

PHYSICAL, EMOTIONAL, AND COGNITIVE MEDIATORS OF
THERAPEUTIC EXPECTATIONS FOR TREATING PTSD
RELATED TO MILITARY SEXUAL TRAUMA

APPROVED BY SUPERVISORY COMMITTEE

Alina Surís, Ph.D., ABPP

Michael Businelle, Ph.D.

Heidi Koehler, Ph.D., ABPP

Lisa Thoman, Ph.D.

Reed Robinson, Ph.D.

DEDICATION

To Abdulhadi and Alina

PHYSICAL, EMOTIONAL, AND COGNITIVE MEDIATORS OF
THERAPEUTIC EXPECTATIONS FOR TREATING PTSD
RELATED TO MILITARY SEXUAL TRAUMA

by

ANNIA WAHEED RAJA

DISSERTATION

Presented to the Faculty of the Graduate School of Biomedical Sciences

The University of Texas Southwestern Medical Center at Dallas

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

The University of Texas Southwestern Medical Center at Dallas

Dallas, Texas

May 2017

Copyright

by

Annia Waheed Raja, B.A., 2017

All Rights Reserved

ACKNOWLEDGEMENTS

I want to first express my deep gratitude and admiration for Dr. Alina Surís, who can only be described as the best research mentor and dissertation chair I could ever have. Thank you for your tireless support throughout my time in graduate school in both professional and personal arenas. Through your mentorship, you have proven to be a paragon for what it means to be a rigorous researcher and masterful clinician. I am grateful beyond words for your insight, encouragement, kindness, and guidance. Your role in my graduate school career, dissertation and beyond, has transformed my professional, intellectual, and personal development as a psychologist in innumerable ways.

I also owe a debt of gratitude to Dr. Michael Businelle, whose guidance in all matters of my dissertation, statistical and otherwise, has been indispensable. Thank you for staying by my side throughout this process and making yourself available for all of my questions, no matter their essential or trivial nature. I am profoundly grateful for your statistical expertise—this dissertation would not have turned out the way it did without your involvement. Thank you for your discerning eye on all drafts of my dissertation. I am also deeply appreciative of the scaffolding and reassurances you provided in moments where I felt stumped or lost—you have helped me realize that I am capable of understanding more about statistics and modeling than I initially thought.

Many thanks go to the rest of my dissertation committee. To Dr. Heidi Koehler, thank you for your clinical expertise and sage wisdom on all matters related to military sexual trauma, for which I am appreciative not only with this dissertation, but also in my clinical work at the VA. Thank you to Dr. Lisa Thoman for the indispensable editorial input, direct

expertise on methodology and study design, and warm support. To Dr. Reed Robinson, I want to express thanks for his probing comments and questions, which helped to deepen the intellectual rigor of this dissertation, as well as for his professional mentorship and support of my goals as a future clinician.

I also want to express thanks and appreciation for several key individuals who have contributed in profound and unique ways to my graduate training. Thank you to my clinical supervisors—Drs. Haley Downing, Angelica Tratter, Sandra Pitts, Paula Miltenberger, Mary Ann Little, and Wendy Ringe. I cannot express enough how grateful I am for each of your contributions to my clinical training and growth, as well as for your unflagging support and warmth beyond my clinical work. I want to thank Dr. Michael Gottlieb for his intellectual prowess and biting wit, which undeniably fueled his feedback “Damn! You write very well” taking on a life of its own and thus sowing the seeds of confidence and ethical conviction for one of my proudest moments of professional and personal accomplishment. Special thanks go to Drs. Betsy Kennard, Monty Evans, and Richard Robinson for everything they have done for me throughout my time at UT Southwestern. Your support, understanding, kindness, and mentorship are never forgotten. And special thanks go to Drs. N.M.F., D.R. and C.O. for bearing witness, being by my side, and seeing me through—I am overwhelmingly and enduringly transformed for the better because of you, and words do not suffice in expressing how indebted I am to each of you.

Lastly, I want to thank my family, my friends, my feline fur bebe, and my husband. None of this would mean anything without you.

PHYSICAL, EMOTIONAL, AND COGNITIVE MEDIATORS OF
THERAPEUTIC EXPECTATIONS FOR TREATING PTSD
RELATED TO MILITARY SEXUAL TRAUMA

Annia Waheed Raja, Ph.D.

The University of Texas Southwestern Medical Center at Dallas, 2017

Alina Surís, Ph.D., ABPP

PTSD due to military sexual trauma affects both male and female Veterans, and Veterans with MST-related PTSD contend with a host of physical, emotional, and cognitive sequelae. Evidence-based treatments for MST-related PTSD broadly focus on reducing symptoms by increased exposure and/or emotional processing of physical, emotional, and cognitive triggers. However, given the high treatment dropout rates for Veterans with PTSD and given that avoidance symptoms are most predictive of a PTSD diagnosis for Veterans with MST, research suggests that it may be important to understand the role of pretreatment symptoms and therapeutic expectations for Veterans seeking treatment for PTSD related to MST. This study investigated whether physical, emotional, and cognitive variables mediated the relationship between pre-treatment PTSD severity and therapeutic expectations for Veterans seeking Cognitive Processing Therapy or Present-Centered Therapy for PTSD due to MST. Additionally, this study examined whether the relationship between pre-treatment therapeutic expectations and change in PTSD severity (pre-post treatment) was moderated by treatment type. Results indicated that the relationship between pre-treatment PTSD severity and therapeutic expectations was significantly mediated, within separate models, by posttraumatic cognitions and suicide-related cognitions. Results did not indicate significant moderation by treatment type of the relationship between pre-treatment therapeutic expectations and change in PTSD severity. Clinical implications for significant findings include recommendations for assessing posttraumatic cognitions before, during, and after treatment, bolstering hopefulness and strengthening the therapeutic alliance prior to commencing treatment, and directly addressing interpersonal factors for Veterans with greater PTSD severity and/or lower therapeutic expectations prior to treatment.

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION.....	1
CHAPTER II: BACKGROUND AND LITERATURE REVIEW	4
Posttraumatic Stress Disorder (PTSD) diagnosis	4
DSM-IV-TR diagnostic criteria	5
DSM-5 diagnostic criteria.....	7
PTSD prevalence	11
Risk factors for developing PTSD	14
PTSD and the military	17
Military Sexual Trauma (MST)	20
MST risk factors	23
Consequences of MST	27
Physical consequences of MST	27
Social consequences of MST	29
Psychological consequences of MST.....	31
Emotional consequences of MST	33
Cognitive consequences of MST	37
PTSD treatment.....	40
Cognitive Processing Therapy (CPT)	41
Therapeutic expectations	44
CHAPTER III: METHODOLOGY	51
Study design.....	51
Sample recruitment	51
Inclusion criteria	53
Exclusion criteria	53
Procedure	54
Measures	55
Demographic information.....	55
PTSD severity	55
Therapeutic expectations	56
Quality of life.....	57
Physical health	57
Anger.....	58
Depression.....	58
Posttraumatic cognitions.....	59
Suicide-related cognitions.....	59
Mediation and moderation—an overview	60
Hypotheses.....	61
Physical functioning—Models P1 and P2	62

Model P1: quality of life	62
Model P2: physical health.....	63
Emotional functioning—Models E1 and E2	63
Model E1: anger.....	64
Model E2: depression	64
Cognitive functioning—Models C1 and C2	65
Model C1: posttraumatic cognitions.....	65
Model C2: suicide-related cognitions	66
Moderation by treatment type: Model T1	66
 CHAPTER IV: RESULTS	 68
Demographics	68
Description of statistical analyses.....	69
Primary analyses	70
Secondary analyses	71
Model P1—quality of life	72
Primary analysis.....	73
Secondary analyses	73
Model P2—physical health.....	73
Primary analysis.....	73
Secondary analyses	73
Model E1—anger.....	74
Primary analysis.....	74
Secondary analyses	74
Model E2—depression.....	74
Primary analysis.....	74
Secondary analyses	74
Model C1—posttraumatic cognitions	75
Primary analysis.....	75
Secondary analyses	75
Model C2—suicide-related cognitions	76
Primary analysis.....	76
Secondary analyses	76
Model T1—moderation by treatment type	78
 CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS	 79
Findings and conclusions	80
Model P1—quality of life	80
Model P2—physical health.....	81
Model E1—anger.....	83
Model E2—depression.....	84
Model C1—posttraumatic cognitions	85

Model C2—suicide-related cognitions	88
Model T1—moderation by treatment type	92
Study limitations	94
Implications.....	95
TABLE ONE: DEMOGRAPHICS.....	100
REFERENCES	101

PRIOR PUBLICATIONS

- Raja, A. (2016). Ethical Considerations for Therapists Working With Demographically Similar Clients. *Ethics & Behavior*, 26(8), 678-687. doi: 10.1080/10508422.2015.1113133.
- Mullen, K., Holliday, R., Morris, E., Raja, A., & Surís, A. (2014). Cognitive processing therapy for male veterans with military sexual trauma-related posttraumatic stress disorder. *Journal of Anxiety Disorders*, 28(8), 761-764. doi: 10.1016/j.janxdis.2014.09.004.
- Lewis, D.M., Conroy-Beam, D., Al-Shawaf, L., Raja, A.W., Buss, D.M., & DeKay, W.T. (2011). Friends with Benefits: Ultimate Functions and Proximate Psychology of Same-Sex and Opposite-Sex Friendship. *Evolutionary Psychology*, 9(4): 543-563.

