et al, 2006). This is important, as these differences can influence prevalence of expression of certain PTSD symptoms which are important to consider in treatment. With regard to group effects of anger-related cognitions and trauma, Castillo et al (2002) found in a sample of male veterans with combat-related PTSD, female veterans with sexual-trauma related PTSD, and male veterans with non-PTSD psychiatric problems, that Resentment and Suspicion subscales on the Buss Durkee Hostility Inventory (BDHI) were elevated in the two PTSD groups when compared to the male veterans with non-PTSD psychiatric problems. The investigators hypothesized that resentment and suspicion may represent internal,

cognitive aspects of PTSD. Maier et al (2009) found that women reported more guilt symptoms than men, while men and African Americans reported higher levels of expressive hostility and cynicism than others in a sample of male and female undergraduate students from predominantly three ethnicities (Caucasian, African American, and Asian). Further, based on a four-factor model generated from the data from five anger measures (BDHI, STAXI, the Cook-Medley Hostility Scale (CMHS), the Multidimensional Anger Inventory (MAI), and the Trait Anger Subscale (TANG)) and two other measures (the Beck Depression Inventory (BDI) and the NEO Personality Inventory), African Americans reported higher scores on the brooding-cynical hostility component, one of the three factors that emerged from the factor analysis, than Asians or Caucasians. Caucasians reported the lowest scores of the three groups on cynical-depressive hostility and brooding hostility. Lastly, Turner et al (2007) assessed anger among adolescents and young adults, male and female, from diverse ethnicities. They identified higher mean levels of proneness to hostility and short-tempered anger among men when compared to females. Further, Turner and colleagues (2007) found non-significant differences in hostility, but they indicated lowest levels of hostility among Caucasians, moderately higher levels of hostility among African Americans, and highest levels of hostility among both Cuban and non-Cuban Hispanics.

Veterans Affairs Medical Centers across the United States employ therapy protocols for veterans with PTSD. One of these protocols is the utilization of group anger-management therapy. Several studies have assessed the efficacy of these programs, but the results have been inconsistent. In a sample of Vietnam veterans with combat-related PTSD and severe anger, Chemtob et al (1997) compared the outcomes of anger disposition, anger reactions, and anger control between a group receiving a 12-session manualized anger treatment (n = 8) and a group receiving standard clinical care for PTSD (n = 7). Per the authors' description, the anger treatment consisted of (a) self-monitoring of anger frequency, intensity, and situational triggers; (b) devising a personal anger provocation hierarchy based on self-monitoring; (c) progressive muscle relaxation, breathing-focused relaxation, and guided imagery training to regulate physiological arousal; (d) cognitive restructuring of anger by altering attentional focus, modifying appraisals, and using self-instruction; (e) training behavioral coping, communication, and assertiveness skills through role play; and (f) practicing the new anger coping skills while visualizing and role-playing progressively intense anger-arousing scenes from their personal hierarchies. The investigators stated that they also focused on veterans' cognitive schemas related to combat experience, threat, survival, and trauma as they were affecting their lives in the present. The researchers found that patients completing the anger treatment reported an increased capacity to control anger and less intense

reactions to anger-provoking situations. They concluded that the above findings and the post-hoc finding of a significant decrease on the cognitive scale of the Navaco Anger Scale between pre- and post- treatment in the anger-treatment group suggests that anger treatment appears promising as a potential treatment for PTSD-related anger in terms of anger-related cognitions in PTSD (Chemtob et al, 1997). . Although there was no pre- and post- assessment of PTSD in this study, treatment was found to be associated with significant reduction in state-related anxiety as assessed by the Spielberger State-Trait Anxiety Inventory (STAI). Conversely, Thomas (2004), in a study of 16 Vietnam veterans receiving anger management treatment in a group setting, found that there were no significant changes on any of the anger scales, including anger, aggression, and violent attitudes, at post-treatment. Finally, Gerlock (1994) found that among the 51 male veterans in their sample, a majority had a past history of childhood trauma and substance abuse problems. They also found that veterans with past psychological trauma had higher mean anger scores than those without past trauma.

Exposure therapy for the treatment of anger in PTSD has also been evaluated. Arntz et al (2007) assessed the efficacy of exposure therapy on anger outcomes. They compared imaginal exposure with imaginal exposure + image rescripting and found that while both reduced overall PTSD symptoms equally,

the imaginal exposure + image rescripting treatment also improved anger control and reduced externalization of anger, hostility, and guilt through follow-up.

Treatment of PTSD

Although recent guidelines suggest that psychotherapy should be initiated as a first-line treatment for PTSD before pharmacological options, treatment for PTSD commonly consists of dual therapy with psychotherapy and psychotropic medications (Otto et al, 2003). Psychopharmacology in the form of antidepressants is often necessary to reduce PTSD symptoms, however, studies have shown that the difference between treatment groups given medication and placebo at post-treatment was only 5.76 points on the CAPS and the overall effect size in medication trials did not exceed the criterion of 0.5 required to be clinically effective(Cukor et al, 2009). Psychotherapy approaches consists of cognitive-behavioral therapies such as exposure therapy, which is considered to be one of the first-line treatment for PTSD because of its good clinical efficacy (Foa et al, 1999 and Foa et al, 2005). Given the limitations in the effectiveness of pharmacological therapies juxtaposed with the strong evidence of effectiveness of exposure therapy for long-term PTSD symptom reduction, there has been a recent movement toward utilization of psychotherapy in the treatment of PTSD (Van Etten and Taylor et al, 1998). Cognitive-behavioral therapies such as prolonged exposure, cognitive processing therapy, and eye movement desensitization and

reprocessing have emerged with in the last decade and have shown good outcomes (Cukor et al, 2009; VA/DoD Clinical Practice Guideline for the Management of Posttraumatic Stress, 2004) but are still in the early stages of being evaluated in clinical trials across patient populations with PTSD associated with various traumatic events, including MST.

The VA implemented mandatory screening for MST in 2000 as part of the initiatives to conduct MST outreach and treatment for veterans with MST that began with the 1992 Public Law amendment was discussed. Following this, therapeutic efforts in cognitive-behavioral therapy treatments have been shown to be effective in reducing PTSD symptoms, disability, and symptoms of anxiety and depression (Ehlers et al, 2005).

Cognitive Processing Therapy (CPT) Development

CPT was developed by Drs. Patricia Resick and Monica Schnicke. In 1992, Resick and Schnicke published a book detailing their findings after implementing a treatment called cognitive processing therapy (CPT) among sexual assault victims. Cognitive Processing Therapy (CPT) is a 12-session treatment that utilizes aspects of both cognitive restructuring and exposure therapy. CPT was developed based on information processing theory, which delineates the learning and memory process by which information is encoded, stored, and recalled (Resick and Schnicke, 1992 and 1993). The general approach

is that memory is composed of schemas (experience-based sets of related ideas) that help process and organize new information and when these schemas are challenged by experiences or evidence that does not fit easily into the previously developed categories, that information is usually ignored or categorized elsewhere because it cannot be integrated into the existing schema (Resick and Schnicke, 1992). In the case of sexual trauma, the event cannot be ignored, but has to be processed in light of existing schema. Resick and Schnicke (1992) state that "in whatever ways this event differs from her expectations and understanding of herself and the world, the women will find herself in conflict, with no simple way to comprehend, encode, or store this most significant life event…if the assailant was an acquaintance whom she trusted…the rape will be particularly difficult to label and encode as rape…if she was assaulted by a stranger [and she believed it couldn't happen to her]…or the assailant behaved in some way inconsistent with her rape schema,…the rape would be difficult to integrate with her existing schema." They add, "Without a way to understand and categorize the experience, the strong emotions associated with sexual assaults are also left unprocessed (Resick and Schnicke, 1992; pg 11)."

One schema that the social psychology literature has documented well is the idea of a "just world belief." This is the idea that good things happen to good people and bad things happen to bad people (Lerner, 1977). This schema serves

to defend against feeling vulnerable to random negative events (Resick and Schnicke, 1992). Consider how this schema might operate in the minds of men and women who voluntarily join the armed forces in the cause of defending and protecting the people of their country. Those who serve in the armed forces do so, at least in part, out of a desire to 'do good.' It can be conceived that when men or women in the military experience an event such as a sexual assault while in service, it would be difficult to integrate and process this "bad" event that happened to them within the schema if they see themselves and their peers as "good" because of their voluntary service to the country. Murdoch et al (2004), in a study of men and women veterans applying for VA PTSD disability benefits, suggested that the common cognitive shift in rape victims beliefs in a "just world" and reduction in self-efficacy after rape may be particularly profound among servicewomen assaulted by their military comrades who entered that military in a common goal of upholding the country's peace and safety. Previous research suggests that when an event, such as a rape, occurs that is inconsistent with this "just world" schema, it results in one of two things: assimilation or accommodation (Hollon and Garber, 1988).

Assimilation is the process by which new information encountered is altered or distorted to fit into existing schemata. For sexual assault victims, assimilation can result in self-blame for the event, questioning whether the event

was a rape or not, and/or memory loss for aspects of the event (Resick and Schnicke, 1992). Accommodation is the process by which new information encountered is successfully integrated into the schema. However, overaccommodation occurs when the process of integrating the new information or event elicits complete alteration or change in world view and interpersonal interactions (Resick and Schnicke, 1992). Among sexual assault victims, overaccommodation often results in generalized problems with trust and intimacy as well as an increase in fear (Resick and Schnicke, 1992). Re-experiencing symptoms of PTSD, including intrusive memories as well as nightmares and flashbacks of the traumatic event, result from poor information processing (Resick and Schnicke, 1992). These symptoms bring about strong emotional reactions like anxiety, fear, sadness, and anger, which, because they are upsetting, lead to escape and avoidance behaviors, such as the avoidance of triggers and events that remind the person of the traumatic event (Resick and Schnicke, 1992). Foa et al (1989) per Lang's (1977) theory of fear memories proposed that in PTSD, information about the traumatic event is stored in fear networks such that any meaningful trigger that stimulates the memory will initiate an avoidance behavior response. Research assessing the process by which PTSD develops and is maintained also points to the involvement of cognitive schema as prolonging fear activation and maintaining threat-arousal anxiety (Resick and Schnicke, 1992). Investigators have found that traumatic experiences activate a fear-arousal

state that results in heightened attention toward evidence of danger and threat cues, while being less attentive to evidence against danger and non-threatening cues in a situation. This potentiates negative cognitive schemas about being unsafe and promotes avoidance behavior. The problem with avoidance is that it prevents emotional responses from being fully expressed and processed such that cues and triggers for the traumatic memory continue to elicit negative emotional responses and chronic fear arousal (Resick and Schnicke, 1992; Nishith et al, 2002). For this reason, CPT's cognitive component has a focus on reducing avoidance behaviors and negative emotions to moderate PTSD chronicity.

CPT's exposure component is based on exposure therapy, which has a foundation in Foa et al's (1989) theory that established fear structures can be dismantled when (1) the fear memory is reactivated, and (2) new information is provided that is incompatible with the beliefs in the current fear structure. This combination, theoretically, allows (1) affective expression to occur and dissipate so that it is no longer associated with the traumatic memory, and (2) accommodation of the trauma memory through challenging of faulty and over-generalized beliefs about the self and the world (Resick and Schnicke, 1992; Resick et al, 2008). In CPT, the patient is instructed to write about his or her traumatic event in detail, much like exposure therapy requires. The patient is then required to read the account aloud both in session and outside of the session. The

therapist assists the patient in identifying thoughts and beliefs based in self-blame, hindsight bias, and guilt-related cognitions that result from the conflict between pre-trauma beliefs about the self and world and post-trauma information. These thinking errors and negative cognitions (called "stuck points" in CPT) are challenged with Socratic questioning and cognitive restructuring, with the goal of changing patterns of thinking that are not grounded in evidence and eliciting expression of negative emotions, thereby reducing avoidance behaviors that usually result when these thoughts are triggered. The latter sessions of CPT focus on teaching the patient cognitive skills and topics of safety, trust, power/control, esteem, and intimacy (Resick et al, 2008 (CPT manual)).

Relevant Findings in the use of Cognitive Processing Therapy (CPT)

Numerous studies have assessed efficacy of CPT for treating PTSD. Some of the first studies assessed the effectiveness of CPT for civilian women with history of sexual assault, since this was the population that CPT was initially developed for. Resick and Schnicke (1992) found that CPT was effective improving symptoms of PTSD in "a large majority" of a sample of civilian women with PTSD associated with rape. On the basis of the Structured Clinical Interview for the DSM IV (SCID), the researchers found that 17 of 19 women met criteria for PTSD prior to receiving treatment. Post-treatment data indicated that none of the women met full criteria for PTSD. The 3-month follow-up data

showed that, of 16 subjects, 2 met criteria for PTSD. More recently, Chard (2005), found that PTSD scores, as assessed by the Clinician Administered PTSD Scale (CAPS), were significantly reduced after CPT treatment (mean CAPS of 65.46 at pre-treatment, and mean CAPS of 9.00 at post-treatment) in a sample of 55 women with PTSD associated with childhood sexual trauma. Additional studies have assessed the efficacy of CPT compared with prolonged exposure therapy among female rape victims. These studies consistently found that CPT and prolonged exposure therapy were equally effective in reducing PTSD symptoms overall (Nishith et al, 2005; Nishith et al, 2002; Resick et al, 2002).