LIST OF FIGURES

FIGURE 1	62
FIGURE 2	63
FIGURE 3	63
FIGURE 4	64
FIGURE 5	65
FIGURE 6	66
FIGURE 7	66
FIGURE 8	69
FIGURE 9	70
FIGURE 10	71
FIGURE 11	75
FIGURE 12	76

LIST OF TABLES

TABLE ONE: DEMOGRAPHICS.....	98
------------------------------	----

CHAPTER I

INTRODUCTION

Female Veterans are about 20 times more likely to have experienced military sexual trauma (MST) than male Veterans, and they are also nine times more likely to develop Posttraumatic Stress Disorder (PTSD) than female Veterans without sexual assault histories (Surís, Lind, Kashner, Borman, & Petty, 2004). The three symptom clusters for the DSM-IV-TR diagnostic criteria each contain a variety of physical, emotional, and cognitive symptoms (American Psychiatric Association, 2000), and accordingly, current evidence-based treatments for PTSD such as Cognitive Processing Therapy (CPT), Prolonged Exposure (PE), and Present-Centered Therapy (PCT) are targeted to address symptoms through increased exposure to and/or processing of physical, emotional, and cognitive triggers (Steenkamp, Litz, Hoge, & Marmar, 2015). Given the direct, involved approach of these treatment modalities, Veterans who have PTSD due to military sexual trauma often report difficulties in engaging with trauma-focused work in part due to fears that treatment will exacerbate, not alleviate, posttraumatic symptoms (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008; van Minnen, Arntz, & Keijsers, 2002). Consequently, willingness to engage in trauma-focused treatment and treatment dropout are particularly concerning for Veterans who have MST-related PTSD (Cook, Thompson, Harb, & Ross, 2013; Schottenbauer, et al., 2008), with treatment dropout rates for Veterans engaging in various trauma-focused modalities ranging from under 20% to as high as over 70% (Garcia, Kelley, Rentz, & Lee, 2011; Monson, et al., 2006; Najavits, 2015; Schottenbauer, et al., 2008).

While much work has been done to validate evidence-based psychotherapies for the treatment of PTSD, less attention has been paid to factors affecting how Veterans view treatment options or the role of pretreatment symptoms in affecting perceptions and expectations of treatment. Moreover, there is no work in the research literature to date that has examined the role of therapeutic expectations in mediating symptom reduction for MST-related PTSD.

This study will investigate these areas by first examining the role of physical, emotional, and cognitive symptoms in mediating the relationship between PTSD severity and therapeutic expectations and then evaluating whether therapeutic expectations affect end-of-treatment PTSD severity. In investigating these hypotheses, this study aims to contribute a unique perspective on existing MST-related PTSD treatments by elucidating the importance of Veterans' expectations for treatment. If the effect of pretreatment PTSD severity on therapeutic expectations is significantly mediated by pretreatment symptoms (as moderated by treatment type) or if the effect of therapeutic expectations on PTSD symptom reduction is treatment type-dependent, such findings may point to important directions in addressing non-trauma related factors prior to commencing with trauma-focused treatment. Addressing non-trauma related factors as they relate to trauma-focused treatment could involve a number of considerations, including increased emphasis on pretreatment psychoeducation regarding the nature, purpose, and mechanisms of treatment (Zoellner, et al., 2011); focusing on improved physical health as means for bolstering strength for trauma-focused treatment (Surís & Lind, 2008); reducing therapy-interfering behaviors or cognitions (e.g., suicidal and/or self-injurious

thoughts behaviors) (Harned, Jackson, Comtois, & Linehan, 2010); or treating mood symptoms or emotional states that may potentially interfere with efficacy of trauma-focused psychotherapy (Lutwak, 2013). Alternatively, if the relationship between PTSD severity and therapeutic expectations prior to commencing trauma-focused psychotherapy is not significantly mediated by physical, emotional, or cognitive variables, then such findings may some reassuring evidence to clinicians and Veterans both about commencing trauma-focused psychotherapy despite the presence of other psychosocial stressors and/or comorbidities.

CHAPTER II

BACKGROUND AND LITERATURE REVIEW

Posttraumatic stress disorder (PTSD) diagnosis

PTSD, as an officially recognized psychiatric disorder with defined etiology, symptomatology, and nosology, was first outlined as such within the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1987). However, the phenomenology of PTSD has been known and discussed since antiquity, with numerous examples speaking to the universality of posttraumatic response in religious, literary, and historical works such as Deuteronomy 20:1-9 (circa 1400 B.C.), *Giglamesh* (a Sumerian epic, circa 1200 B.C.), *Gísli Súrsson Saga* (an Icelandic saga, circa 1000-1300 A.D.), *Romeo and Juliet* (1591-1595 A.D.), and army physicians writing about “shell shock” during the French Revolution (1792-1800) and Napoleonic wars (1800-1815) (Crocq & Crocq, 2000). With advancements in modern psychiatry coinciding with World War I, World War II, and the Vietnam War, there was an increased emphasis on codifying and classifying symptoms associated with trauma and posttraumatic response as a means for addressing the growing need to treat returning Veterans (Surís, Holliday, & North, 2016). The addition of PTSD to DSM-III as an anxiety disorder in 1980 provided psychiatric legitimacy to a phenomenological reality that was heretofore already recognized within colloquial terms such as soldier’s heart, battle fatigue, and combat stress reaction—many of which date back to the 19th century (Jones, 2013).

The diagnostic criteria for PTSD were revised in the fourth edition of the DSM (DSM-IV; American Psychiatric Association, 1994), and the text revision of the DSM-IV (DSM-IV-TR; American Psychiatric Association, 2000) provided the basis of PTSD diagnosis for participants in this current study, though as of this work's writing, the diagnostic criteria for PTSD has changed per the fifth edition of DSM (DSM-5; American Psychiatric Association, 2013). Accordingly, the DSM-IV-TR criteria for PTSD will be explained first, followed by a discussion of the relevant changes to the PTSD diagnostic criteria within DSM-5.

DSM-IV-TR diagnostic criteria

DSM-IV TR diagnosis of PTSD is predicated upon symptoms “following exposure to an extreme traumatic stressor.” This stipulation makes PTSD unique from other DSM-IV-TR diagnoses because it necessitates an external event as the basis for associated symptoms, as opposed to the presence of a set of symptoms alone being sufficient for diagnosis (North, Suris, Davis, & Smith, 2009). Criterion A for DSM-IV-TR diagnosis of PTSD, on page 467, outlines this requirement (American Psychiatric Association, 2000):

- A. 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 and others
 2. the person's response involved intense fear, helplessness, or horror

Criteria B, C, and D represent three distinct clusters – reexperiencing, avoidance/numbing, and arousal – each of which outlines an associated set of symptoms

that must be endorsed. Numerous studies suggest that avoidance/numbing symptoms (Criterion C) demonstrate the greatest specificity for PTSD diagnosis, indicating that patients who fulfill Criterion C (which requires three or more avoidance/numbing symptoms to be endorsed) are more likely to meet full criteria for PTSD diagnosis than patients who fulfill Criteria B or D (Foa, Riggs, & Gershuny, 1995; North, et al., 2009). There has been and continues to be extensive debate regarding the validity of these symptom clusters as means for determining PTSD diagnosis, and recent research using epidemiological findings, factor analyses, and other methods of inquiry have indeed contributed to the reorganization of PTSD symptom criteria within DSM-5 (Cox, Mota, Clara, & Asmundson, 2008; Kilpatrick, et al., 2013; North, et al., 2009).