Nishith et al (2002) suggested that the exposure piece of CPT is the "active ingredient" since symptoms initially increased and then declined after the exposure in both exposure therapy and CPT treatments. Interestingly, one other finding was that CPT was more effective than exposure therapy in reducing certain trauma-related guilt cognitions, particularly those related to hindsight bias and lack of justification as measured by the Trauma-Related Guilt Inventory (TRGI). Conversely, Resick et al (2008) conducted a dismantling study in which they compared the efficacy of each of the components of CPT (cognitive therapy component and exposure/written component) to the full protocol. They found that patients in all three treatments improved on PTSD symptomatology. Additionally, they found that the group receiving the cognitive therapy

component of CPT improved significantly more than the group that received the exposure/written component. As opposed to Nishith et al's (2002) assertion, Resick and colleagues (2008) suggested that the cognitive therapy portion of CPT is the critical component to affecting change in PTSD symptoms. The outcomes of these two studies suggested contradictory findings. However, they may be reconciled by a finding that cognitions are indirectly affected by exposure therapy techniques. The results of these studies suggest that there is no certainty as yet in identifying the catalytic component of CPT.

To date, none of the studies of CPT for patients with history of sexual abuse have included men. However, there have been some studies that have utilized CPT among male veterans with combat-related PTSD (Chard et al, 2010) and mixed group of military-trauma including combat and sexual trauma (Monson et al, 2006). Chard et al (2010) compared treatment outcomes of CPT between a group of veterans with PTSD from the Vietnam era to a group of veterans with PTSD from OEF/OIF era. Her team found that compared with Vietnam veterans, OEF/OIF veterans showed significantly lower CAPS scores at post-treatment, which they stated suggests that it may be more difficult to treat more chronic PTSD with CPT. Monson et al (2006) found that among Vietnam veterans with combat-related PTSD, 40% no longer met criteria for PTSD at post-treatment and 50% exhibited significantly reduced PTSD symptomatology at post-treatment.

Note that this rate of improvement is lower than those shown for women with sexual trauma history. Monson et al (2006) found that the veterans in their study showed improvement in re-experiencing and numbing symptoms of PTSD but less improvement in avoidance and hyperarousal symptoms, such as irritability and anger outbursts. In fact, studies have shown that in PTSD, anger can become stronger over time, contributing to chronic PTSD symptoms in male veterans (Novaco and Chemtob, 1998). This is supported by the finding that initial feelings of anger are reinforced and strengthened over time as the memory of the traumatic event is reactivated and anger feelings become associated more strongly with the memory (Orth and Wieland, 2006). Jakupcak et al (2007) also proposed that anger functions to facilitate emotional detachment, which serves to form and maintain PTSD symptoms by affecting interpersonal functioning. These findings suggest that there is likely a categorical difference in the manifestation of PTSD among male veterans with combat-related PTSD compared to civilian women with sexual trauma-related PTSD. Whether this has to do with the nature of the trauma, the difference in background, or gender differences remains to be examined.

CPT has been shown to be effective in improving PTSD symptoms long term and improving quality of life for victims of childhood sexual abuse (Hall and Henderson, 1996; Chard et al, 1997; Owens et al, 2001; House, 2006; Chard,

2005), female victims of adult sexual abuse (Resick and Schnicke, 1992; Nishith et al, 2002; Resick et al, 2002), and female victims of repeated sexual assaults (Messman-Moore and Resick, 2002). Studies of women with both childhood and adult sexual abuse history, or re-victimization, showed improvement in PTSD symptomatology despite a history of chronic PTSD and persistent symptomatology (Owens et al, 2001; Messman-Moore and Resick, 2002; Hall and Henderson, 1996; Chard et al, 1997; House, 2006; Chard, 2005). Further, there is some evidence for the application of CPT for treating PTSD related to combat trauma (Chard et al, 2010; Monson et al, 2006), physical assault (Kaysen et al, 2005), and trauma related to terrorist attacks (Difede and Eskra, 2002). An additional finding is that among patients with PTSD, CPT seemed to improve post-treatment levels of depression (Nishith et al, 2005; Resick et al, 2008; Ahrens and Rexford, 2002), anxiety (Falsetti et al, 2001; Ahrens and Rexford, 2002), as well as emotional functioning, guilt distress, and social adjustment (Monson et al, 2006).

There is evidence that although positive outcomes resulted from CPT overall in the samples, there was variability in the amount of change seen across symptom cluster. For example, some researchers found that veterans who are generally less treatment responsive to cognitive behavioral therapies have higher pre-treatment scores in the domains of numbing/emotional constriction, as well as

depression, pain, and anger (Harvey, Bryant, and Terrier, 2003). Among veterans, studies of CPT are sparse, but the data from Chard et al's (2010) study of OEF/OIF veterans and Vietnam veterans with PTSD and a study of civilian female rape victims with PTSD (Rizvi, Vogt, and Resick, 2009) found that CPT resulted in more reduction in PTSD symptoms in younger and less chronic PTSD patients compared to older and chronic PTSD patients for various trauma types. Thus far, there are no published studies assessing the efficacy of CPT for military sexual trauma. The data for this study comes from the first of these studies, conducted by Dr. Alina Suris and her research team at the VA Medical Center in Dallas. In any case, with the overwhelmingly positive outcomes of CPT for a variety of populations with PTSD, the VA lauds CPT (as well as prolonged exposure therapy) as one of the preferred treatment modalities for PTSD (VA/DoD Clinical Practice Guideline for the Management of Posttraumatic Stress, 2004).

Summary

This chapter reviewed important aspects of PTSD as it manifests across demographic groups and relates to the military population. Initially, variance in symptom severity of PTSD was reviewed, highlighting that female gender, history of prior trauma, and severity of trauma are all associated with more severe PTSD symptoms. Further, sexual trauma was identified as a traumatic event that results

in more severe PTSD symptoms than other traumas. Next, symptom patterns were reviewed. It was found that the pattern of PTSD symptoms that present may vary based on type of criterion A event. Sexual assault was found to be associated with more avoidance symptoms (cluster C) than re-experiencing (cluster B) or arousal (cluster D) symptoms in women. Males were found to present with more arousal (cluster D) symptoms than females. Regarding ethnic groups, African Americans reported more avoidance (cluster C) symptoms than Hispanics, while Hispanics reported fewer re-experiencing (cluster B) symptoms than others. Ethnic differences in PTSD presentation were hypothesized to be associated with differences in socialization and ethnocultural exposures.

The importance of anger in PTSD was discussed. Anger was identified as having a unique relationship with PTSD associated with its association with both fear and arousal. Males with PTSD typically show more prominent anger symptoms than women, which was thought to be associated with differences in gender role socialization. With regard to ethnic groups, African Americans were found to report more anger-related symptoms than Hispanics. This was also thought to be associated with differences in socialization, culture, and socio-economically related exposures.

The relevance of studying PTSD in the military was discussed. The high prevalence, increased number of exposures, and severity of PTSD in the military

population were described as added risk factors. Military Sexual Trauma (MST) as a military-specific traumatic event was discussed. Its prevalence among women and men is significant. The history of MST and how it is different from sexual trauma outside of the military was discussed. MST victims live and work in close proximity to their perpetrators and often feel discouraged from speaking out against them because of rank, potential lack of support, and/or perceived potential risk to their military careers.

Sexual trauma as a criterion A event in PTSD was discussed along with MST in the context of gender differences. Both significant physical and psychological sequelae of MST are observed. There is evidence that civilians with sexual trauma differ from veterans with MST. While sexual trauma is associated with higher risk of PTSD than other traumas for both civilians and veterans, men with MST report more PTSD symptoms, more sexual problems, and more physical problems than women with MST. Early life sexual trauma and its relationship to re-victimization in civilian populations as well as veteran populations (re-victimization is MST) was also reviewed. Whether there is an increased risk of re-victimization or not among civilians with early life sexual trauma is not certain due to the inconsistency in study findings. The relationship between early life sexual trauma and MST is stronger, as the results of the increased risk of MST after early life sexual trauma are more consistent.

Cognitions as a feature of PTSD that can prolong symptomatology were discussed. Type of trauma was found to influence the PTSD-related cognitions that emerge. Themes of shame, fear, and avoidance were found to be associated with MST. Anger-related cognitions were reviewed and hostility was identified as a possible anger cognition that is prevalent in PTSD.

Finally, the treatment of PTSD, with particular focus on Cognitive Processing Therapy (CPT) was discussed. The development of CPT and relevant research studies using CPT were reviewed as well. It was identified that a possible limitation in CPT is that although there was improvement in re-experiencing (cluster B) and numbing symptoms of PTSD in a sample of veterans with different types of trauma, there was less improvement in avoidance (cluster C) and hyperarousal (cluster D)symptoms. The adaptation of CPT to utilize treatment-matching issues in MST is a proposed start to addressing this potential limitation in the CPT treatment protocol.

CHAPTER THREE

METHODOLOGY

Design

The present study is an analysis of baseline data from a randomized, controlled, clinical trial of psychotherapy for PTSD comparing cognitive processing therapy and person-centered therapy. The study involved women and men in the VA North Texas Health Care System (VANTHCS) with a diagnosis of PTSD associated with Military Sexual Trauma (MST). Assessments administered included clinician-administrated interviews as well as self-report measures to obtain diagnostic information, psychiatric symptom measures, as well as assessment of PTSD-related cognitions, anger characteristics, and demographics. Although the original study is focused on the comparison of the efficacy of two treatment modalities for PTSD associated with MST, the current study focuses on the baseline data alone, to evaluate variability in subjects' symptoms and characteristics (prior to treatment) in order to gain a better understanding of this particular population (survivors of MST) and the manifestation of their PTSD. This information, in turn, could be useful in modifying PTSD treatment towards addressing the specific clinical issues prevalent among subgroups of MST victims.

Description of Site

The study was conducted at the VA North Texas Healthcare System. The VANTHCS includes the Dallas VA Medical Center, Sam Rayburn Memorial VA Center in Bonham, and the Fort Worth Outpatient Clinic. Specialty mental health treatment for veterans at VANTHCS includes the Women's Stress Disorder and Military Sexual Trauma Program (WSD&MST). The team provides evaluation and treatment for female and male veterans with a history of MST.

Sample

There were a total of 130 participants in the study, 116 female and 14 males. This study initially included only women. After the completion of year 2 of the study, additional funding became available through the sponsor, which allowed an increase in sample size and the inclusion of males in the sample. This is, in part, why the number of women in the study is far greater than the number of men enrolled in the study. Power to detect differences between men and women in the study is discussed below.

Recruitment

Subjects were identified through several means including: clinician referral, self-referral via an IRB-approved study flyer, affirmative response to mailed IRB-approved recruitment letter, and referral through the government clinical trials website.

A total of 491 prospective participants were identified through these recruitment methods. Of those 491, a total of 178 participants were eligible and enrolled in the study upon screening. Of the 178 participants enrolled in the study, 3 became ineligible after screening/enrollment but prior to the baseline because they no longer met the eligibility criteria (described below), 3 were lost to follow-up, and 2 withdrew from the study. Of those remaining 170 participants, 13 were found to be ineligible at baseline because they either did not meet criteria for PTSD per CAPS diagnosis or they no longer met eligibility criteria, 2 did not complete baseline, and 3 no-showed the baseline appointment. Of the 152 enrolled, 22 were assigned as training cases for clinicians on the study, resulting in an N of 130 in the study sample.

Research Protocol

Once identified, veterans were screened for eligibility by an assessment technician. At the screening, the tech explained study protocol and reviewed the informed consent form, which explained: the purpose of the study, the treatment

conditions, the use of random assignment, the time commitment for both treatment and assessments, and the schedule of payments for the assessment. Inclusion and exclusion criteria were based on the largest PTSD treatment study ever conducted with women veterans: CSP #494 "A Randomized Clinical Trial of Cognitive-Behavioral Therapy for the Treatment of PTSD in Women." This was an eleven-site study, of which the Dallas-based site was the number one recruitment site. The goal of the inclusion/exclusion criteria were to be as unrestrictive as possible, while ensuring the safety of participants and maintaining the internal validity of the study.

Inclusion Criteria:

- veteran or active duty personnel, from any era, with a diagnosis of PTSD associated with MST
- have experienced MST at least 3 months prior to entering the trial
- identify MST as the trauma causing the worst current distress (if they had other sexual traumas)
- have at least one clear memory of the trauma (sufficient to write impact statement)
- consent to be randomized into treatment

- not receive other psychotherapy for PTSD during the 6-weeks of active treatment (psychotherapy for other problems, brief check-ins with an existing therapist, and attendance at self-help groups were allowed)
- (if on psychoactive medications) be on a stable medication regimen for a minimum of 6 weeks prior to entering the trial.

Exclusion Criteria:

- prior CPT or PCT treatment (based on chart review by study coordinator)
- active substance dependence
- prior substance dependence that has not been in remission for at least 3 months
- any active psychotic symptoms
- active mania or unstable Bipolar Disorder
- prominent suicidal or homicidal features
- any severe cognitive impairment or history of Organic Mental Disorder
- current involvement in a violent relationship

Procedure

After the informed consent was completed and subjects were enrolled in the study, they were interviewed by one of the Assessment Technician*s* (AT*s*). The AT assessed the participant's trauma history using the Life Events Checklist (LEC) and the CAPS for the presence of PTSD related to an MST event. If more than one MST event had occurred, the veteran was asked to indicate the worst MST event (the one causing the most current distress). The AT assessed if the event met criteria A-1 and A-2 of the Clinical Administered PTSD Scale (CAPS), the gold-standard diagnostic tool for PTSD (CITE). If criteria were met, the assessment for PTSD was conducted in relation to that event. If not, the AT probed about other MST events to determine if one of them met criteria A-1 and A-2. The AT then conducted the CAPS for the most distressing MST event. Following the CAPS, the AT administered the Structured Interview for the DSM-IV (SCID) to identify any co-morbid psychological issues. The AT continued to administer the remaining instruments if the participant was eligible after conducting diagnostic assessments. Participants then completed the self-report instruments. Most baseline assessments were conducted in a single appointment, but given the extended time needed to complete the baseline appointment, per patient request, some were conducted over the course of 2 appointments, within 2-3 days of each other.