The remaining criteria (Criteria B-F) for PTSD within DSM-IV-TR (American Psychiatric Association, 2000), on page 468, are as follows:

- B. The traumatic event is persistently re-experienced 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
- E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.
- F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

DSM-5 diagnostic criteria

The fifth edition of the DSM was published in 2013 (American Psychiatric Association, 2013), and there were several key changes made to the classification of PTSD within the manual and to its diagnostic criteria. First, PTSD was moved from the Anxiety Disorders section to the newly formed Trauma- and Stressor-Related Disorders section in an attempt to address two issues: 1) a shift towards organizing disorders based on etiology rather than symptom-based classification, and 2) the need to address PTSD's heterogeneous clinical presentation, which is phenomenologically defined by more than anxiety symptoms alone (North, et al., 2009; Surís, et al., 2016). The wording of Criterion A was revised to remove 1) the possibilities of indirectly witnessing trauma serving as a qualifying event (e.g., seeing trauma in media) and 2) the requirement of an emotional reaction to the trauma (Criterion A2). The symptom clusters were revised extensively, particularly with the reorganization of DSM-IV-TR Criteria C symptoms (avoidance/numbing) into two separate DSM-5 criteria – (C) persistent avoidance and (D) negative alterations in cognitions and mood. Additionally, the “acute” and “chronic” DSM-IV-TR specifiers were removed, the “with dissociative symptoms” specifier was added, and a preschool subtype for children six years or younger was added. These DSM-5 changes to the PTSD diagnostic criteria were intended to reduce comorbidity with Major Depressive Disorder, legitimize a wider spectrum of posttraumatic responses beyond fear-based anxiety alone, address the growing evidence base that shows the centrality of avoidance symptoms for valid PTSD diagnosis, and bring DSM-5 diagnostic criteria for PTSD more in line with those of the World Health Organization's ICD-10

(Friedman, Resick, Bryant, & Brewin, 2011; Friedman, Resick, Bryant, Strain, et al., 2011).

The DSM-5 criteria for PTSD, on pages 271-272, are outlined below (American Psychiatric Association, 2013):

- A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
 1. Directly experiencing the traumatic event(s).
 2. Witnessing, in person, the event(s) as it occurred to others.
 3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
 4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse).
- B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
 1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).
 2. Recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s).
 3. Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.).
 4. Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
 5. Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

- C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:
1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
 2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
- D. Negative alternations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs).
 2. Persistent or exaggerated negative beliefs or expectations about oneself, others, or the world (e.g., “I am bad,” “No one can be trusted,” “The world is completely dangerous,” “My whole nervous system is permanently ruined”).
 3. Persistent distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others.
 4. Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame).
 5. Markedly diminished interest or participation in significant activities.
 6. Feelings of detachment or estrangement from others.
 7. Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).
- E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:

1. Irritable behavior and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects.
 2. Reckless or self-destructive behavior.
 3. Hypervigilance.
 4. Exaggerated startle response.
 5. Problems with concentration.
 6. Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep)
- F. Duration of the disturbance (Criteria B, C, D, and E) is more than 1 month.
- G. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- H. The disturbance is not attributable to the physiological effects of a substance (e.g., medication, alcohol) or another medical condition.

PTSD prevalence

Broadly speaking, in order to have a PTSD diagnosis, a person must present with two necessary processes—trauma exposure and a recognized pattern of symptoms occurring after the trauma exposure (American Psychiatric Association, 2000; North, et al., 2009). The diagnosis of PTSD necessitates that a person have directly experienced or indirectly been exposed to trauma that is of sufficient severity to threaten or cause death and/or serious injury to oneself or a close friend/family member. Qualifying trauma types can include physical and/or sexual assault, natural disasters, and combat; the most common trauma types associated with PTSD are torture, rape, and kidnapping (North, et al., 2009). Moreover, trauma is considered to be classifiably different from stressors that

do not threaten/cause immediate death or injury to one's physical integrity (e.g., being fired, divorce) (American Psychiatric Association, 2000; North, et al., 2009).

Exposure to trauma—be it psychological, physical, or sexual—among the general population is unfortunately quite common. Epidemiological studies show lifetime traumatic exposure to be around 60-70% overall, with rates being slightly higher for men than women (Fairbank, 2008). However, not everyone who experiences trauma develops posttraumatic symptoms, and relatedly, posttraumatic symptoms do not necessarily connote a diagnosis of PTSD. The DSM-IV-TR estimates the lifetime prevalence of PTSD to be around 8% based on community-based studies, with rates being as high as one-third to over one-half among those who have survived rape or experienced military combat-related trauma (DSM-IV-TR, 2000). While men tend to have higher frequency of exposure to traumatic events, women are more likely to develop PTSD (Kilpatrick, et al., 2013). It has been estimated that among U.S. adults under the age of 55, 10% of women and 5% of men have PTSD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Lifetime prevalence rates of PTSD for women (9.7%) are significantly higher than they are for men (3.6%), and PTSD rates are even higher for female Veterans (Schnurr, et al., 2007). Moreover, female Veterans with a history of military sexual trauma (MST) are approximately nine times more likely to be diagnosed with PTSD relative to female Veterans with no history of MST (Surís, et al., 2004).

Given the high epidemiological rates of traumatic exposure within the general population and the large aforementioned gap in incidence rates of traumatic exposure versus developing PTSD, researchers have sought to understand the difference between

normal versus psychopathological posttraumatic responses. Using the U.S. National Comorbidity Study, Kessler et al. (1995) observed that the majority of victims develop some level of posttraumatic symptoms shortly after the trauma. Posttraumatic symptoms can include those associated with a PTSD diagnosis and many other mental health consequences such as depression, anxiety, substance use, and suicidality (Hankin, et al., 1999; Lutwak, 2013; North, et al., 2009). The Kessler study found that for most victims, posttraumatic symptoms subside less than a year following the trauma, but those who continue to experience symptoms after one year are not only at a higher risk of having a PTSD diagnosis (DSM-III-R), but they are also less likely to recover completely (Kessler, et al., 1995). An increasing amount of research has also demonstrated that a potential determinant of PTSD can be avoidance/numbing symptoms (Cluster C symptoms), the presence of which, when compared to Cluster B and D symptoms, has been shown to be most predictive of who will go on to develop PTSD (Breslau, Chilcoat, Kessler, & Davis, 1999; North, et al., 2009).

A recent study used a national sample of U.S. adults to compare prevalence rates for PTSD based on DSM-IV-TR versus DSM-5 diagnostic criteria (Kilpatrick, et al., 2013). It confirmed the high prevalence of traumatic exposure based on DSM-5 Criterion A (89.7%), further confirming that multiple exposures to trauma are more the norm than the exception. For actual diagnosis of PTSD, the study yielded slightly lower prevalence rates based on DSM-5 criteria than on DSM-IV-TR criteria (8.3% lifetime, 4.7% past 12-months, 3.8% past 6-months) and confirmed DSM-5 prevalence for PTSD to be higher

for women than men (consistent with previous DSM-IV-TR and DSM-III prevalence findings).

Risk factors for developing PTSD

A host of psychological, biological, social, and medical factors are related to increased risk for PTSD. Research shows that people are at increased risk for developing PTSD, as well as increased severity of their PTSD symptoms, based on some of the following psychosocial factors: previous mental health diagnoses, previous trauma histories, low socioeconomic status, racial/ethnic minority status, military service (active duty and Veteran status), urban living environments, childhood trauma (particularly childhood sexual abuse), low education, substance abuse, chronic illness, and low social support (Bar-Shai & Klein, 2015; Boscarino, 2004; Breslau, et al., 1999; Surís, Holliday, Weitlauf, & North, 2013). There is strong evidence for hereditary risk based on several twin studies (particularly the Vietnam Era Twin Registry; Boscarino, 2004; Koenen, et al., 2003; Pitman, et al., 2006; True, et al., 1993), and there is even recent preliminary evidence for traumatic effects and vulnerability being epigenetically transmitted from parent to child (e.g., increased glucocorticoid receptor sensitivity; Roth, 2014; Yehuda, et al., 2014).

Some of the strongest psychological factors associated with PTSD are depressive symptoms, suicide risk, anxiety, personality-related symptoms, emotional dysregulation, and substance use. In a prospective study that examined predictors of PTSD for patients admitted to a general hospital's emergency room, depressive symptoms were found to be the strongest predictor of developing chronic PTSD both four months and one year after

hospital admission (Freedman, Brandes, Peri, & Shalev, 1999). In that study, various posttraumatic responses were found to have differential impacts on PTSD risk at four months versus one year following the trauma—intrusive symptoms and dissociation during the trauma itself were the best predictors of PTSD at four months post-trauma, while depression, anxiety, and avoidance symptoms were the most robust predictors of PTSD one year after the trauma. The link between depression and PTSD has been extensively documented, though studies vary regarding conclusions on whether depressive symptoms precede, follow, or co-occur with PTSD symptoms (Freedman, et al., 1999). Among PTSD patients with comorbid depression, suicide risk is increased (Surís, Link-Malcolm, & North, 2011), and depressed women with PTSD are more likely to have a history of suicide attempts than men (Oquendo, et al., 2003). Personality-related pathology is also associated with greater prevalence risk for PTSD, with highest prevalence risk for DSM-IV-TR Cluster B personality disorders (Borderline, Narcissistic, Histrionic, Antisocial), particularly Borderline Personality Disorder (Oquendo, et al., 2003; Williams, et al., 2015). Cluster B personality pathology has been found to be associated with difficulties in emotional regulation and heightened emotional reactivity (Harned, Rizvi, & Linehan, 2010), and indeed, these same associations have been found among people with PTSD, with traumatic event-related emotional reactivity and problems with emotional regulation serving as independent predictors of PTSD severity (Badour & Feldner, 2013). Additionally, the comorbid occurrence of PTSD and substance use disorders can worsen both posttraumatic and substance-related symptoms, resulting in poorer outcomes for treatments seeking to address PTSD, substance use, or

both PTSD and substance use together (Najavits & Hien, 2013; Ouimette, Brown, & Najavits, 1998).

Numerous biological correlates have been observed among patients with PTSD. The two main brain pathways that have been associated with PTSD are the hypothalamic-pituitary adrenal (HPA) axis and the sympathetic-adrenal-medullary (SAM) axis, both of which are implicated in the stress response (Boscarino, 2004). Generally speaking, the HPA axis modulates the production and release of cortisol, while the SAM axis produces epinephrine and norepinephrine as means for regulating heart rate. Additionally, people with PTSD have been shown to have higher levels of T-cell lymphocytes and lower cortisol levels, each of which is related to immune system hyperactivity and increased susceptibility to autoimmune disorders (van Zuiden, et al., 2012; Yehuda, 2002).

These biological correlates have separately been demonstrated to be sequelae for a variety of medical comorbidities, and indeed, numerous studies show that exposure to trauma (with or without PTSD) is linked to increased risk for a litany of medical conditions, including cardiovascular diseases, gastrointestinal diseases, chronic fatigue, fibromyalgia and other chronic pain disorders, diabetes, renal diseases, pulmonary diseases, and neurological disorders (Boscarino, 2004; Spitzer, et al., 2009). The links for PTSD are particularly strong with cardiovascular and gastrointestinal diseases. A review of the link between traumatic exposure and gastrointestinal symptoms confirms that severity of traumatic symptoms is positively associated with the extent of gastrointestinal distress, with potential mechanisms ranging from stress-related compromise of mucosal immune function to altered downregulation of somatic afferent signals (Drossman, 2011).

Additionally, a host of studies show increased cardiovascular mortality among PTSD patients, as well as increased risk for myocardial infarctions for patients with previous traumatic exposure (Boscarino, 2004; Gander & von Kanel, 2006; Spitzer, et al., 2009).

Both the HPA and SAM axes are implicated in disinhibiting inflammatory responses (Spitzer, et al., 2009). Given the demonstrated links between posttraumatic responses and dysregulation of the HPA and SAM axes (van Zuiden, et al., 2012; Yehuda, 2002), it has been hypothesized that inflammation may be the mediating link between posttraumatic symptoms and increased risk for developing physical illnesses (particularly cardiovascular and gastrointestinal, both of which are heavily predicated on heightened inflammatory processes) (Boscarino, 2004; Gander & von Kanel, 2006; Spitzer, et al., 2009).

PTSD and the military

Within the military, traumatic events can fall broadly into three categories: combat-related (e.g., an improvised explosive device attack), non-combat-related (e.g., a car accident on an Army Reserve base), and military sexual trauma (e.g., rape, attempted sexual assault, unwanted sexual contact). The National Center for PTSD, which is housed within the U.S. Department of Veteran Affairs, has provided the latest estimated prevalence rates for PTSD for Veterans according to service eras (National Center for PTSD, 2016). For Vietnam War era Veterans, prevalence of PTSD is estimated at 30.9% for men and 26.9% for women based on findings from the National Vietnam Veterans Readjustment Study (Kulka, et al., 1990). The estimated prevalence of PTSD for the total population of Gulf War Veterans is 10.1% (Kang, Natelson, Mahan, Lee, & Murphy,

2003). Among Veterans returning from Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF; Afghanistan and Iraq), PTSD prevalence is estimated at 13.8% (Tanielian, et al., 2008).

It is well established that increased psychosocial stressors are associated with higher risk for exposure to traumatic events (Bar-Shai & Klein, 2015) and for developing PTSD (Breslau, et al., 1999; North, et al., 2009). Examples of psychosocial stressors among Veterans include low social support, low family support, financial stress, poverty and/or homelessness, discrimination based on race/gender/education/age/religion/sexuality, legal problems, as well as traumatic exposure (Bar-Shai & Klein, 2015; Holliday, Williams, Bird, Mullen, & Suris, 2015). Compared to civilian populations, military service personnel and Veterans have greater exposure to psychosocial stressors across all stages of military enlistment—prior, during, and thereafter (Koenen, et al., 2003). Moreover, Veterans have greater exposure to traumatic events compared to the civilian population, in part due to the inherent nature of military service (e.g., combat-related deployments) but also due to extra-military traumatic events that can occur before, during, and after military service (e.g., intimate partner violence, non-combat related physical trauma, childhood trauma) (Bolton, Litz, Britt, Adler, & Roemer, 2001; Magruder & Yeager, 2009).

Traumatic exposure and PTSD prevalence among Veterans and military servicemen and servicewomen is markedly high. Kessler's findings on PTSD prevalence based on the U.S. National Comorbidity Survey (Kessler, et al., 1995) demonstrated the lifetime prevalence of PTSD among the U.S. general population to be at 7.8% (5.0% for

men, 10.4% for women). However, for Veterans, PTSD lifetime prevalence rates are about 1.5 to 3.5 times higher than those of the general population, regardless of deployment era, e.g., Vietnam, Persian Gulf, OEF/OIF (Magruder & Yeager, 2009). In one study that evaluated pre-deployment traumatic exposure, it was found that 74% of military servicemen and servicewomen had been exposed to at least one traumatic event and 60% had multiple exposures, with a mean of 2.38 and median of 2.00 (Bolton, et al., 2001).

Though any traumatic event that fulfills DSM-IV-TR and DSM-5 Criterion A can contribute to the development of PTSD in Veterans, the two broad types of trauma that research has most focused on for Veterans with PTSD are combat-related events and military sexual trauma (Surís & Lind, 2008). By definition, exposure to combat-related trauma is more likely to occur among military personnel than civilians, and working in a combat zone increases the likelihood of being exposed to traumatic events (e.g., threats to life and limb, witnessing death or injury of others, physical injuries and assault). A host of studies show that the trauma severity is strongly correlated with severity of posttraumatic symptoms and PTSD severity (Ozer, Best, Lipsey, & Weiss, 2003), and research also demonstrates that increased traumatic exposures function to cumulatively intensify negative effects on a vast array of mental health, psychosocial, and medical outcomes (Boscarino, 2004). It therefore logically follows and has been empirically demonstrated that combat-related trauma increases the risk of developing PTSD and other mental health disorders (Chard, Schumm, Owens, & Cottingham, 2010; Koenen, et al., 2003).

Combat exposure is associated with increased risk for developing comorbid mood and anxiety disorders, particularly Panic Disorder, Generalized Anxiety Disorder, and Major Depressive Disorder (Koenen, et al., 2003). In a study of Gulf War I Veterans, it was found that women were more likely to report having experienced sexual harassment and greater interpersonal stressors during deployment and men reported greater combat-related stressors, yet still, there were no statistical differences found in levels of posttraumatic symptoms and depressive symptoms reported between men and women (Vogt, Pless, King, & King, 2005). Nonetheless, military servicewomen are at higher risk for developing PTSD when exposed to any type of trauma (combat-related and MST) (Kline, et al., 2013), and men exposed to combat trauma are more likely to have higher PTSD severity, delayed onset of posttraumatic symptoms and PTSD, and PTSD for their lifetime (Prigerson, Maciejewski, & Rosenheck, 2001).