Eligible veterans were then randomized into one of two therapies, CPT or PCT. Therapy commenced within 30 days from the date of completion of baseline screening assessments. In the case in which a patient waited more than four weeks to initiation treatment after baseline assessment, the CAPS was re-administered. Participants were compensated for their time at the conclusion of each assessment session, including $50.00 after completing the baseline session.

Assessments

Assessments administered at baseline included clinician interviews and self-report measures looking at domains of PTSD diagnosis/symptoms, trauma-related cognitions, trauma history, other psychiatric diagnosis/symptoms, and basic demographic information. These questionnaires included: the Clinical Assessment of PTSD Symptoms (CAPS), the Post-Traumatic Cognitions Inventory (PTCI), the PTSD Checklist (PCL), the Structured Clinical Interview for the DSM-IV (SCID), the State-Trait Anger Expression Inventory 2 (STAXI-2), the Vulnerability, Post -Assault, & Temporal Factors Questionnaire (VPAT), and the Sexual Abuse Experiences Questionnaire (SAEQ). A description of each of these assessments is below.

PTSD Symptoms/Cognitions/Diagnosis:

The *Clinician Administered PTSD Scale (CAPS)* (Blake et al, 1990) was used to assess current PTSD diagnosis and severity of symptoms during the Subject Interview Questionnaire. The CAPS is a structured clinical interview that measures the frequency and intensity of DSM-IV's 17 symptoms of PTSD on a behaviorally anchored 5-point rating scale from 0 ("never") to 4 ("daily or almost daily"). The CAPS contains five global rating questions regarding the effect of these symptoms on social and occupational functioning, a validity indicator, a severity score of reported symptoms, and improvement since previous assessment (for repeated administrations). It has also been slightly modified to include age, marital status, and educational level at time of event. Test-retest reliability is reported to range from .90 to .98, with internal consistency for the 17 symptoms at .94. The total severity score is reported to be highly correlated to other measures of PTSD including the Mississippi (.91) and the PK scale of the MMPI-2 (.77) (Blake et al, 1990).

The *Posttraumatic Cognitions Inventory (PTCI)* (Foa et al, 1999) is a 33-item self-report inventory that serves as a comprehensive measure of the appraisals of trauma and its sequelae that are involved in the development and persistence of PTSD. Ratings are made on a 7-point Likert scale, with 1 representing "Totally disagree" to 7 representing "Totally agree." Higher scores indicate more negative cognitions. A principal-components factor analysis has

suggested a 3 factor solution: 1) Negative Cognitions About Self, (general negative view of self, permanent change, alienation, hopelessness, self-trust, negative interpretation of symptoms), 2) Negative Cognitions About the World, (unsafe world and mistrust of other people), and 3) Self-Blame for the trauma = 5 items. It has shown high internal consistency: Cronbach's alphas have been found to be .97 for Negative Cognitions About Self, .88 for Negative Cognitions About World, .86 for Self-Blame, and .97 for the Total Score. Scoring of the PTCI involves the addition of items and division by that number of items for a score between 1 and 7 on the subscales. The total PTCI score, however, is a cumulative sum of 33 of the 36 items in the scale such that the score on this scale falls between the values 33 and 231.

Sexual Trauma History:

The *Sexual Abuse Experiences Questionnaire (SAEQ)* is an 11-item, self-report questionnaire used to assess sexual assault history. Each item poses a question regarding a sexual abuse act. Participants were asked to read each item and answer whether or not the event happened to him/her in childhood, as an adult, or in the military. For each item that they participant responds "yes," he/she was then to indicate what kind of relationship he/she had with the perpetrator, how often the event occurred, and how long the event occurred.

Psychiatric Disorders:

The *Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID-I)* was used to assess Axis I psychiatric disorders. The SCID-I is a semi-structured clinical interview for diagnosing the major DSM-IV Axis I disorders by using a decision tree approach that guides the clinician in testing diagnostic hypotheses. The presence or absence of each disorder is considered. The SCID-I provides comprehensive coverage of the most common major mental illnesses seen in clinical practice. This measure was used in the study to examine non-PTSD psychiatric disorders as predictors of post-trauma outcomes and also to screen patients for active psychosis, a rule-out for the present study. The SCID-I also assesses symptom severity, duration, and recurrence of illness, providing researchers with information on history of illness. The test-retest reliability of the SCID-I is reported to be good with relatively high kappas ranging from .70 to 1.0 (Segal et al., 1993, Segal et al 1994, Segal et al., 1995, Lindstrum et al, 1994). The validity of the SCID-I has also been shown to be good (Kranzler et al, 1996). Since chart-based diagnoses are often unreliable in psychiatric outpatients, (Basco et al, 2000; Kashner et al, 2003). SCIDs are preferred methods to ensure standardized psychiatric diagnoses. The SCID was chosen because it assesses full diagnostic criteria of psychiatric disorders.

Other Psychological Issues:

The *State-Trait Anger Expression Inventory 2 (STAXI-2)* is a 57-item, self-report questionnaire. It is comprised of 6 scales (State Anger, Trait Anger, Anger Expression-Out, Anger Expression-In, Anger Control-Out, Anger Control-In), 5 subscales (State Anger subscales: Feeling Angry, Feel Like Expressing Anger Verbally, and Feel Like Expressing Anger Physically; Trait Anger subscales: Angry Temperament and Angry Reaction, and an Anger-Expression Index, which provides an overall measure of the expression and control of anger. Spielberger (1999) designed the State-Trait Anger Expression Inventory (STAXI) to be able to assess dimensions of anger experience, expression, and control. The scale measures two domains of anger, State-Trait and Anger Expression (Spielberger, 1999). Six main scales comprise the STAXI, with 5 subscales and an anger expression index. The first scale is state anger, which is defined as the "intensity of angry feelings and the extent to which a person tend to express anger at a particular time." Trait anger, the second scale, is defined as the rate at which anger feelings are expressed over time. Anger expression-out, the third scale, assesses the rate at which angry feelings are expressed either verbally or physically, through aggressive behavior. Anger expression-in, the fourth scale, measures the rate at which angry feelings are experienced but not expressed outwardly. Anger control-out and anger control-in make up the fifth scale, which assess the rate at which the outward expression of angry feelings are controlled

and the rate at which attempts to control angry feelings are associated with "cooling off" or "calming down." Lastly, the sixth scale, the Anger Expression Index, provides an "overall measure of the expression and control of anger (Spielberger, 1999)." In the author's test manual, the psychometric properties included high alpha coefficients for internal reliability (median r = 0.88) for all scales and subscales except for the Trait Anger Scale/Angry Reaction (0.73-0.76).

Demographic Characteristics:

Subject self-report demographic characteristics were recorded during the interview onto the Subject Interview Questionnaire Sheet. Information obtained includes: Education (assessed in terms of years of formal schooling and existence of graduate equivalency degree), Ethnic groups [includes categories of Caucasian (not Hispanic), African American (not Hispanic), Hispanic (Caucasian), Hispanic (African American), American Indian/Alaska Native, Pacific Islander, Asian, and Other], Marital status, Urban residence, Age at time of patient interview, Gender, Usual Occupation, Employment status, Monthly income, Service Connection, PTSD service connection status, and dates and branch of military.

Study Aims

The specific aim of this study was to examine differences in the manifestation of PTSD-related sequelae in a sample of veterans with MST.

PTSD-related cognitions and differences in experience, expression, and control of anger across gender (M/F) and ethnic groups (Caucasian/African American/Hispanic) were examined. Differences in PTSD-related cognitions and anger across three groups of sexual trauma history (no prior sexual trauma before MST, history of civilian sexual trauma before MST, and history of childhood sexual assault before MST) were also examined. Additionally, an examination of symptom severity and symptom patterns across these demographic groups were also conducted. Another aim is to understand the variance in PTSD severity attributed to anger, cognitions, and sexual trauma history group through model-building. The goal of this study for the long-term is that implications and findings from this study will help to influence the development of tailored treatment and intervention strategies for victims of PTSD associated with military sexual trauma in the future.

Hypotheses

Cognitions

Aim 1: To assess the relationship between PTSD-related cognitions and demographic characteristics including gender, ethnicity, and sexual trauma history group.

--H1: higher scores on all PTSD cognitions are expected to be positively associated with male gender and the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma, while negative world cognitions are expected to be positively associated with Hispanic ethnicity.

Anger

Aim 2: To assess the relationship between anger and demographic characteristics including gender, ethnicity, and trauma history group.

--H2a: Higher scores on "trait anger" and "anger expression-out" subscales are expected to be associated with male gender and African American ethnicity. Higher scores on "anger expression-in" subscale are expected to be associated with female gender.

–H2b: Higher scores on anger subscales are expected to be positively associated with all PTSD-related cognition subscales.

PTSD

Aim 3: To assess the relationship between PTSD severity and symptom patterns with the demographic characteristics of gender, ethnicity, and sexual trauma history group.

--H3a: Higher PTSD total score is expected to be associated with male gender, Hispanic and African American ethnicities, and the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma.

--H3b: Higher reports of Cluster B (re-experiencing) symptoms are expected to be associated with Hispanic ethnicity. Higher reports of Cluster C (avoidance) symptoms are expected to be associated with African American and Caucasian ethnicities as well as the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma. Higher reports of Cluster D (arousal) symptoms are expected to be associated with male gender.

Model Building

Aim 4: Model building to explore multiple variable effects on PTSD severity simultaneously.

--H4: The sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma, high anger severity scores, and high negative cognition scores are each predicted to be associated with higher PTSD scores. Additionally, an interaction between cognitions and sexual trauma history group is expected to contribute independently to PTSD severity score when added to this model.

CHAPTER FOUR
Results

ANALYSES AND RESULTS

Demographics

Demographic analyses were conducted using Chi-square for categorical variables and t-test/ANOVA for continuous variables. A table of these descriptive data is included in Table 1 of Appendix A.

The study sample consisted of 130 veterans with PTSD following MST who completed the baseline assessment. Females represented 89.2% (n = 116) of the sample and males represented 10.8% (n = 14) of the sample. With regard to ethnic groups, 39.2% (n = 51) of the sample was Caucasian, 43.1% (n = 56) of the sample was African American, and 4.6% (n = 6) of the sample was Hispanic. The remaining participants (13.1%, n = 17) in the sample belonged to the "other ethnic group" category, which included American Indian, Native Hawaiian, Alaskan Native, Pacific Islander as well as individuals from multiethnic backgrounds. Due to the diversity of this last group, all comparisons of ethnic groups were made between the first three groups with the "other" group excluded from analyses. Sexual trauma history was divided into three groups: MST only (16.2%, n = 21), MST + other adult sexual trauma only (19.2%, n = 25), and MST

+ childhood sexual trauma (may include other adult sexual trauma as well) (63.8%, n = 83).

The mean age of the sample was $\bar{x}_{AGE}$ = 45.7 years (SD = 9.3 years) with a range of age 24 – 68. The mean number of years of education of the sample was 14.25 years (SD = 2.07) and ranged from 10 to 20 years. Regarding marital status, nearly half of the sample (43.8%, n = 57) was divorced and 13.1% (n = 17) were separated from their partners, while 21.5% (n = 28) were married, 3.8% (n = 5) were co-habiting with their partners, and 12.3% (n = 16) were never married. Approximately 5% (n = 7) of the sample were widowed. At the time of the baseline assessment, 38.5% (n = 50) of the sample reported that they were unemployed, while 27.7% (n = 36) reported that they were employed full-time and 9.2% (n = 12) reported that they were employed at least part-time. Ten percent (n= 13) reported that they were retired. The remaining 14.6% (n = 19) were either disabled (n = 13), students (n = 3), or involved in other activities (n = 3).

There were no significant differences on any of the demographic variables between ethnic groups, sexual trauma history groups, or gender except on years of education (t = 2.142, p = 0.034) such that females in the sample reported more years of education ($\bar{x}$ = 14.38 years) compared to males ($\bar{x}$ = 13.14 years).

Main Analyses

Aim 1: To assess the relationship between PTSD-related cognitions and demographic characteristics including gender, ethnicity, and sexual trauma history group.

--H1: higher scores on all PTSD cognitions are expected to be positively associated with male gender and the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma, while negative world cognitions are expected to be positively associated with Hispanic ethnicity.

To assess differences in PTSD-related cognitions between genders, t-tests comparing the total score and each of the subscales of the post-traumatic cognitions inventory (PTCI) with gender were conducted to determine which cognitions are reported significantly more between men and women with MST. Results of the analyses revealed that the mean total score on the PTCI was $\bar{x}_{PTCI}$ = 155.93 for males and $\bar{x}_{PTCI}$ = 144.03 for females. There was no significant difference (t=-1.227, p=0.222) between these mean scores for men compared to women. There were no significant differences between men and women on mean scores of the three subscales: Negative cognitions about self (t = -1.412, p = 0.160), Negative cognitions about the world (t= -0.798, p = 0.426), and Self-

blame for the trauma (t = -0.551, p = 0.583). The means and standard deviations of these comparisons are displayed in Table 2 of Appendix A.

An ANOVA was used to compare mean total and subscale scores of the PTCI for each of the three ethnic groups. There was no significant difference found between the mean scores on total PTCI across the three ethnic groups (F = 0.050, p = 0.951). There were also no significant differences across ethnic groups on the three PTCI subscales including, Negative cognitions about self (F = 0.016, p = 0.984), Negative cognitions about the world (F = 1.067, p = 0.348), and Self Blame for the trauma (F = 0.068, p = 0.934). The means and standard deviations of these comparisons are displayed in Table 3 of Appendix A.