Military Sexual Trauma (MST)

Federal law (Title 38 U.S. Code 1720D) defines military sexual trauma (MST) as “psychological trauma, which in the judgment of a Veterans Affairs (VA) mental health professional, resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment which occurred while the Veteran was serving on active duty, active duty for training, or inactive duty training” (Department of Veterans Affairs). It is important to note that the definition of MST is not predicated on geographic or perpetrator-related specifications. That is to say, it does not matter whether the trauma occurred within a military setting or was perpetrated by a military service member—as long as the event happened during military service, it constitutes MST. Additionally, it

bears noting that despite the inclusion of sexual harassment as a qualifying MST event, sexual harassment alone is not a qualifying Criterion A traumatic event under DSM-IV-TR and DSM-5 diagnostic criteria for PTSD, and so the experience of sexual harassment alone in the military would not result in a diagnosis of PTSD related to MST.

Despite the VA's official definition for MST based on Federal law and lack of need for geographic or perpetrator specifications, prevalence rates for MST have been hard to pinpoint due to a variety of research-based and social considerations, including heterogeneous definitions and assessments for MST used within research, underreporting issues, inconsistency in sample selection, and military-specific factors (Morris, Smith, Farooqui, & Surís, 2014; Surís & Lind, 2008).

MST prevalence rates appear at first glance to be lower for earlier service eras—around 0.4% overall for Vietnam era Veterans (Surís & Lind, 2008), compared to 15.1% for female Veterans and 0.7% for male Veterans from the OEF/OIF eras (Kimerling, et al., 2010). However, sexual trauma often goes unreported in the general population—for example, it is estimated that only 16% of rapes in the United States are actually reported—and this underreporting phenomenon is even stronger in the military (Sadler, Booth, Cook, & Doebbeling, 2003; Surís & Lind, 2008). Both Veterans and civilians often do not report sexual trauma due to fear, embarrassment, shame, and social stigma (Tewksbury, 2007). Within the military, victims of sexual trauma are even less likely to report due to fear of retaliation, power dynamics and power differentials between victims and perpetrators, prevailing attitudes for masculinity and strength, and lack of trust regarding confidentiality for reporting. Through events like the 1991 Tailhook scandal

and MST-related documentaries (e.g., *Invisible War*, *Uniform Betrayal*, *Justice Denied*), awareness has increased for the pervasiveness and phenomenological considerations of MST across all war eras. In response, as directed by Congress, the Department of Veterans Affairs has implemented several healthcare, outreach, and counseling initiatives, including a universal screening program for all Veterans within the VA system. As of 2013, the Department of Veterans Affairs estimates the prevalence of MST among Veterans to be around 23% for female Veterans and 1% for male Veterans (Department of Veterans Affairs, 2013).

Across most research studies, it has been estimated that the prevalence of MST among Veterans is around 22% for female Veterans and around 1% for male Veterans (Kimerling, Gima, Smith, Street, & Frayne, 2007), which is consistent with the aforementioned Department of Veterans Affairs prevalence statistics. Research estimates overall prevalence rates for MST to be as high as one-fourth to one-third of all female Veterans, and it has also been estimated that around 50% of Veterans reporting unwanted sexual contact while in the military are men (Kimerling, et al., 2007; Surís & Lind, 2008). Proportionally, women are approximately 20 times more likely to be victims of MST, but there are also about 20 times more men than women within the military. This means that in absolute terms, the number of men and women who have experienced sexual trauma in the military are approximately equal (Surís & Lind, 2008).

Though varied definitions for MST used in research and underreporting both contribute to inconsistency among estimated MST prevalence rates (Morris, et al., 2014; Surís & Lind, 2008), it is nonetheless clear that prevalence rates for MST are

substantially higher than prevalence rates for sexual trauma among civilians in the general population. As an example, the National Violence Against Women Survey found that about 16-17% of U.S. women have experienced attempted or completed rape (Tjaden & Thoennes, 2000). For male Veterans, it is estimated that the prevalence of MST is approximately five to nine times higher than the civilian population (Kessler, et al., 1995; Murdoch, Polusny, Hodges, & O'Brien, 2004; Surís & Lind, 2008). For both men and women, it is well established that risk of sexual trauma exposure is higher within the military than for civilians (Sadler, et al., 2003; Sadler, Booth, Mengeling, & Doebbeling, 2004).

MST risk factors

In general, risk factors for experiencing MST are not that different from those associated with civilian sexual trauma. However, there are also some military-specific considerations. A host of studies demonstrate that early life traumas—physical, emotional, sexual—are associated with increased risk for developing PTSD (Bar-Shai & Klein, 2015; Breslau, et al., 1999) and with higher risk for adult victimization (Breslau, et al., 1999). Indeed, Veterans who have experienced MST are more likely to have experienced early life traumas (Merrill, et al., 1999). Specifically for women Veterans, it has been found that, compared to women Veterans with no prior history of sexual assault, risk for PTSD is nine times higher for women Veterans with a history of military sexual assault, seven times higher for women Veterans with a history of childhood sexual assault, and five times higher for women Veterans with a history of adult civilian sexual assault (Surís, et al., 2004). Though most studies examining pre-trauma risk factors

associated with MST have either focused on women or left gender considerations unevaluated, many of the same risk factors can be deduced for male Veterans based on civilian sexual trauma research on male survivors (Morris, et al., 2014).

Rates for sexual and physical trauma among both men and women entering the military are higher than those found in the general population, and once in the military, they are at higher risk for repeated exposures to sexual trauma while serving active duty (Sadler, et al., 2003). Merrill (1999) found that the risk for experiencing MST was five to nine times higher for female Navy recruits who had previous childhood sexual trauma history than for women without a history of childhood sexual trauma. Kline (2013) examined risk factors associated with developing PTSD (combat- and MST-related) for National Guard troops deployed in OEF/OIF and found that women had significantly higher posttraumatic stress symptoms prior to deployment than men did, often due to premilitary sexual trauma. The study also showed that female troops reported lower rates of unit cohesion and military preparedness than did men.

Sadler et al. (2003) evaluated sociodemographic characteristics of MST female victims and perpetrators, finding that women who were raped in the military were significantly more likely than women who were not to be younger in age (20.7 vs. 22.5 years old), less likely to have graduated from college (18.3% vs. 33.9%), more likely to be younger at discharge (26.3 vs. 29.1), and more likely to hold enlisted rank (95.2% vs. 84.5%). Sadler et al. (2003) further demonstrated the risk of being raped in the military to be twice as high for women who joined the military at age 19 or younger, for women with previous histories of childhood physical or sexual trauma, and for women of enlisted

rank. For perpetrators, Sadler's study showed them to be predominantly 1) non-commissioned 2) White or Black 3) males 4) and of similar rank as the victim. Overall, 79% of women in the study who served in the military from Vietnam onward indicated that they experienced sexual harassment, 54% reported some kind of unwanted contact, and 50% disclosed having experienced one or more attempted or completed rapes while serving.

Several within-military risk factors have been found to increase the likelihood for MST victimization. The leadership attitudes of higher ranking officers (particularly male officers) are closely tied to the predominance of MST towards women—for example, military environments in which office leadership tolerates, turns a blind eye towards, or even overtly encourages sexual impropriety (e.g., lewd gestures, demeaning remarks) (Sadler, et al., 2003). It has also been found that rape of servicewomen occurs more often while women are still on base, off-duty, and in or around the barracks in the evening (Sadler, et al., 2003). Alcohol and drug use are also closely associated with MST (Sadler, et al., 2003); the Department of Defense 2004 report found that over 50% of reported MST cases in 2002 and 2003 included some mention of alcohol use (predominantly by at least the perpetrator). There is also some recent evidence that Black servicewomen are at increased risk for MST, particularly more severe forms such as sexual coercion and rape, than White servicewomen (Buchanan, Settles, & Woods, 2008). Taken together, these within-military factors are likely contributing to MST victims being victimized multiple times while in the military—37% of servicewomen (a national cross section of 558 female Veterans who served in Vietnam or subsequent eras) polled by Sadler et al. (2003)

said that they were raped more than once and 14% of servicewomen reported having been gang raped at least once.

Broader organizational and cultural factors of the military greatly contribute to the prevalence, risk, and underreporting of MST. The military is defined, internally and in the public eye, by the utmost priority that it places on unit cohesion and loyalty. This emphasis on maximizing in-group identification often fosters antagonism towards whistleblowing and encourages the equating of obedience with silence, thereby decreasing the likelihood that victims will report MST (O'Brien & Sher, 2013). MST victims often express feeling guilt, shame, and even blame for "outing their fellow soldier," and they also describe fearing retaliation—either directly from the perpetrator or indirectly via repercussions to their military career—for making a report (Allard, Nunnink, Gregory, Klest, & Platt, 2011). Given these psychological disincentives and material risks to military rank, career, and reputation, it is not surprising that according to Sadler et al. (2003), 75% of women raped in the military did not report the assault, with one-third of women noting that they were not aware of the reporting process at the time and 20% of women remarking that they thought rape "was expected in the military."

Underreporting of sexual assault is a major concern within the general population, and it is further exacerbated within the military due to the aforementioned considerations. Victims cite fear of retaliation from their supervisors, commanding officers, and peers for reporting, often times because the very figures to whom victims are instructed to report MST are those who are also responsible for victims' evaluation and promotion processes (Burns, Grindlay, Holt, Manski, & Grossman, 2014; Kimerling, et al., 2011; Turchik, et

al., 2013). MST victims are also disallowed from suing the military for any instances of MST due to the military being exempt from Title VII of the Civil Acts Right, which permits civilian victims of sexual harassment to sue their employers (Natelson, 2009). Coupling this restriction with the fact that the military only keeps prosecutorial evidence such as rape kits for one year, it is not surprising that prosecution rates for MST perpetrators are around 8%, compared to around 40% for civilian perpetrators of sexual violence (Williamson & Mulhall, 2009).

Consequences of MST

Research shows that men and women who have experienced MST contend with a variety of negative consequences to their physical health, mental health, and social wellbeing. The negative sequelae associated with MST history have been shown to have both immediate and long-term effects on Veterans.

Physical consequences of MST. In general, Veterans who experienced MST report greater problems associated with their physical health than do Veterans without MST (Surís, Lind, Kashner, & Borman, 2007). Street et al. (2008) found that 49.3% of women who experienced both sexual harassment and sexual assault within the military reported also having co-occurring medical conditions, compared to 35.6% of women who experienced sexual harassment only and 26.2% of women who denied experiencing either sexual harassment or sexual assault. Multiple studies have shown MST to be associated with cardiovascular problems, gastrointestinal illness, pelvic pain, chronic pain, sleep disturbances, liver disease, obesity, hypertension, headaches, lower overall subjective ratings of physical health, higher morbidity and mortality rates, and increased

healthcare utilization (Boscarino, 2004; Drossman, 2011; Frayne, Skinner, Sullivan, & Freund, 2003; Hyun & Pavao, 2009; Kelly, Skelton, Patel, & Bradley, 2011; Kimerling, et al., 2007; O'Brien & Sher, 2013; Surís & Lind, 2008; Valente & Wight, 2007).

Medical sequelae from MST experience have been found across nearly all organ systems, including neurological, rheumatological, pulmonary, gynecological, reproductive, and urological dysfunction (O'Brien & Sher, 2013). There is also increasing concern that victims of MST are less likely to seek and receive adequate medical attention, treatment, and education post-trauma (Valente & Wight, 2007).

In a study by Kimerling et al. (2007) that mined data from the universal screening program for MST that was implemented throughout the Veterans Health Administration (VHA) from 2002 to 2003, it was found that both men and women with MST have moderately higher risk for chronic pulmonary disease and liver disease. For women with positive MST screens, risk was significantly higher for weight loss, obesity, and hyperthyroidism, while for men with positive MST screens, HIV/AIDS was significantly more prevalent. For female Veterans who have experienced MST, similar associations to those among civilian populations of women with sexual trauma histories have been found, including greater risk for sexually transmitted diseases, menstrual problems, endometriosis, bladder infections, rectal bleeding, infertility, loss of pregnancies, and hysterectomies before the age of 40 (Allard, et al., 2011; Frayne, et al., 2003; O'Brien & Sher, 2013; Surís & Lind, 2008). Sadler et al. (2004) found that women who experienced multiple instances of MST had a significantly higher number of outpatient medical visits (16 visits) compared to women who experienced one instance of MST (nine visits) and

women with no MST history (eight visits). Women with a history of MST have also been shown to rate their health-related quality of life lower than women without MST history (Hyun & Pavao, 2009).

Social consequences of MST. MST has been linked to a litany of social consequences for both male and female Veterans. Veterans with PTSD related to MST have been found to experience socioeconomic difficulties (Holliday, Link-Malcolm, Morris, & Suris, 2014). In one study on MST and homelessness, Pavao et al. (2013) found that 39.7% of homeless female Veterans and 3.3% of homeless male Veterans had experienced MST. One of the main social stressors among Veterans is experiencing difficulty integrating back into civilian life post-deployment, which is linked with lower social support post-deployment (Driscoll, et al., 2015), and these difficulties are exacerbated by previous traumatic experiences within the military, including MST (Mattocks, et al., 2012). Veterans with a history of MST have also been found to have significantly higher trauma-related self-blame, lower perceived social support, and higher attachment anxiety than nontraumatized Veterans (Park, 2014).

Lack of intimate partner support is also a major concern for Veterans with trauma histories, including MST. In a study examining the role of comfort with PTSD treatment among female Veterans with PTSD, 49.0% were divorced, separated, or widowed, and 29.1% had never been married (Fontana & Rosenheck, 2006). It has also been shown that men who screen positive for MST are more likely than men with negative screens to have been divorced, separated, or never married (Kimerling, et al., 2007).

Intimate partner violence (IPV) of a sexual nature that occurs while a Veteran is serving active duty constitutes MST. Indeed, it has been shown that female Veterans with MST experience are at increased likelihood for reporting current or lifetime IPV experience (Gerber, Iverson, Dichter, Klap, & Latta, 2014). Relatedly, it has also been shown that female Veterans with a history of pre-military IPV victimization are over 2.5 times more likely to endorse having also experienced MST, including IPV while serving in the military (Gerber, et al., 2014).

Several studies have demonstrated that Veterans with MST experience report lower quality of life than Veterans without MST experience across multiple domains, including lower ratings for physical, emotional, and social functioning (Kelly, et al., 2011; Surís, et al., 2007; Valente & Wight, 2007). For female Veterans who experienced MST, research has shown higher rates of sexual dysfunction, lower sexual satisfaction, difficulties with sexual arousal and desire, and sexual avoidance (Allard, et al., 2011; O'Brien & Sher, 2013). It has also been found that quality of life among Veterans with MST-related PTSD may not be adequately addressed through CPT or PCT psychotherapy treatments; quality of life perceptions did not significantly change for Veterans who received either CPT or PCT as treatment for MST-related PTSD (Holliday, et al., 2015). Furthermore, MST negatively affects social functioning beyond that of victims alone. The children of Veterans who have experienced MST are at increased risk for emotional, physical, and sexual abuse (Valente & Wight, 2007). Additionally, both male and female Veterans with positive MST screens are more likely to have a service-connected disability (i.e., any disability, physical or psychological, that was a result of illness or

injury that occurred during military service) than male and female Veterans with negative MST screens (Kimerling, et al., 2007).

Psychological consequences of MST. Research on MST and psychiatric sequelae has firmly established that men and women who experience MST are at significantly higher risk for mental health concerns. The most prevalent mental health diagnosis associated with MST is PTSD, and a host of additional mental health diagnoses have yielded significant associations with MST history, including mood disorders, anxiety disorders, adjustment disorders, substance use disorders, and personality disorders (Hyun & Pavao, 2009; Kimerling, et al., 2007; Kimerling, et al., 2010; Surís & Lind, 2008). Overall, it is estimated that both male and female Veterans with a history of MST are about three times more likely to have any mental health condition compared to those without MST history (Kimerling, et al., 2007; Kimerling, et al., 2010).

Veterans who have experienced MST are approximately four times more likely to have developed PTSD as a result of MST versus other kinds of military-related traumas, including combat-related and war zone traumas (Fontana & Rosenheck, 2006; Yaeger, Himmelfarb, Cammack, & Mintz, 2006). Compared to women without any history of sexual trauma, review articles have found that women who experienced MST are four to nine times more likely to have PTSD (Kimerling, et al., 2007; Surís & Lind, 2008). In Kimerling et al.'s study on the universal MST screening program within the VHA (2007), it was found that women with positive MST screens were 8.83 times more likely (adjusted odds ratio) to have PTSD than women with negative MST screens. For men, the

study showed men with positive MST screens to be 3.00 times more likely (adjusted odds ratio) than men with negative MST screens to have PTSD.

Although MST alone does not itself constitute a psychiatric diagnosis, the experience of MST is firmly established within the research to be linked with numerous comorbid mental health disorders, including depression, anxiety, panic disorder, substance abuse (particularly alcohol), bipolar disorder, and psychotic disorders (Surís & Lind, 2008). Relative to Veterans who do not endorse a history of MST, it has been shown that female Veterans who report having experienced MST are two to three times more likely to fulfill diagnostic criteria for alcohol abuse or depression (Hankin, et al., 1999; Surís, et al., 2007). Veterans with PTSD related to MST are also at increased risk for suicidal ideation, which has been found to be significantly predicted by depression severity among Veterans with MST-related PTSD (Surís, et al., 2011). Using data from a national sample, it was found that around 60% of women who endorsed MST also screened positive for depression, 27% of women reporting MST also endorsed eating disorder-related symptoms, and women with MST were about two times more likely to report problems with alcohol use compared to women with no MST (Skinner, et al., 2000). Additionally, as was noted earlier, MST experience is associated with higher rates of medical conditions such as hypertension, liver disease, obesity, and pulmonary disease given the pivotal link between positive mental health-related behaviors (e.g., exercise, proper diet, alcohol use, smoking) and these disease processes (Frayne, et al., 2003; Hyun & Pavao, 2009).