ANOVAs were used to compare mean total and subscale scores of the PTCI across each of the three sexual trauma history groups. The analyses showed that Total PTCI score was significantly different across sexual trauma history groups (F = 4.304, p = 0.016). The three sexual trauma history groups included: Group 1 - MST only (no other sexual trauma history), Group 2 - MST + other adult sexual trauma, and Group 3 - MST + childhood sexual trauma. Post-hoc analyses revealed that the significant difference between these three groups lied predominantly between the MST only (1) and the MST + other adult sexual trauma (2) groups (t = 2.126, p = 0.039) and between the MST + other adult sexual trauma (2) and MST + childhood sexual trauma (3) groups (t = -2.739, p =

0.007). There was no significant difference between the MST only (1) group and the MST + childhood sexual trauma (3) group (t = 0.090, p = 0.268) on Total PTCI score. The mean Total PTCI score for the MST only (1) ($\bar{x}_{PTCI}$ = 150.43) and the MST + childhood sexual trauma (3) ($\bar{x}_{PTCI}$ = 149.75) groups were higher than the mean Total PTCI score for the MST + other adult sexual trauma (3) ($\bar{x}_{PTCI}$ = 128.08) group. Among the PTCI subscales, there was no significant difference across the three sexual trauma history groups on mean score for Negative Cognitions about the World (F = 1.133, p = 0.325) but there were significant differences across the three sexual trauma history groups on mean scores for Negative Cognitions of Self (F = 3.824, p = 0.024) and Self Blame for the Trauma (F = 3.415, p = 0.036). Post-hoc t-tests revealed that the significant difference between these three groups on report of Negative Cognitions of Self lied predominantly between the MST only (1) and the MST + other adult sexual trauma (2) groups (t = 2.126, p = 0.039) and between the MST + other adult sexual trauma (2) and MST + childhood sexual trauma (3) groups (t = -2.510, p = 0.014). There was no significant difference between the MST only (1) group and the MST + childhood sexual trauma (3) group (t = 0.346, p = 0.730) on Negative Cognitions of Self. Again, the MST only (1) ($\bar{x}_{NEGSELF}$ = 4.53) and the MST + childhood sexual trauma (3) ($\bar{x}_{NEGSELF}$ = 4.44) groups reported more negative cognitions of self than the MST + other adult sexual trauma (2) ($\bar{x}_{NEGSELF}$ = 3.74) group. Post-hoc analyses showed that the significant difference between the three

sexual trauma history groups on Self Blame for the Trauma was between the MST + other adult sexual trauma (2) and the MST + childhood sexual trauma (3) groups (t = -2.580, p = 0.011). The MST only (1) report of self-blame cognitions was not significantly different from the MST + other adult sexual trauma (t = 1.267, p = 0.212) or the MST + childhood sexual trauma (t = -0.856, p = 0.394) groups. Participants with a history of MST + childhood sexual trauma (3) ($\bar{x}_{SELFBLAME}$ = 4.07) reported more Self Blame for the Trauma than participants with MST only (1) ($\bar{x}_{SELFBLAME}$ = 3.75) and participants with MST + other adult sexual trauma (2) ($\bar{x}_{SELFBLAME}$ = 3.14). The means and standard deviations of these comparisons are displayed in Table 4 of Appendix A.

Aim 2: To assess the relationship between anger and demographic characteristics including gender, ethnicity, and sexual trauma history group.

--H2a: Higher scores on "trait anger" and "anger expression-out" subscales are expected to be associated with male gender and African American ethnicity. Higher scores on "anger expression-in" subscale are expected to be associated with female gender.

To assess differences in anger experience, expression, and control, t-tests were conducted among each of the 12 scores from the 6 scales, 5 subscale scores, and the anger expression index of the State-Trait Anger Expression Inventory

(STAXI-2) for males compared to females. In the analysis of State-Anger and its subscales, there was no significant difference in scores between males and females on the State-Anger (t = -0.340, p = 0.734) scale and all of its subscales including: Feeling Angry (t = -0.722, p = 0.471), Expressing Anger Verbally (t = -0.198, p = 0.843), and Expressing Anger Physically (t = 0.071, p = 0.944). In the analysis of Trait-Anger and its subscales, there was no significant difference in scores between males and females on the Trait-Anger scale (t = -1.556, p = 0.122) and the subscales, Angry Temperament (t = -0.882, p = 0.379) and Angry Reaction (t = -1.832, p = 0.069). In the analysis of the remaining Anger scales, there was no significant difference between males and females on the scales Anger Expression-Out (t = -1.595, p = 0.113), Anger Control-Out (t = 1.632, p = 0.105), and Anger Control-In (t = 0.027, p = 0.979). However, there was a significant difference between males and females on the scales Anger Expression-In (t = -2.555, p = 0.012) and the Anger Expression Index (t = -2.002, p = 0.047). The mean scale scores indicate that males ($\bar{x}_{ANGEXIN}$ = 23.29) reported more Anger Expression-In than females ($\bar{x}_{ANGEXIN}$ = 19.70). The Anger Expression Index scores, which produce an overall measure of total anger expression, suggest that males ($\bar{x}_{ANGINDEX}$ = 48.21) reported more overall expression of anger when compared to females ($\bar{x}_{ANGINDEX}$ = 39.65). The means and standard deviations of these comparisons are displayed in Table 5 of Appendix A.

To address anger differences across ethnicity, ANOVA was used to compare mean scores for each of the 6 scales, 5 subscale scores, and the anger expression index of the STAXI-2 for each of the three ethnic groups. Comparative t-tests were conducted if any differences are found. In the analysis of State Anger and its subscales, there were significant differences across ethnic groups for State Anger ($F = 5.363$, $p = 0.006$) and all three of its subscales including Feeling Angry ($F = 5.508$, $p = 0.005$), Verbal Expression of Anger ($F = 3.811$, $p = 0.025$), and Physical Expression of Anger ($F = 3.980$, $p = 0.021$). In the case of State Anger and its subscales, t-tests revealed that the significant difference was between the Caucasian and African American groups ($t = -3.131$, $p = 0.002$) and between Caucasians and Hispanics ($t = -2.037$, $p = 0.047$). Hispanics ($\bar{x}_{STATEANG} = 28.33$) and African Americans ($\bar{x}_{STATEANG} = 27.21$) reported more severe State Anger than Caucasians ($\bar{x}_{STATEANG} = 20.82$). A similar pattern was found among the differences between the three groups on Feeling Angry, Feel Like Expressing Anger Verbally, and Feel Like Expressing Anger Physically, the State Anger subscales. There were no significant differences across ethnic groups overall in the analysis of Trait Anger ($F = 0.302$, $t = 0.740$) or its subscales, Angry Temperament ($F = 0.338$, $t = 0.714$) and Angry Reaction ($F = 0.377$, $p = 0.687$). The analysis of the remaining Anger scales showed no significant differences overall across ethnic groups on Anger Expression-Out ($F = 0.677$, $p = 0.510$), Anger Expression-In ($F = 0.594$, $p =$

0.554), Anger Control-Out (F = 2.260, p = 0.109), Anger Control-In (F = 1.004, p = 0.370), and the Anger Expression Index (F = 0.698, p = 0.500). The means and standard deviations of these comparisons are displayed in Table 6 of Appendix A.

Analyses of anger differences across sexual trauma history groups were conducted using ANOVA for each of the 6 scales, 5 subscale scores, and the anger expression index of the STAXI-2 for each of the three sexual trauma history groups. Additionally, comparative t-tests were conducted where significant differences were found. No significant differences were found between the three sexual trauma history groups on State-Anger (F = 0.573, p = 0.565) or any of its three subscales including Feeling Angry (F = 1.737, p = 0.180), Verbal Expression of Anger (F = 0.221, p = 0.802), and Physical Expression of Anger (F = 0.180, p = 0.835). There were no significant differences on Trait Anger (F = 1.098, p = 0.337) or either of its subscales, Angry Temperament (F = 1.319, p = 0.271) and Angry Reaction (F = 0.448, 0.640), across the three sexual trauma history groups. Of the remaining anger scales, there were no significant differences across sexual trauma history groups on the Anger Expression-Out (F = 1.819, p = 0.166), Anger Control-Out (F = 1.633, p = 0.199), and Anger Control-In (F = 1.087, p = 0.340), Notably, there were trend level significant differences across sexual trauma history groups on the Anger Expression-In scale (F = 2.663, p = 0.074) and the overall Anger Expression Index (F = 2.817, p = 0.064) scales.

This is further examined in the discussion section. The means and standard deviations of these comparisons are displayed in Table 7 of Appendix A.

–H2b: Higher scores on anger subscales are expected to be positively associated with all PTSD-related cognition subscales.

Analysis to identify a PTSD-related cognition and anger relationship was conducted using correlation analysis of scores on each of the subscales on the PTCI (PTSD severity as the outcome variable) with scores on anger-related subscales on the STAXI-2. State Anger and its three subscales (Feeling Angry, Feel Like Expressing Anger Verbally, and Feel Like Expressing Anger Physically) were found to be positively associated with Total Score PTCI ($r = 0.344$, $p = 0.000$) and only subscales Negative Cognitions about Self ($r = 0.357$, $p = 0.000$) and Negative Cognitions about the World ($r = 0.365$, $p = 0.000$). The relationship between State Anger and the subscale Self Blame for the Trauma was not significant.

Trait Anger and its two subscales (Angry Temperament and Angry Reaction) were positively associated with Total Score PTCI ($r = 0.482$, $p = 0.000$), and subscales Negative Cognitions about Self ($r = 0.475$, $p = 0.000$) and Negative Cognitions about the World ($r = 0.482$, $p = 0.000$). The Trait Anger

scale (but not its subscales) and the subscale Self Blame for the Trauma were significantly correlated ($r = 0.184$, $p = 0.036$).

Anger Expression-Out was positively associated with Total Score PTCI ($r = 0.322$, $p = 0.000$) and subscales Negative Cognitions of Self ($r = 0.302$, $p = 0.000$) and Negative Cognitions about the World ($r = 0.350$, $p = 0.000$). Anger Expression-In was positively associated with the Total Score PTCI ($r = 0.447$, $p = 0.000$) and all three subscales, Negative Cognitions of Self ($r = 0.444$, $p = 0.000$), Negative Cognitions about the World ($r = 0.380$, $p = 0.000$), and Self-Blame for the Trauma ($r = 0.260$, $p = 0.003$). Anger Control-Out was found to be negatively associated with Total PTCI Score ($r = -0.241$, $p = 0.006$) and the subscale Negative Cognitions of Self ($r = - 0.252$, $p = 0.004$). Anger Control-In was also found to be negatively correlated with Total PTCI Score ($r = -0.208$, $p = 0.017$) and the subscale Negative Cognitions of Self ($r = - 0.242$, $p = 0.006$).

The Anger Expression Index, the overall measure of anger expression, was positively associated with Total Score PTCI ($r = 0.421$, $p = 0.000$) and all three subscales, Negative Cognitions of Self ($r = 0.428$, $p = 0.000$), Negative Cognitions about the World ($r = 0.310$, $p = 0.000$), and Self-Blame for the Trauma ($r = 0.229$, $p = 0.009$). A table of the correlations and p-values from this comparison can be found in Table 11 of Appendix A.

Aim 3: To assess the relationship between PTSD severity and symptom patterns with the demographic characteristics of gender, ethnicity, and sexual trauma history group.

--H3a: Higher PTSD total score is expected to be associated with male gender, Hispanic and African American ethnicities, and the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma.

--H3b: Higher reports of Cluster B (re-experiencing) symptoms are expected to be associated with Hispanic ethnicity. Higher reports of Cluster C (avoidance) symptoms are expected to be associated with African American and Caucasian ethnicities as well as the sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma. Higher reports of Cluster D (arousal) symptoms are expected to be associated with male gender.

Analyses of severity of PTSD symptoms across groups (gender, ethnicity, sexual trauma history) participants in the study were assessed using total CAPS score. T-test (for gender) and ANOVA with t-tests were conducted (for ethnicity and sexual trauma history group) to assess differences in PTSD severity between groups. To assess symptom patterns of PTSD, ANOVA/t-tests were used to compare PTSD criterion scores [Criteria B-D] within groups for gender, ethnicity, and sexual trauma history groups.

There was no significant difference on total CAPS score between males and females in the sample (t = -0.465, p = 0.643). The mean CAPS total score for males is $\bar{x}_{CAPS}$ = 84.84 and for females is $\bar{x}_{CAPS}$ = 89.79. Further, there was no significant difference between males and females on criterion score across any of the B (t = -1.022, p = 0.309), C (t = -0.134, p = 0.894), and D (t = -0.321, p = 0.749) criterion groups. The means and standard deviations of these comparisons are displayed in Table 8 of Appendix A.

There was no significant difference across ethnic groups on total CAPS score (F = 1.934, p = 0.149). There was no significant difference in mean CAPS score across all three ethnic groups for criterion B (F = 1.745, p = 0.179), C (F = 1.452, p = 0.238), and D (F = 1.181, p = 0.311). See Table 9 in Appendix A for full descriptive data for ethnicity on CAPS.

With regard to sexual trauma history, there was no significant difference across sexual trauma groups on Total CAPS score (F = 0.251, p = 0.778), or any of the B (F = 0.265, p = 0.768), C (F = 0.322, p = 0.726), and D (F = 0.794, p = 0.454) criterion scores. All means and standard deviations for sexual trauma history groups on CAPS are listed in Table 10 in Appendix A.

Aim 4: Model building to explore multiple variable effects on PTSD severity simultaneously.

--H4: The sexual trauma history groups MST + childhood sexual trauma and MST + other adult sexual trauma, high anger severity scores, and high negative cognition scores are each predicted to be associated with higher PTSD scores, controlling for gender and ethnicity. Additionally, an interaction between cognitions and sexual trauma history group is expected to contribute independently to PTSD severity score when added to this model.

Multivariate regression was used to assess the unique contribution of trauma history, anger, and cognitions (as β variables) in determining PTSD total score on the CAPS (dependent variable). All variables were entered into the model simultaneously. An interaction term between sexual trauma history group and negative cognitions was added into the model to determine if there is a significant amount of variance in PTSD score explained by this interaction.