Emotional consequences of MST. A host of emotional consequences for Veterans who experienced MST (such as guilt, shame, disgust, anxiety, depression, and anger) have been verified by existing research (Lutwak, 2013). Emotional sequelae for military sexual trauma also include how Veterans conceptualize their emotions, as demonstrated by increased difficulties with emotion regulation and greater tendency to devalue emotional reactions (Voller, et al., 2015).

Guilt and shame are some of the most commonly endorsed emotions following sexual trauma (Nishith, Nixon, & Resick, 2005). Although often used interchangeably in colloquial contexts, guilt and shame are conceptually different in psychological terms, bearing important phenomenological distinctions (Crocker, Haller, Norman, & Angkaw, 2016). Broadly speaking, shame is a self-focused emotion, while guilt is an others-focused emotion. Shame is associated with feeling damaged, unworthy, or fundamentally defective at one's core. Guilt tends to highlight specific behaviors that one feels may have harmed others or may be negatively evaluated or judged by others. Guilt tends to manifest itself in feelings that one has done something wrong, and shame tends to arise in feelings that one is a bad person (Parker & Thomas, 2009).

Veterans with MST also experience guilt and shame in similar ways to civilians with sexual trauma histories, and there are also some military-specific and post-military considerations. Guilt reactions related to experiences of sexual trauma can include blaming oneself for the assault, feeling that one could have somehow prevented the assault, and feeling bad for reporting the assault to family or law enforcement out of concern for consequences for the perpetrator (particularly if the perpetrator is a family

member or preexisting social contact) (Nishith, et al., 2005). Feelings of shame about experiencing sexual assault can encompass feeling embarrassed about being a victim, feeling that the experience of sexual assault entails a personal infraction of deeply held religious and/or moral beliefs, wanting to hide the trauma from others, feeling damaged because of the assault, and feeling that there is something intrinsic about oneself that caused the assault (Northcut & Kienow, 2014). In addition to these manifestations, Veterans who experienced MST can also experience guilt and shame related to reporting (or not reporting) that the perpetrator is a direct superior or fellow service(wo)man, experiencing loss of power and control, and for men in particular, questioning of one's masculinity and sexual orientation (Morris, et al., 2014; Natelson, 2009).

Another commonly reported emotional reaction following sexual trauma is disgust, which is considered a basic emotion that is broadly characterized by a visceral revulsion/rejection reaction to aversive pathogenic, sexual, or moral stimuli (Badour, Ojserkis, McKay, & Feldner, 2014). The experience of sexual trauma holds the capacity to elicit disgust across any and all domains of disgust (i.e., pathogenic disgust regarding venereal disease transmission, sexual disgust regarding coerced and harmful sexual contact, moral disgust regarding violation of personal moral standards), and indeed, research on sexual trauma indicates that disgust following sexual trauma is experienced as a unique posttraumatic emotion that warrants specific attention alongside conventional foci on emotions of fear, anxiety, and depression (Badour & Feldner, 2016; Badour, et al., 2014).

Research on disgust and sexual trauma is an emerging area, yet several studies have already established disgust to be uniquely contributory to posttraumatic stress and PTSD following sexual trauma, even after teasing out the influences of posttraumatic fear and anxiety (Badour & Feldner, 2013). Predominant theories for the efficacy of exposure-based treatments of PTSD attribute symptom improvement to reductions in fear- or anxiety-based conditioned responses (Foa & Kozak, 1986). However, studies on exposure-based treatments of disgust-dominant psychopathologies (e.g., obsessive-compulsive disorder, specific phobias) show that reducing disgust reactions requires lengthier and more intense exposures than does reducing fear- or anxiety-based conditional reactions (Badour & Feldner, 2016; Mason & Richardson, 2012). Though to date, no studies in the literature appear to specifically investigate the role of disgust in MST-related PTSD, anecdotal evidence from clinicians working with this clinical population substantiates the role of disgust in exacerbating MST-related PTSD, limiting the potential effectiveness of existing exposure-based treatments, and contributing to treatment dropout and reduced therapeutic expectations.

Anger in the context of PTSD has a range of phenomenological manifestations for Veterans, including aggression (Crocker, et al., 2016; Worthen, 2011), decreased behavioral control (Harned, Jackson, et al., 2010), short-temperedness (Miller & Resick, 2007), hostility, increased emotional reactivity (Gonzalez, Novaco, Reger, & Gahm, 2016), sympathetic nervous system activation, social isolation, restricted affective range, and resentment (Chemtob, Novaco, Hamada, Gross, & Smith, 1997). The emotional experience of anger can be associated with multiple symptom clusters for PTSD

diagnostic criteria in the DSM-IV-TR and DSM-5, including avoidance, arousal, reexperiencing, and cognitions/mood clusters. Given the prevalence of anger among Veterans with PTSD, the VHA has made various efforts to implement anger management therapy protocols across VA Medical Centers (Chemtob, et al., 1997). Research on PTSD in Veterans continues to investigate the important associations of anger with PTSD severity (Germain, Kangas, Taylor, & Forbes, 2016), comorbid depression (Gonzalez, et al., 2016), and reduced PTSD treatment efficacy (Rizvi, Vogt, & Resick, 2009; Worthen, 2011). The link between anger and sexual trauma-related PTSD is well established, with one study in particular having examined the role of pretreatment anger in influencing treatment dropout and efficacy for women undergoing CPT or Prolonged Exposure (PE) Therapy. That study, conducted by Rizvi, Vogt & Resick (2009), found that women undergoing PE were more likely to drop out of treatment if they had higher levels of pretreatment anger than women undergoing CPT, a finding that aligns with previous evidence that anger can impede emotional processing of trauma material (Foa & Kozak, 1986). Despite a paucity of direct investigation, the link between anger and MST-related PTSD can be logically inferred from existing work on PTSD among 1) Veterans and 2) sexual trauma victims.

In addition to specific emotions such as guilt/shame, disgust, anger, depression, and anxiety, Veterans with MST-related PTSD can also struggle with difficulties with emotional regulation and dissociation (Luterek, Bittinger, & Simpson, 2011), as well as greater tendencies to devalue one's emotions (Voller, et al., 2015). Similar emotional consequences following sexual trauma are well documented for victims of adult and

childhood sexual abuse in civilian samples (Harned, Rizvi, et al., 2010). For combat Veterans with PTSD, it has been found that fear of experiencing anxiety and anger prior to starting CPT is associated with greater likelihood of dropping out of treatment (Miles, Smith, Maieritsch, & Ahearn, 2015). Emotional difficulties such as heightened reactivity, poor regulation, and devaluation are associated in particular with borderline personality disorder, for which the likelihood of previous sexual trauma history is well established (Harned, Jackson, et al., 2010). Additionally, a recent study found a 22% prevalence rate through medical chart review for borderline personality disorder among Veterans with MST-related PTSD (Williams, et al., 2015).

Cognitive consequences of MST. Veterans who have PTSD related to MST contend with a variety of negative cognitive consequences (Surís, Link-Malcolm, Chard, Ahn, & North, 2013), as would be expected based on previous research on negative posttraumatic cognitions among civilian survivors of sexual trauma. However, little to date has been published that specifically examined cognitions (negative posttraumatic cognitions and suicide-related cognitions) among Veterans with MST-related PTSD (Bryan, Bryan, & Clemans, 2015; Holliday, et al., 2014; Surís, et al., 2011). Nonetheless, the importance of cognitions to MST-related PTSD cannot be overstated based on the existing body of research on PTSD and cognitions, sexual trauma-related PTSD, and military-related PTSD. A general overview of existing research on negative posttraumatic cognitions will first be outlined, followed by a discussion of findings from studies that evaluated cognitions based on an MST population.