Analyses using correlation to assess the relationship between Total CAPS score and sexual trauma history group, anger scales and subscales, and cognition scales and subscales revealed that Total PTCI ($r = 0.313$, $p = 0.000$) and subscales, Negative Cognitions about Self ($r = 0.339$, $p = 0.000$), Negative Cognitions about the World ($r = 0.272$, $p = 0.002$), as well as anger scales, State

Anger (r = 0.201, p = .022) and its subscales, Feeling Angry (r = 0.257, p = 0.003) and Expressing Anger Physically (r = 0.190, p = 0.031), and the Anger Expression-In scale (r = 0.180, p = 0.040) were significantly correlated with Total CAPS score. The correlations and associated p-values for this comparison are included in Table 12 in Appendix A.

In the regression analysis, two models were compared, one that included only the statistically significant variables that were correlated with Total CAPS Score (Total PTCI, Negative Cognitions about Self, Negative Cognitions about the World, State Anger, Feeling Angry, Expressing Anger Physically, and Anger Expression-In). The second model included all scales and subscales of the PTCI and STAXI, as well as the sexual trauma history group variable. The model statistics and tests are included in Appendix B. For Model 1, which includes only the statistically significantly correlated scales, the multiple regression coefficient was R = 0.411 (R^2 = 0.169), indicating that approximately 17% of the variance in Total CAPS score can be predicted by the scales included in Model 1. Notably, although all of the scales included in this model were significantly correlated with Total CAPS score, only Feeling Angry (p = 0.045) was significant in the model. The fit of Model 1 was significant (F = 3.518, p = 0.002). For Model 2, which includes all variables/scales, including those that were not significantly correlated with Total CAPS score, the multiple regression coefficient was R = 0.436 (R^2 =

0.190), indicating that 19% of the variance in Total CAPS score can be predicted by the scales included in Model 2. None of the variables in this model were significant. The fit of Model 2 was significant ($F = 1.772$, $p = 0.047$). Model 3 includes the terms in Model 1 as well as an interaction term for sexual trauma history group and trauma cognitions. For model 3, the multiple regression coefficient was $R = 0.412$ ($R^2 = 0.169$), indicating that there is no additional percentage variance of CAPS Total score explained by adding in the interaction term. The interaction term itself, was not significant in the model ($p = 0.855$). Therefore, Model 1 is the best fit in explaining Total CAPS score in this sample.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The purpose of the current study was to determine the relationship between cognitions and anger with PTSD and to identify how cognitions and anger manifest across gender, ethnicity, and sexual trauma history groups among individuals with PTSD related to MST. The study addressed the following aims: 1. To determine differences in the manifestation of trauma-related cognitions across gender, ethnicity, and sexual trauma history groups among individuals with PTSD related to MST, 2. To determine differences in the manifestations of anger expression, control, and emotions across gender, ethnicity, and sexual trauma history groups among individuals with MST related to PTSD; and also to determine the relationship between trauma-related cognitions and anger expression, control, and emotions among individuals with MST related to PTSD, 3. To assess and compare the level of severity of PTSD and severity pattern of B-D PTSD symptoms across gender, ethnicity, and sexual trauma history groups, and 4. To assess how much variance in PTSD severity is associated with trauma-related cognitions and with anger expression, control, and emotions among individuals with PTSD related to MST.

Sample Characteristics

The sample of participants consisted of approximately 89% females and 11% males. This discrepancy is due to the late inclusion of males as the study was initially intended to be female-only and became inclusive of males when additional funding made it possible to add male participants. There were no significant differences between genders on any of the demographic variables analyzed with the exception of "years of education," as women had approximately one more year of education than men in the sample. Among women and men in the sample, about 36% ((N = 42 for women and N = 5 for men) of each group had less than 14 years of education. Twenty-eight percent of females (N = 33) had exactly 14 years of education and 53% of males (N = 8) had exactly 14 years of education. However, among women, 35% (N = 41) had more than 14 years of education while only 7% (N = 1) of men in the study had more than 14 years of education. These differences may be due, in part, to the discrepancy in sample sizes of the groups. Alternatively, it may mean that men who are victims of MST are slightly less educated (and possibly lower ranking – this was not assessed in the sample) than women who are victims of MST. Of note, however, is that the sample in this study was a random sample of all male and female veterans with PTSD from MST, and the possibility of some skewness in the selection of subjects is possible since participants were volunteers and could have been

treatment-seeking or otherwise not representative of the general population of men and women with PTSD related to MST.

Assessment of Trauma-related Cognitions, Anger, and PTSD Severity and Symptom Patterns

The Post-Traumatic Cognitions Inventory was used to assess type and severity of trauma-related cognitions endorsed in the sample. Anger was assessed with the State-Trait Anger Expression Inventory-2 (STAXI-2), which provided information on severity and aspects of anger expression among participants in the study. PTSD severity and criteria were assess with the Clinician-Administered PTSD Scale (CAPS), which included overall PTSD severity score as well as severity of criterion symptoms B-D of PTSD.

Cognitions

Demographic comparisons revealed no significant differences across gender on severity and types of cognitions reported. However, it is noteworthy that descriptively, males reported more severe negative cognitions overall when compared to women in the study and a significant difference may not have been found because of the small sample size of men in the study (N=14). A power analysis revealed that this may be the case as the power was 23%, which is well below the standard 80% power desired to detect differences between groups. On

all three cognition subscales (negative cognitions about self, negative cognitions about the world, and self-blame for the trauma), males reported more severe negative cognitions than females in the sample. Males reported more severe negative cognitions overall, however, this finding was not significant also likely due to insufficient power (29% Negative Cognitions of Self, 12.4% for Negative Cognitions About the World, and 8.5% for Self-Blame for the Trauma). The finding that males reported more severe negative cognitions than females, if power had been sufficient, would have been in line with the hypothesis that males with PTSD related to MST report more negative cognitions overall when compared to females because their PTSD is more severe than females with PTSD related to MST (Street and Stafford, 2006).

Despite non-significant differences on report of trauma-related cognitions across ethnicity, it is worthwhile to qualitatively examine the differences in mean scores as reported by participants on each of the cognition scales. African Americans reported the highest total scores on PTCI, followed closely by Caucasians, and then Hispanics. Descriptive comparison of the PTCI subscales indicates that African Americans reported more Negative Cognitions about the World than Caucasians and Hispanics, while Caucasians reported more Self Blame for the Trauma and Negative Cognitions about Self than African Americans and Hispanics. Notably, Hispanics reported fewer negative cognitions overall than both Caucasians and African Americans. It is possible that

differences were difficult to detect between the Hispanic group and the other two ethnic groups as the sample size of Hispanics was N=6, which may have resulted in insufficient power to detect differences.

As expected, all three ethnic groups reported negative cognitions in all areas. However, the trend among cognition subscales was not as expected. Hispanics did not report negative world cognitions more than any other ethnic group and in fact reported less severe cognitions overall. Given that severity of cognitions is associated with severity of PTSD, we would expect that Hispanics would report less severe PTSD compared to Caucasians and African Americans based on this finding. However, this was not the case as Hispanics actually reported the highest mean severity of PTSD on the CAPS (see below). If this finding was duplicated with significance in a larger sample of Hispanics, it may suggest that among individuals with PTSD related to MST, trauma-related cognitions are endorsed at a lower rate among Hispanics compared to other ethnicities. One explanation for this pattern might be that psychological symptoms (such as depressive and anxiety symptoms) may be expressed somatically rather than cognitively among Hispanics (Angel and Guarnaccia, 1989). Following this, it may be that while negative cognitions do exist among Hispanics with PTSD related to MST, some of the disability is manifest in physical complaints as well. The finding that Hispanics reported higher severity,

then, is supported by the research that states that somatization of psychological symptoms can reflect more severe pathology (Harris et al, 2008).

Significant differences were found across sexual trauma history groups on reported trauma-related cognitions. These findings reflect that overall, individuals with only MST and individuals with MST + childhood sexual trauma reported more severe negative cognitions than individuals with MST + other adult sexual trauma. These findings might suggest that more severe trauma-related cognitions develop during processing of the traumatic event if the first victimization is during childhood or if the first event occurs within the military environment, two circumstances that challenge one's notions of safety and security. Specifically, childhood sexual trauma goes against a child's sense of security with adults (since most sexual assault in childhood is committed by adults that the child is familiar with) and MST as a first exposure to sexual trauma goes against a soldier's sense of security in the military environment as a place of camaraderie and interpersonal support. Both circumstances involve the betrayal of a trusted "family member." The results indicate that early life victimization as well as isolated military sexual trauma is related to more severe negative trauma-related cognitions than with repeated sexual trauma in adulthood and MST. In addition to the finding of overall differences in report of negative trauma-related cognitions, the study also identified a higher report of Negative Cognitions about Self among individuals with MST and childhood sexual trauma as well as those

with MST only when compared to individuals with MST and other adult sexual trauma. There was also a significantly higher report of Self Blame for the Trauma among individuals with MST and childhood sexual trauma compared with individuals with MST and other adult sexual trauma. Hypothetical interpretations of these findings are that: 1. Individuals with childhood sexual trauma were taught by aggressors' behavior that they are sexual objects at a young age and repeated sexual victimization likely led to beliefs of self-blame for the trauma and reduced feelings of self-worth, resulting in negative beliefs about self, and 2. Individuals who experience MST as a first encounter of sexual assault in adulthood experience loss of security and associated reduction in self-confidence, leading to negative beliefs about self and how this event may have occurred to him/her in the context of an environment in which he/she initially felt secure.

Anger

Males reported significantly more Anger Expression-In and more overall expression of anger when compared to females in the sample. A descriptive comparison of means shows that State-Anger and Trait Anger were reported as higher among males compared to females even though there was no significant difference between genders. The quantitative and qualitative findings are in line with the literature that supports that males with MST may experience more severe

symptomatology than women with MST due to the added stressors related to the trauma (gender-role expectations, emotional expression, stigma in reporting trauma) that they may experience (Street and Stafford, 2006). However, with regard to the hypotheses, the findings were somewhat unexpected. Rather than exhibiting higher scores on trait anger and anger expression-out than females, males reported trait-anger and anger expression-out items approximately equally to women but instead reported more State Anger and more Anger Expression-In than females. This suggests that PTSD related to MST may manifest itself differently among males than other types of traumas in that MST may be associated with State Anger and internal anger expression among men. This would further support the evidence that outward emotional and verbal expression related to sexual abuse, particularly MST, is difficult for males (Evans, 2008; Street and Stafford, 2006; Snel, 2003), suggesting that males may tend to internalize negative emotions rather than expressing them outwardly. This may be due to fear of being ridiculed, ignored, or punished by their aggressors or seniors in the military setting.

Regarding anger expression and ethnicity, there were differences across ethnicities on State Anger but not Trait Anger. African Americans and Hispanics reported more severe State Anger than Caucasians. This was not as expected since the hypothesis was that African Americans would report significantly higher Trait Anger than the other two ethnicities but not significantly higher State Anger.

This outcome suggests that African Americans with PTSD related to MST experience more anger and aggression than Hispanics or Caucasians. This is supported in the literature that states that African Americans may experience anger and aggression in reaction to the sexual trauma stressor rather than other emotional reactions such as depression or anxiety (Moisan et al., 1997; Broman and Johnson, 1988). Exploratory analysis revealed that there was a significant difference between Caucasians and African Americans on Anger Control-Out such that Caucasians reported significantly more control of outward anger than African Americans. The means were not significantly different between Caucasians and Hispanics despite the fact that the mean report of Anger Control-Out by Hispanics was similar to that of African Americans. However, a t-test comparing the Caucasian group to the combined African American and Hispanic groups on Anger Control-Out was significant ($t = 2.135$, $p = 0.035$), confirmed this difference. Caucasians with PTSD related to MST reported more outward control of anger compared to African Americans and Hispanics.

Anger expression was not found to be significantly different across sexual trauma history groups. However, descriptively, there was a trend level difference between participants on the State Anger Subscale, Feeling Angry, such that MST only (1) participants reported more angry feelings compared to the MST + other adult sexual trauma (2) participants and MST + childhood sexual trauma (3) participants. This suggests that angry feelings are more prominent among

individuals with MST only, likely because their first sexual trauma experience was more recent and emotions related to the trauma are novel. Exploratory post-hoc t-tests, given the trend level significance on the Anger Expression-In and Anger Expression Index scales revealed differences between the groups as well. The difference on report of Anger Expression-In was evident between the groups MST only (1) and MST + other adult sexual trauma (2) ($t = 2.119$, $p = 0.040$), and between the MST + other adult sexual trauma (2) and MST + childhood sexual trauma (3) groups ($t = -1.943$, $p = 0.055$). There was no significant difference between the MST only (1) and the MST + childhood sexual trauma (3) groups ($t = 0.831$, $p = 0.408$). The MST only and MST + childhood sexual trauma groups reported higher inward anger expression than the MST + other adult sexual trauma group. By combining the MST only group with the MST + childhood sexual trauma group and comparing it with the MST + other adult sexual trauma group on Anger Expression-In, the power increases and the t-test becomes significant ($t = -2.155$, $p = 0.033$), further supporting that there is a difference between the MST only and MST + childhood sexual trauma groups together when compared to the MST + other adult sexual trauma on Anger Expression-In. This finding may suggest that the circumstances under which the MST only group and the MST + childhood sexual trauma experienced sexual trauma for the first time fostered inward anger expression. Specifically, in childhood and in the military, there is likely a high probability that the aggressor put the victim in a position that

involved threat or warnings to keep quiet about the sexual abuse to protect themselves from further harm. It is foreseeable, then, that these individuals were more likely to experience inward anger expression and related feelings of depression due to these circumstances. Not knowing the exact circumstances of the individuals who experienced adult sexual trauma in addition to MST, it is hypothesized that when these individuals experienced civilian adult sexual trauma, they may have been in a less compromising position such that the ability to speak out against the trauma as an adult may have allowed anger expression outwardly in a way that the individuals in the other two groups did not have the ability to do. Finally, qualitative comparisons of the means on Anger Expression Index (which had trend-level significance) indicate that the MST only (1) group reported highest anger expression overall, followed by the MST + childhood sexual trauma (3) group and then the MST + other adult sexual trauma (2) group. However, these mean scores were not significantly different on comparative t-tests.

Cognitions and Anger

The correlation analyses between PTCI scales and STAXI-2 scales revealed several significant relationships. The anger scales, State Anger and Anger Expression-Out, were positively associated with cognition subscales

Negative Cognitions about Self and Negative Cognitions about the World. This implies a relationship between situational anger and outward anger expression with negative cognitions related to the traumatic event. Trait Anger, Anger Expression-In, and the overall Anger Expression Index were positively associated with all three cognition subscales, Negative Cognitions about Self, Negative Cognitions about the World, and Self Blame for the Trauma. This indicates that characteristic anger, inward anger expression, and overall anger expression are related to negative trauma-related cognitions as they relate to the self, self-blame, and the world. Anger Control-Out and Anger Control-In were negatively associated with the subscale Negative Cognitions of Self. This indicates that as control of anger increases, negative cognitions related to the self are decreased. This may imply that teaching control of anger among individuals with PTSD related to MST may help to reduce negative cognitions of self and subsequently help to reduce PTSD severity. The significant association between subscales on these two assessments suggests that PTCI may capture some aspects of anger expression. However, being that the correlations were so low (highest being $r = 0.482$) and that overlap was so widespread (many significant correlations across scales and subscales), there does not appear to be any specificity in identification of anger expression in the PTCI. These significant associations suggest that anger and cognitions are related, but that cognitions, as assessed in the PTCI, are not necessarily inclusive of all of the important aspects of anger, nor do they identify

an anger cognition (in addition to anger emotions), which may be a critical component of PTSD related to MST that is not being assessed.

PTSD Severity and Symptom Patterns

The overall mean CAPS score for this sample of men and women with PTSD following MST was 85.05. Based on the rationally derived severity scoring ranges, (0-19 = asymptomatic/few symptoms, 20-39 = mild PTSD/subthreshold, 40-59 = moderate PTSD/threshold, 60-79 = severe PTSD symptomatology, ≥80 = extreme PTSD symptomatology) (Weathers et al, 2001), the mean CAPS scores for all participants in the study was in the "extreme PTSD symptomatology" range. Previous literature (Kelley et al, 2009) identifies sexual trauma as a traumatic event that results in more severe PTSD scores compared with other types of trauma, therefore, these high CAPS scores are most likely due to the severity of the criterion A event, being MST in all cases in this sample. This finding from past research suggesting that men and women with sexual trauma experience increased PTSD severity due to the nature of the trauma was confirmed with this finding.

There was no significant difference between genders on Total CAPS score or on any of the B-D symptom criteria. Qualitatively, however, males reported higher mean total CAPS scores and higher mean scores across all three criterion

groups than females. This was the predicted outcome in the hypotheses but was not supported statistically in the analyses. A power analysis revealed that there was a power of 7.5% for this analysis, which is not sufficient to detect differences between genders in this sample. This is further evidence that a replication of this study warrants larger sample sizes to be able to determine if the difference between PTSD severity and PSTD symptom patterns is significant between genders.

There was no significant difference on PTSD severity across ethnicities. However, qualitatively, mean CAPS score among Hispanics was highest, followed by Caucasians and African Americans, which were closer in range. Severity of PTSD was expected to be higher among the two ethnic minority groups but was found to be higher among Hispanics only (compared to Caucasians and African Americans). Descriptively, Hispanics reported more severe re-experiencing (Cluster B) symptoms, avoidance (Cluster C) symptoms, and arousal (Cluster D) symptoms than Caucasians, who reported more Cluster B symptoms, but less severe Cluster C and D symptoms than African Americans. African Americans and Caucasians were expected to report more Cluster C and D symptoms than Hispanics but did not. As expected, Hispanics did report more Cluster B symptoms than Caucasians or African Americans. The finding that Hispanics reported more severe symptoms overall is interesting and may suggest

that MST results in more severe PTSD among this ethnic minority group compared to other ethnicities.

No significant differences were found on total CAPS score or any of the B, C, or D criterion symptoms by sexual trauma history group. However, descriptively, the participants with only MST(1) reported more re-experiencing (Cluster B) symptoms and arousal (Cluster D) symptoms than the MST + childhood sexual trauma (3) participants, followed by the MST + other adult sexual trauma (2) participants. The MST + other adult sexual trauma (2) group reported more avoidance (Cluster C) symptoms than the participants with only MST (1), followed by the MST + childhood sexual trauma (3) participants. Overall, however, all participants, regardless of sexual trauma history group, reported more severe Cluster C symptoms, followed by Cluster D symptoms, and then Cluster B symptoms. This finding supports the documented findings from prior literature emphasizing the significance of Cluster C symptoms in PTSD diagnosis, particularly in PTSD related to sexual trauma (Asmundson et al, 2004).

Model Building

Model building was used to assess the significance of the relationship between trauma-related cognitions, anger expression, and sexual trauma history group with PTSD severity. The results of the model revealed that aspects of both anger and cognitions are important in explaining PTSD severity but that this

relationship cannot be explained completely by the PTCI and STAXI-2 assessments. Associations between the PTCI subscales of Negative Cognitions about Self and Negative Cognitions about the World were significantly related to overall PTSD severity, but neither was significant in the model. Negative Cognitions about Self was significant in the model when other non-significant cognition and anger variables were removed from the model. State Anger and the subscales, Feeling Angry and Feel Like Expressing Anger Physically, as well as Anger Expression-In were significantly associated with PTSD Severity but only Feeling Angry was significant in the model. State Anger was at trend level significance in the model. Given the literature that states the importance of cognitions in PTSD severity among victims of sexual trauma (Dunmore et al, 1999; Owens et al, 2001), it was surprising that the PTCI subscales did not end up being significant in the model. However, the model was significant with the cognitive scales of Negative Self and Negative World included. This suggests that at least some of the variance in PTSD severity relates to trauma-related cognitions. Moreover, Trait Anger was not found to be significantly associated with PTSD severity while State Anger was significantly associated with PTSD severity and in the model. This implies a distinct relationship with situational anger expression and PTSD severity among individuals with PTSD related to MST. These findings point to an important area of research that has yet to be

explored in depth, the unique contribution of anger and cognitions in explaining PTSD severity.

Summary of Major Findings

The study results suggest that trauma-related cognitions and anger expression manifests differently across certain demographic groups among individuals with PTSD related to MST. With regard to trauma-related cognitions, individuals exposed to MST alone and those exposed to MST + childhood sexual trauma reported more negative cognitions about self and more self-blame for the trauma compared with individuals with MST + other adult sexual trauma. With regard to anger expression, males reported more Anger Expression-In and higher overall anger expression when compared to women with PTSD related to MST. Further, African Americans and Hispanics reported more State Anger than Caucasians. Lastly, individuals exposed to MST alone and those exposed to MST + childhood sexual trauma reported more Anger Expression-In than individuals exposed to MST + other adult sexual trauma.

There were significant associations between the report of anger expression with overall report of negative trauma-related cognitions. State Anger and Anger Expression-Out were positively associated with cognition subscales Negative Cognitions about Self and Negative Cognitions about the World. Trait Anger,

Anger Expression-In, and the Anger Expression Index were positively associated with all three cognition subscales, Negative Cognitions about Self, Negative Cognitions about the World, and Self Blame for the Trauma. Anger Control-Out and Anger Control-In were negatively associated with the report of Negative Cognitions of Self. These relationships were significant but the correlations were not high, suggesting that cognitions and anger are related but not representative of the same concept.

The model building analysis was used to determine the contribution of anger, cognitions, and sexual trauma history group in PTSD severity among individuals with MST. Negative Cognitions about Self and Negative Cognitions about the World as well as State Anger (and subscales, Feeling Angry and Expressing Anger Physically) and Anger Expression-In were significantly associated with PTSD severity score. In the model, only Feeling Angry was significant in explaining PTSD severity. State Anger and Negative Cognitions about Self were not significant but had trend-level p-values. State Anger and negative trauma-related cognitions about self are particularly important in determining the severity of PTSD related to MST.

Limitations of Study

One of the main limitations of the study was the small sample size of the male gender (N = 14) and the Hispanic ethnicity (N = 6) groups, especially for comparisons across gender and ethnic groups. Small sample sizes lead to reduced power in the ability to analyze differences across groups. It is also possible that small sample sizes can obscure existing differences that might otherwise be significant if sample sizes were larger.

Being that the sample included only participants with military sexual trauma (MST), who voluntarily participated in the study and were treatment-seeking, there is a limit to the generalizability of the findings. However, despite this limitation, the findings of this study are applicable and important among military veterans as MST is a unique traumatic event that affects this population. MST appears to be a very unique traumatic event that results in mental health outcomes that can differ greatly from mental health outcomes in the general public. However, this is important in understanding vulnerabilities among military personnel, even if the findings are not necessarily applicable to the general population.

A final possible limitation is that the majority of the data assessed in this study was based on self-report by the participants. Self-report data are not necessarily the most reliable, as biases in reporting are well known.

Implications

Despite the limitations of the study, the results provide support for the hypothesis that trauma-related cognitions and anger are important aspects of PTSD related to MST that may help the researcher and clinician to better understand and treat PTSD among patients.

Treatment Implications

The study findings provide support that demographic characteristics such as gender, ethnicity, and sexual trauma history group, are related to the manifestation of PTSD symptoms among individuals with PTSD related to MST. This evidence suggests that it is probable that providing treatment thataddresses elevation of symptoms specific to a demographic group may be useful in addressing severe PTSD sequelae. For example, given that negative cognitions related to PTSD on negative self beliefs and self-blame for the trauma were reported at a higher rate among individuals with sexual trauma history group involving childhood trauma in addition to MST, these individuals may benefit from augmented psychotherapy involving both cognitive behavioral therapy to address self-worth issues and exploratory therapy to address and process through the inception and development of these negative self beliefs. Cognitive Processing Therapy, which, as discussed in the literature review, is a treatment that is coming to the forefront of PTSD treatment for sexual trauma victims,

provides a strong building block on which to incorporate such symptom-matched treatments.

Moreover, aspects of anger were found to be manifested differently among individuals with PTSD related to MST on gender, ethnicity, and sexual trauma history group. This suggests that among individuals with PTSD from MST, anger plays an important role and should be a target of treatment. The additional finding that anger control is associated with reduced negative cognitions of self implies that teaching both inward and outward anger control may help to reduce negative cognitions of self and subsequently help to reduce PTSD severity. Much of the literature on anger-management suggests that anger-management therapy (a cognitive-behavioral therapy) helps to reduce anger symptoms but does not indicate whether the therapy helps to reduce symptoms of PTSD. The findings of this study help support the relationship between anger expression and PTSD and suggest that implementing anger-management or other forms of anger reduction in psychotherapy could help to reduce negative cognitions and PTSD severity, given the association between PTSD severity with anger and with trauma-related cognitions.

The identification of an anger-related PTSD cognition such as hostility, which is not independently addressed in the CPT treatment, is an additional implication of this study. CPT could perhaps improve its efficacy across all demographics (gender, ethnicity, and sexual trauma history group) by including a

session addressing both anger emotions and anger cognitions (such as hostility, rumination, resentment, and suspiciousness (Dyer et al, 2009; DiGuiseppe and Tafrate, 2007)) as related to the sexual trauma event. Alternatively, offering anger-management directed at increasing anger control and reducing anger emotions and cognitions in combination with or prior-to CPT could perhaps meet these treatment goals as well.

Assessment Implications

Following from the treatment implications, there are assessment implications that may be used independently or hand-in-hand with treatment efforts among individuals with PTSD related to MST. The PTCI identifies trauma-related cognitions in three domains, Negative Cognitions about Self, Negative Cognitions About the World, and Self-Blame for the Trauma. This study identified the need to operationalize an anger-cognition subscale in order to assess the manifestation and level of severity of anger cognitions among individuals with PTSD related to MST. Given the level of severity of anger emotions and cognitions related to trauma, and the overlap between these two domains in this study, the need for evaluating anger-cognitions appears to be important in this population. Recently, anger cognition scales and subscales such as the Angry Cognitions Scale (Martin and Dahlen, 2007), as well as the Angry Cognition subscale on the Novaco Anger Scale and Provocation Inventory (Novaco, 2003), the Hostility subscale on the Aggression Questionnaire (Buss and

Warren, 2000), and the cognition subscale on the Anger Disorders Scale (DiGuiseppe and Tafrate, 2007) have been developed. These scales and subscales could be used to assess anger-cognitions among individuals with PTSD related to MST prior to treatment to assess severity and to help direct therapy in the event that anger-management therapies are warranted. Alternatively, these scales could provide data from which to develop an anger cognition subscale to be incorporated in a trauma-related cognition scale like the PTCI, to more fully assess negative trauma-related cognitions among individuals with PTSD related to MST.

Regarding anger, the findings in this study provide further evidence that anger is associated with PTSD, and can be severe and debilitating in the context of PTSD. Subsequently, it would follow that the need to assess anger emotions (in addition to anger cognitions) is important among individuals with PTSD related to MST in order to identify areas of anger severity (such as expression or control of anger) and direct therapy to address these areas in order to reduce anger related to PTSD.

Finally, the findings from this study suggest that replication of this study should include larger sample sizes of males and ethnic minorities (Hispanics) in order to increase power and be able to detect differences across groups with more confidence.

Taken together, these treatment and assessment implications, such as the development of tailor-made treatments to address symptom-specific presentation, the use of anger and cognition assessments prior to treatment of PTSD from MST, if utilized, and the replication of this study with larger sample sizes to increase power, could improve clinicians' and researchers' abilities to better appraise PTSD disability related anger emotions and cognitions and negative trauma-related cognitions in order to direct treatment efforts toward addressing symptoms and sequelae of PTSD that are otherwise not directly focused upon in the treatment of PTSD related to MST. These efforts could likely improve treatment of PTSD from MST and result in more significant research outcomes that could help guide treatment among individuals with PTSD related to MST.

APPENDIX A
Tables

Table 1: Demographic Data

Categorical Variables	N (%) Sample size	Gender χ^2 (p-value)	Ethnicity χ^2 (p-value)	Sexual Trauma Hx χ^2 (p-value)
GENDER Male Female	 14 (10.8) 116 (89.2)	N/A	5.101 (0.078)	2.671 (0.263)
ETHNICITY Caucasian African American Hispanic Other (not included in analysis)	 51 (39.2) 56 (43.1) 6 (4.6) 17 (13.1)	5.101 (0.078)	N/A	7.952 (0.093)
SEXUAL TRAUMA HISTORY GROUP MST Only MST + Other Adult Sexual Trauma only MST + Childhood Sexual Trauma	 21 (16.2) 25 (19.2) 83 (63.8)	2.671 (0.263)	7.952 (0.093)	N/A
MARITAL STATUS Never Married Married Co-Habiting Separated Divorced Widowed	 16 (12.3) 28 (21.5) 5 (3.8) 17 (13.1) 57 (43.8) 7 (5.4)	6.988 (0.221)	9.452 (0.490)	14.719 (0.143)
EMPLOYMENT STATUS Employed Full-Time Employed Part-time Retired Unemployed Other (Disabled, Student, Volunteer, Other Activities)	 36 (27.7) 12 (9.2) 13 (10.0) 50 (38.5) 19 (14.6)	5.411 (0.248)	14.865 (0.062)	11.252 (0.188)
Continuous Variables	$\bar{x}$ (stdev) {range}	Gender t-test (p-value)	Ethnicity ANOVA (p-value)	Sexual Trauma Hx ANOVA (p-value)
AGE	45.7 (9.3) {24,68}	-1.629 (0.106)	1.373 (0.258)	2.418 (0.093)
YEARS OF EDUCATION	14.3 (2.1) {10,20}	2.142 (0.034)*	0.560 (0.573)	1.079 (0.343)

*Significant at the 0.05 level

Means and Standard Deviations for Gender, Ethnicity, and Sexual Trauma History Group on PTCI, STAXI, and CAPS

Table 2: Descriptive Statistics for Gender on PTCI

PTCI Subscale	Gender	N	Mean	Std. Deviation	Std. Error Mean	t (p-value)
Negative Cognitions of Self	Female	116	4.26	1.211	.112	
	Male	14	4.74	1.083	.289	-1.412 (0.160)
Negative Cognitions about the World	Female	116	5.68	1.025	.095	
	Male	14	5.91	1.002	.268	-0.798 (0.426)
Self Blame for the Trauma	Female	116	3.79	1.616	.150	
	Male	14	4.04	1.589	.425	-0.551 (0.583)
Total PTCI Score	Female	116	144.03	34.893	3.240	
	Male	14	155.93	27.941	7.467	-1.227 (0.222)

Table 3: Descriptive Statistics for Ethnicity on PTCI

PTCI Subscale	Ethnicity	N	Mean	Std. Deviation	Std. Error	F (p-value)
Negative Cognitions of Self	Caucasian	51	4.28	1.132	.158	
	African American	56	4.25	1.303	.174	
	Hispanic	6	4.22	.838	.342	
	Total	11	4.26	1.199	.113	0.016 (0.984)
Negative Cognitions about the World	Caucasian	51	5.64	.878	.123	
	African American	56	5.80	1.077	.144	
	Hispanic	6	5.21	1.241	.507	
	Total	11	5.69	1.001	.094	1.067 (0.348)
Self Blame for the Trauma	Caucasian	51	3.85	1.679	.235	
	African American	56	3.74	1.538	.206	
	Hispanic	6	3.73	1.628	.665	
	Total	11	3.79	1.594	.150	0.068 (0.934)
Total PTCI Score	Caucasian	51	144.08	32.216	4.511	
	African American	56	144.64	36.963	4.939	
	Hispanic	6	140.00	21.982	8.974	
	Total	11	144.14	34.013	3.200	0.050 (0.951)

Table 4: Descriptive Statistics for Sexual Trauma History Group on PTCI

PTCI Subscale	Sexual Trauma History Group	N	Mean	Std. Deviation	Std. Error	F (p-value)
Negative Cognitions of Self	MST Only	21	4.53	.880	.192	
	MST + Other Adult Sexual Trauma	25	3.74	1.507	.301	
	MST + Childhood Trauma	83	4.44	1.130	.124	
	Total	129	4.32	1.203	.106	3.824 (0.024)*
Negative Cognitions about the World	MST Only	21	5.83	.927	.202	
	MST + Other Adult Sexual Trauma	25	5.44	1.147	.229	
	MST + Childhood Trauma	83	5.76	1.000	.110	
	Total	129	5.71	1.020	.090	1.133 (0.325)
Self Blame for the Trauma	MST Only	21	3.75	1.506	.329	
	MST + Other Adult Sexual Trauma	25	3.14	1.713	.343	
	MST + Childhood Trauma	83	4.07	1.535	.169	
	Total	129	3.84	1.595	.140	3.415 (0.036)*
Total PTCI Score	MST Only	21	150.43	25.445	5.553	
	MST + Other Adult Sexual Trauma	25	128.08	42.106	8.421	
	MST + Childhood Trauma	83	149.75	32.171	3.531	
	Total	129	145.66	34.228	3.014	4.304 (0.016)*

*Significant at the 0.05 level

Table 5: Descriptive Statistics for Gender on STAXI-2

	Gender	N	Mean	Std. Deviation	Std. Error	t (p-value)
State Anger	Female	116	24.24	10.808	1.003	
	Male	14	25.29	11.248	3.006	-0.340 (0.734)
Feeling Angry	Female	116	9.42	4.229	.393	
	Male	14	10.29	4.177	1.116	-0.722 (0.471)
Feel Like Express Anger Verbally	Female	116	8.18	4.417	.410	
	Male	14	8.43	4.345	1.161	-0.198 (0.843)
Feel Like Express Anger Physically	Female	116	6.64	3.277	.304	
	Male	14	6.57	3.673	.982	0.071 (0.944)
Trait Anger	Female	116	20.72	7.148	.664	
	Male	14	23.86	6.815	1.821	-1.556 (0.122)
Angry Temperament	Female	116	7.55	3.547	.329	
	Male	14	8.43	3.204	.856	-0.882 (0.379)
Angry Reaction	Female	116	9.37	3.440	.319	
	Male	14	11.14	3.231	.864	-1.832 (0.069)
Anger Expression Out	Female	116	15.97	5.304	.492	
	Male	14	18.36	5.078	1.357	-1.595 (0.113)
Anger Expression In	Female	116	19.70	5.008	.465	
	Male	14	23.29	4.548	1.215	-2.555 (0.012)*
Anger Control Out	Female	116	21.91	5.494	.510	
	Male	14	19.36	5.917	1.582	1.632 (0.105)
Anger Control In	Female	116	22.11	5.342	.496	
	Male	14	22.07	6.044	1.615	0.027 (0.979)
Anger Expression Index	Female	116	39.65	14.967	1.390	
	Male	14	48.21	16.498	4.409	-2.002 (0.047)*

*Significant at the 0.05 level

Table 6: Descriptive Statistics for Ethnicity on STAXI-2

STAXI-2 Scale/Subscale	Ethnicity	N	Mean	Std. Deviation	Std. Error	F (p-value)
State Anger	Caucasian	51	20.82	8.364	1.171	
	African American	56	27.21	12.192	1.629	
	Hispanic	6	28.33	10.172	4.153	
	Total	113	24.39	10.930	1.028	5.363 (0.006)*
Feeling Angry	Caucasian	51	8.10	3.494	.489	
	African American	56	10.54	4.456	.595	
	Hispanic	6	11.33	4.457	1.820	
	Total	113	9.48	4.207	.396	5.508 (0.005)*
Feel Like Express Anger Verbally	Caucasian	51	6.98	3.575	.501	
	African American	56	9.14	4.803	.642	
	Hispanic	6	9.50	3.209	1.310	
	Total	113	8.19	4.325	.407	3.811 (0.025)*
Feel Like Express Anger Physically	Caucasian	51	5.75	2.048	.287	
	African American	56	7.54	4.186	.559	
	Hispanic	6	7.50	3.507	1.432	
	Total	113	6.73	3.439	.324	3.980 (0.021)*
Trait Anger	Caucasian	51	20.67	7.118	.997	
	African American	56	21.73	7.489	1.001	
	Hispanic	6	21.83	7.468	3.049	
	Total	113	21.26	7.276	.684	0.302 (0.740)
Angry Temperament	Caucasian	51	7.61	3.573	.500	
	African American	56	8.04	3.727	.498	
	Hispanic	6	7.00	2.608	1.065	
	Total	113	7.79	3.592	.338	0.338 (0.714)
Angry Reaction	Caucasian	51	9.65	3.352	.469	
	African American	56	9.39	3.637	.486	
	Hispanic	6	10.67	3.559	1.453	
	Total	113	9.58	3.487	.328	0.377 (0.687)
Anger Expression Out	Caucasian	51	16.08	5.122	.717	
	African American	56	17.09	5.715	.764	
	Hispanic	6	15.17	3.656	1.493	
	Total	113	16.53	5.357	.504	0.677 (0.510)
Anger Expression In	Caucasian	51	20.63	5.314	.744	
	African American	56	19.55	4.936	.660	
	Hispanic	6	20.50	6.317	2.579	
	Total	113	20.09	5.161	.485	0.594 (0.554)
Anger Control Out	Caucasian	51	22.47	5.877	.823	
	African American	56	20.25	5.285	.706	
	Hispanic	6	20.33	3.777	1.542	
	Total	113	21.26	5.567	.524	2.260 (0.109)
Anger Control In	Caucasian	51	22.73	5.296	.742	
	African American	56	21.41	5.745	.768	
	Hispanic	6	20.50	3.017	1.232	
	Total	113	21.96	5.447	.512	1.004 (0.370)
Anger Expression Index	Caucasian	51	39.51	16.339	2.288	
	African American	56	42.98	15.221	2.034	
	Hispanic	6	42.83	7.441	3.038	
	Total	113	41.41	15.441	1.453	0.698 (0.500)

*Significant at the 0.05 level

Table 7: Descriptive Statistics for Sexual Trauma History Group on STAXI-2

STAXI-2 Scales/Subscales	Sexual Trauma Hx Group	N	Mean	Std. Deviation	Std. Error	F (p-value)
State Anger	MST Only	21	26.67	10.331	2.254	
	MST + Other Adult Sexual Trauma	25	24.32	10.846	2.169	
	MST + Childhood Trauma	83	23.82	11.036	1.211	
	Total	129	24.38	10.854	.956	0.573 (0.565)
Feeling Angry	MST Only	21	11.05	4.043	.882	
	MST + Other Adult Sexual Trauma	25	9.48	4.445	.889	
	MST + Childhood Trauma	83	9.13	4.175	.458	
	Total	129	9.51	4.232	.373	1.737 (0.180)
Feel Like Express Anger Verbally	MST Only	21	8.67	4.408	.962	
	MST + Other Adult Sexual Trauma	25	8.48	4.593	.919	
	MST + Childhood Trauma	83	8.04	4.391	.482	
	Total	129	8.22	4.406	.388	0.221(0.802)
Feel Like Express Anger Physically	MST Only	21	6.95	3.201	.699	
	MST + Other Adult Sexual Trauma	25	6.36	3.108	.622	
	MST + Childhood Trauma	83	6.65	3.434	.377	
	Total	129	6.64	3.316	.292	0.180 (0.835)
Trait Anger	MST Only	21	22.95	8.375	1.828	
	MST + Other Adult Sexual Trauma	25	19.84	8.518	1.704	
	MST + Childhood Trauma	83	20.98	6.382	.701	
	Total	129	21.08	7.179	.632	1.098 (0.337)
Angry Temperament	MST Only	21	8.52	4.308	.940	
	MST + Other Adult Sexual Trauma	25	6.84	3.412	.682	
	MST + Childhood Trauma	83	7.69	3.320	.364	
	Total	129	7.66	3.521	.310	1.319 (0.271)
Angry Reaction	MST Only	21	10.10	3.604	.787	
	MST + Other Adult Sexual Trauma	25	9.12	4.106	.821	
	MST + Childhood Trauma	83	9.57	3.239	.356	
	Total	129	9.57	3.464	.305	0.448 (0.640)
Anger Expression Out	MST Only	21	18.24	5.957	1.300	
	MST + Other Adult Sexual Trauma	25	16.04	5.119	1.024	
	MST + Childhood Trauma	83	15.78	5.180	.569	
	Total	129	16.23	5.333	.470	1.819 (0.166)
Anger Expression In	MST Only	21	21.38	5.296	1.156	
	MST + Other Adult Sexual Trauma	25	18.16	4.997	.999	
	MST + Childhood Trauma	83	20.36	4.957	.544	
	Total	129	20.10	5.085	.448	2.663 (0.074)
Anger Control Out	MST Only	21	19.62	5.249	1.145	
	MST + Other Adult Sexual Trauma	25	22.20	5.041	1.008	
	MST + Childhood Trauma	83	21.94	5.775	.634	
	Total	129	21.61	5.588	.492	1.633 (0.199)
Anger Control In	MST Only	21	20.48	5.154	1.125	
	MST + Other Adult Sexual Trauma	25	22.48	5.189	1.038	
	MST + Childhood Trauma	83	22.33	5.486	.602	
	Total	129	22.05	5.383	.474	1.087 (0.340)
Anger Expression Index	MST Only	21	47.52	17.040	3.718	
	MST + Other Adult Sexual Trauma	25	37.52	16.346	3.269	
	MST + Childhood Trauma	83	39.88	14.207	1.559	
	Total	129	40.67	15.324	1.349	2.817 (0.064)

Table 8: Descriptive Statistics for Gender on CAPS

CAPS Scale	Gender	N	Mean	Std. Deviation	Std. Error	t (p-value)
Total CAPS	Female	116	84.84	14.873	1.381	
	Male	14	86.79	13.667	3.653	-0.465 (0.643)
Re-experiencing (Cluster B)	Female	116	22.77	6.179	.574	
Freq + Intense	Male	14	24.57	6.768	1.809	-1.022 (0.309)
Avoidance (Cluster C)	Female	116	34.72	7.674	.712	
Freq + Intense	Male	14	35.00	6.064	1.621	-0.134 (0.894)
Arousal (Cluster D)	Female	116	26.73	5.300	.492	
Freq + Intense	Male	14	27.21	5.309	1.419	-0.321 (0.749)

Table 9: Descriptive Statistics for Ethnicity on CAPS

CAPS Scale	Ethnicity	N	Mean	Std. Dev.	Std. Error	F (p-value)
Total CAPS	Caucasian	51	84.35	14.929	2.090	
	African American	56	83.88	12.953	1.731	
	Hispanic	6	95.50	12.582	5.136	
	Total	113	84.71	13.986	1.316	1.934 (0.149)
Re-experiencing (Cluster B)	Caucasian	51	23.75	6.499	.910	
	African American	56	21.98	5.175	.692	
	Hispanic	6	25.33	5.645	2.305	
	Total	113	22.96	5.873	.552	1.745 (0.179)
Avoidance (Cluster C)	Caucasian	51	33.75	8.124	1.138	
	African American	56	34.45	6.641	.887	
	Hispanic	6	39.33	11.290	4.609	
	Total	113	34.39	7.636	.718	1.452 (0.238)
Arousal (Cluster D)	Caucasian	51	26.06	4.974	.696	
	African American	56	27.45	4.775	.638	
	Hispanic	6	27.67	4.676	1.909	
	Total	113	26.83	4.870	.458	1.181 (0.149)

Table 10: Descriptive Statistics for Sexual Trauma History Group on CAPS (PTSD Severity)

CAPS (PTSD Severity) Scale	Sexual Trauma History Group	N	Mean	Std. Dev.	Std. Error	F (p-value)
Total CAPS	MST only	21	86.10	13.069	2.852	
	MST + other adult sexual trauma	25	83.20	14.048	2.810	
	MST + childhood sexual trauma	83	85.23	15.442	1.695	
	Total	129	84.98	14.741	1.298	0.251 (0.778)
Re-experiencing (Cluster B)	MST only	21	23.24	5.394	1.177	
	MST + other adult sexual trauma	25	22.12	4.927	.985	
	MST + childhood sexual trauma	83	23.11	6.836	.750	
	Total	129	22.94	6.261	.551	0.265 (0.768)
Avoidance (Cluster C)	MST only	21	35.38	7.473	1.631	
	MST + other adult sexual trauma	25	35.44	5.796	1.159	
	MST + childhood sexual trauma	83	34.30	8.003	.878	
	Total	129	34.70	7.506	.661	0.322 (0.726)
Arousal (Cluster D)	MST only	21	27.48	4.203	.917	
	MST + other adult sexual trauma	25	25.64	5.894	1.179	
	MST + childhood sexual trauma	83	26.94	5.372	.590	
	Total	129	26.78	5.302	.467	0.794 (0.454)

Table 11: Correlations between Cognition Scales and Anger Scales

STAXI-2 Scale/Subscale		Neg. Cogs of Self	Neg. Cogs of World	Self Blame for trauma	Total (neg. cogs) PTCI score
State Anger	Pearson Correlation	.357(**)	.365(**)	.039	.344(**)
	Sig. (2-tailed)	.000	.000	.657	.000
	N	130	130	130	130
Feeling Angry	Pearson Correlation	.359(**)	.352(**)	.022	.340(**)
	Sig. (2-tailed)	.000	.000	.807	.000
	N	130	130	130	130
Feel Like Express Anger Verbally	Pearson Correlation	.293(**)	.314(**)	.049	.287(**)
	Sig. (2-tailed)	.001	.000	.576	.001
	N	130	130	130	130
Feel Like Express Anger Physically	Pearson Correlation	.323(**)	.329(**)	.035	.311(**)
	Sig. (2-tailed)	.000	.000	.689	.000
	N	130	130	130	130
Trait Anger	Pearson Correlation	.475(**)	.482(**)	.184(*)	.482(**)
	Sig. (2-tailed)	.000	.000	.036	.000
	N	130	130	130	130
Angry Temperament	Pearson Correlation	.378(**)	.412(**)	.118	.387(**)
	Sig. (2-tailed)	.000	.000	.180	.000
	N	130	130	130	130
Angry Reaction	Pearson Correlation	.413(**)	.393(**)	.183(*)	.416(**)
	Sig. (2-tailed)	.000	.000	.037	.000
	N	130	130	130	130
Anger Expression Out	Pearson Correlation	.302(**)	.350(**)	.167	.322(**)
	Sig. (2-tailed)	.000	.000	.057	.000
	N	130	130	130	130
Anger Expression In	Pearson Correlation	.444(**)	.380(**)	.260(**)	.447(**)
	Sig. (2-tailed)	.000	.000	.003	.000
	N	130	130	130	130
Anger Control Out	Pearson Correlation	-.252(**)	-.131	-.123	-.241(**)
	Sig. (2-tailed)	.004	.137	.162	.006
	N	130	130	130	130
Anger Control In	Pearson Correlation	-.242(**)	-.044	-.114	-.208(*)
	Sig. (2-tailed)	.006	.619	.197	.017
	N	130	130	130	130
Anger Expression Index	Pearson Correlation	.428(**)	.310(**)	.229(**)	.421(**)
	Sig. (2-tailed)	.000	.000	.009	.000
	N	130	130	130	130

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 12: Correlations between Total CAPS (PTSD Severity) Score and variables related to Cognitions, Anger, and Sexual Trauma History Group

Trauma Cognition Variable		Correlation with Total CAPS Score	Anger Scale Variable (cont.)		Correlation with Total CAPS Score
Total PTCI Score	Pearson Correlation	.313(**)	Trait Anger	Pearson Correlation	.162
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.065
	N	130		N	130
Negative Cognitions about Self	Pearson Correlation	.339(**)	Angry Temperament	Pearson Correlation	.158
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.073
	N	130		N	130
Negative Cognitions about the World	Pearson Correlation	.272(**)	Angry Reaction	Pearson Correlation	.144
	Sig. (2-tailed)	.002		Sig. (2-tailed)	.103
	N	130		N	130
Self Blame for the Trauma	Pearson Correlation	.054	Anger Expression Out	Pearson Correlation	.081
	Sig. (2-tailed)	.541		Sig. (2-tailed)	.362
	N	130		N	130
Anger Scale Variable		**Correlation with Total CAPS Score**	Anger Expression In	Pearson Correlation	.180(*)
				Sig. (2-tailed)	.040
				N	130
State Anger	Pearson Correlation	.201(*)	Anger Control Out	Pearson Correlation	-.024
	Sig. (2-tailed)	.022		Sig. (2-tailed)	.783
	N	130		N	130
Feeling Angry	Pearson Correlation	.257(**)	Anger Control In	Pearson Correlation	-.047
	Sig. (2-tailed)	.003		Sig. (2-tailed)	.598
	N	130		N	130
Feel Like Express Anger Verbally	Pearson Correlation	.105	Anger Expression Index	Pearson Correlation	.113
	Sig. (2-tailed)	.233		Sig. (2-tailed)	.201
	N	130		N	130
Feel Like Express Anger Physically	Pearson Correlation	.190(*)	**Sexual Trauma History Group**	Pearson Correlation	-.002
	Sig. (2-tailed)	.031		Sig. (2-tailed)	.984
	N	130		N	129

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

APPENDIX B
Model Building Statistics

Model 1 and 2 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.411(a)	.169	.121	13.820
2	.436(b)	.190	.083	14.116

ANOVA(c)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4704.078	7	672.011	3.518	.002(a)
	Residual	23110.853	121	190.999		
	Total	27814.930	128			
2	Regression	5297.254	15	353.150	1.772	.047(b)
	Residual	22517.676	113	199.271		
	Total	27814.930	128			

a Predictors: (Constant), Anger Expression In, Feel Like Express Anger Physically, Negative cognitions about the World, Negative cognitions about Self, Feeling Angry, State Anger, Total PTCI (negative cognitiions) Score

b Predictors: (Constant), Anger Expression In, Feel Like Express Anger Physically, Negative cognitions about the world, Negative cognitions about self, Feeling Angry, State Anger, Total PTCI (negative cognitions) score, Sexual trauma history group, Anger Control Out, Angry Reaction, Anger Expression Out, Angry Temperament, Anger Control In, Self Blame for the trauma, Trait Anger

c Dependent Variable: Total CAPS

Coefficients(a)

Model	Variables/Scales	Unstandardized Coeff.		Standardized Coeff.	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.534	7.650		8.305	.000*
	TotalPTCI	-.228	.199	-.528	-1.143	.255
	Negative Cognitions about Self	8.621	5.101	.704	1.690	.094
	Negative cognitions about the world	2.053	2.087	.142	.984	.327
	State Anger	-.766	.467	-.564	-1.641	.103
	Feeling Angry	1.558	.769	.447	2.026	.045*
	Feel Like Express Anger Physically	1.164	.951	.262	1.224	.223
	Anger Expression In	.088	.273	.030	.321	.749
2	(Constant)	56.657	11.902		4.760	.000*
	Total PTCI (negative cognitions)	-.264	.789	-.614	-.335	.738
	Negative cognitions about Self	9.644	16.511	.787	.584	.560
	Negative cognitions about the World	1.938	5.844	.134	.332	.741
	State Anger	-.676	.510	-.498	-1.326	.187
	Feeling Angry	1.530	.840	.439	1.822	.071
	Feel Like Express Anger Physically	1.196	1.035	.269	1.155	.251
	Anger Expression In	.053	.319	.018	.166	.869
	Self Blame for the trauma	.368	3.571	.040	.103	.918
	Sexual trauma history group	-.107	1.757	-.006	-.061	.951
	Trait Anger	-1.025	1.152	-.499	-.889	.376
	Angry Temperament	1.589	1.384	.380	1.148	.253
	Angry Reaction	1.108	1.372	.260	.808	.421
	Anger Expression Out	-.141	.348	-.051	-.407	.685
	Anger Control Out	.279	.400	.106	.698	.486
	Anger Control In	.043	.405	.016	.107	.915

a Dependent Variable: Total CAPS

Excluded Variables(c)

Model	Variables/Scales	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Self Blame for the trauma	.042(a)	.114	.909	.010	.051
	Sexual trauma history group	.026(a)	.297	.767	.027	.931
	Feel Like Express Anger Verbally	.(a)	.	.	.	.000
	Trait Anger	-.056(a)	-.529	.598	-.048	.617
	Angry Temperament	-.018(a)	-.185	.854	-.017	.735
	Angry Reaction	-.027(a)	-.259	.796	-.024	.643
	Anger Expression Out	-.079(a)	-.809	.420	-.074	.723
	Anger Control Out	.108(a)	1.197	.234	.109	.834
	Anger Control In	.091(a)	.977	.330	.089	.786
	Anger Expression Index	-.129(a)	-1.213	.227	-.110	.605
2	Feel Like Express Anger Verbally	.(b)	.	.	.	.000
	Anger Expression Index	.(b)	.	.	.	.000

a Predictors in the Model: (Constant), Anger Expression In, Feel Like Express Anger Physically, Negative cognitions about the World, Negative cognitions about Self, Feeling Angry, State Anger, Total (negative cognitions) PTCI score

b Predictors in the Model: (Constant), Anger Expression In, Feel Like Express Anger Physically, Negative cognitions about the World, Negative cognitions about Self, Feeling Angry, State Anger, Total (negative cogntions) PTCI score, Sexual trauma history group, Anger Control Out, Angry Reaction, Anger Expression Out, Angry Temperament, Anger Control In, Self Blame for the trauma, Trait Anger

c Dependent Variable: Total CAPS

Model 3 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.412(a)	.169	.114	13.876

ANOVA(b)

Model		Sum of Squares	Df	Mean Square	F	Sig.
3	Regression	4710.549	8	588.819	3.058	.004(a)
	Residual	23104.381	120	192.537		
	Total	27814.930	128			

a Predictors: (Constant), Sexual trauma history group*negative cognitions total score, Feeling Angry, Anger Expression In, Negative cognitions about the World, Feel Like Express Anger Physically, Negative cognitions about Self, State Anger, Total (negative cognitions) PTCI score
b Dependent Variable: Total CAPS (PTSD Severity)

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3	(Constant)	63.558	7.682		8.274	.000*
	Total (negative cognitions) PTCI	-.237	.207	-.551	-1.147	.253
	Negative cognitions about Self	8.712	5.146	.711	1.693	.093
	Negatvie cognitions about the World	2.079	2.101	.144	.990	.324
	State Anger	-.767	.469	-.565	-1.637	.104
	Feeling Angry	1.575	.778	.452	2.025	.045*
	Feel Like Express Anger Physically	1.155	.956	.260	1.208	.229
	Anger Expression In	.089	.274	.031	.324	.747
	Sexual trauma group*total negative cognitions	.002	.011	.020	.183	.855

a Dependent Variable: Total CAPS (PTSD severity) score
* significant at a 0.05 level

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