Traumatic events are hypothesized to elicit changes in cognitions that can then impede subsequent emotional processing and healing related to the trauma (Foa & Kozak, 1986; Resick & Schnicke, 1992). Trauma theories have posited several areas in which harmful cognitive changes occur following trauma, including negative beliefs about oneself, the world, power, control, safety, and intimacy (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). For survivors of sexual trauma, increased negative cognitions are well documented, including low self-worth, increased beliefs about one's perceived culpability in the sexual assault, heightened mistrust of others, decreased self-efficacy, increased self-blame, and increased suicidal ideation (Bryan, et al., 2015; Foa, et al., 1999; Foa & Rauch, 2004; Lutwak, 2013; Resick & Schnicke, 1992; Surís, et al., 2011). Increased suicidal ideation is associated with having a PTSD diagnosis (Oquendo, et al., 2003), and suicidal ideation is significant concern for Veterans. Veterans with PTSD are four times more likely to endorse suicidal ideation than Veterans without PTSD, and risk for suicidal ideation is 5.7 times higher for Veterans with two or more comorbid psychiatric diagnosis than those with PTSD alone (Surís, et al., 2011). Importantly, research has shown a significant link between PTSD severity and posttraumatic cognitions among survivors of sexual trauma with PTSD (Sobel, Resick, & Rabalais, 2009), military personnel with combat-related PTSD (Germain, et al., 2016), and Veterans with MST-related PTSD (Holliday, et al., 2014).

Bryan et al. (2015) found significant associations between suicidal ideation and suicidal plans for male Veterans who experienced MST, as well as significantly increased risk for suicidal ideation, plans, and attempts for female Veterans with a history of sexual

trauma prior to military service. Surís et al. (2011) found that suicidal ideation was positively correlated with PTSD severity for Veterans with MST-related PTSD, though it must be stated that the correlation was statistically explained by the inclusion of depressive symptom severity. However, the association between PTSD and depressive symptoms is still important to note when one considers that PTSD and depression are highly comorbid (David Forbes, et al., 2011).

Among Veterans with MST-related PTSD who enrolled in one of two psychotherapies—Cognitive Processing Therapy (CPT) or Present-Centered Therapy (PCT)—greater PTSD severity at baseline was significantly correlated with increased negative posttraumatic cognitions, as measured by the Posttraumatic Cognitions Inventory (Holliday, et al., 2014). In the same study, researchers found that Veterans with MST-related PTSD who engaged in CPT reported significantly less negative posttraumatic cognitions related to oneself and the world at post-treatment than those who received PCT.

The link between PTSD severity and posttraumatic cognitions has contributed to the development of evidence-based treatments (EBTs) for PTSD, notably CPT and Prolonged Exposure Therapy (PE), that focus on reduction of posttraumatic cognitions as a treatment target, though with differentially prioritized therapeutic mechanisms (Foa & Kozak, 1986; Foa & Rauch, 2004; Resick, et al., 2008; Resick & Schnicke, 1992). CPT therapists use cognitive restructuring techniques such as Socratic questioning and identifying/challenging maladaptive cognitive schemas as means for reducing posttraumatic cognitions (Resick & Schnicke, 1992; Surís, Link-Malcolm, et al., 2013),

while PE therapists engage patients in repeated exposure to the trauma to foster emotional processing, which is thought to catalyze reductions in posttraumatic cognitions (Foa & Kozak, 1986). Both CPT and PE were originally developed for use with survivors of sexual trauma with PTSD, and both EBTs have evidence for efficacy in reducing PTSD symptoms among sexual trauma survivors and military populations (Steenkamp, et al., 2015), including those with MST-related PTSD (Surís, Link-Malcolm, et al., 2013). Studies have demonstrated each EBT's efficacy in reducing posttraumatic cognitions, though there is some debate among researchers regarding the exact mechanisms of action—cognitive restructuring or emotional processing—for these cognitive changes and corresponding reductions in posttraumatic symptoms within each EBT (Foa & Rauch, 2004; Resick, et al., 2008).

PTSD treatment

Treatment options for PTSD have historically consisted of psychotherapeutic and pharmacological options, though research increasingly demonstrates several forms of psychotherapy to be more effective than medication alone (DeViva, et al., 2015; Steenkamp, et al., 2015). Current clinical guidelines indicate that evidence-based treatments (EBTs) such as CPT, PE, Eye Movement Desensitization and Reprocessing (EMDR), and PCT are effective PTSD treatments (Ponniah & Hollon, 2009; Steenkamp, et al., 2015). In recent years, the VA has made concerted efforts to implement CPT and PE as first line psychotherapy treatments for Veterans with PTSD, whether the trauma experienced is combat-related, non-combat-related, or MST-related, based on growing evidence in the literature for these treatments' efficacy with Veterans (Steenkamp, et al.,

2015). Despite national training and implementation rollouts for CPT and PE, which are justified by a combination of clinical trials on PTSD for civilians and Veterans, currently the only clinical trial that focused on Veterans with MST-related PTSD in the research was conducted by Surís, et al. (Surís, Link-Malcolm, et al., 2013) and is the source of data for this proposed study.

Cognitive Processing Therapy (CPT)

CPT was developed in 1992 by Resick and Schnicke as a form of cognitive-behavioral therapy to treat PTSD among female survivors of sexual assault (Resick & Schnicke, 1992). The manualized treatment consists of 12 psychotherapy sessions that implement treatment components of exposure and cognitive restructuring of maladaptive beliefs (termed “stuck points” in CPT nomenclature). Since its original development, research on CPT has expanded in demonstrating efficacy in treating PTSD for a range of populations such as adults with childhood sexual abuse (Chard, 2005), combat Veterans (Monson, et al., 2006), female survivors of interpersonal violence (Resick, et al., 2008), refugees (Schulz, Resick, Huber, & Griffin, 2006), and Veterans with MST (Surís, Link-Malcolm, et al., 2013).

CPT is primarily based on addressing the cognitive appraisal processes associated with posttraumatic symptoms and memories. Resick and Schnicke outlined several studies showing that survivors of trauma experienced more difficulties in trauma recovery if they held stronger views prior to the trauma regarding safety, trust, intimacy, and invulnerability. Based on this, they developed an information processing theory and treatment protocol capable of addressing a multitude of posttraumatic cognitions,

emotions and reactions, including fear, anger, confusion, disgust, anxiety, shame, guilt, depression, avoidance, and many others. Concepts incorporated by Resick and Schnicke include schemas, assimilation, and accommodation.

Schemas are broadly defined as a mental framework that helps individuals quickly process, organize, and interpret incoming information and experiences (Littleton, 2007). Schemas are generally helpful in allowing a person to navigate one's surroundings, relationships, and experiences efficiently, but when one has an experience, such as trauma, that is discrepant from a preexisting schema, the new information is either assimilated or accommodated at the cognitive level, which in turn affects subsequent emotional and behavioral reactions (Littleton, 2007; Resick & Schnicke, 1992). Assimilation occurs when the new information or experience is changed or distorted in order to allow one to fold it into a preexisting schema, and accommodation happens when the preexisting schema is altered so that the new information or experience can be incorporated into the revised schema (Payne, Joseph, & Tudway, 2007). For survivors of sexual trauma, these two processes can become problematic when traumatic memories are inappropriately distorted to fit preexisting schemas (assimilation) and when maladaptive schemas are formed in order to accommodate the traumatic experience (overaccommodation) (Resick & Schnicke, 1992). Examples of assimilation for sexual trauma survivors can include blaming oneself for the assault or doubting whether the assault really happened or can be labeled as such. Survivors of sexual trauma can overaccommodate by forming broad negative generalizations about trust, intimacy, safety, and vulnerability.

In CPT, the therapist helps the patient identify maladaptive cognitive schemas related to the trauma, such as thoughts of self-blame, guilt, shame, anger, mistrust, and other posttraumatic beliefs that have formed as a result of the disconnect between one's pretrauma views of oneself or the world and the trauma experience (Resick & Schnicke, 1992). The therapist then challenges these "stuck points" with Socratic questioning and cognitive restructuring techniques. CPT also has an exposure component, drawn upon from research by Foa et al's (1986) theory for fear processing, which involves having the patient write a detailed account of the trauma that is then read aloud repeatedly within and outside of therapy sessions. Foa et al. have posited that posttraumatic fear can be reduced by repeatedly activating fear memories through imaginal exposure to the trauma experience as means for eliciting emotional processing that was otherwise stunted due to posttraumatic avoidance behaviors (Foa & Kozak, 1986; Foa & Rauch, 2004).

Additionally, the CPT protocol includes psychoeducation, where the patient is taught about relevant topics such as common posttraumatic reactions, the role of avoidance in maintaining PTSD, safety, power, trust, intimacy, and self-esteem. Through the CPT process, the therapist is facilitating the patient's ability to challenge maladaptive thinking patterns, elicit primary negative emotions that may heretofore not been adequately experienced or processed, and reduce posttraumatic avoidance symptoms (which, as previously mentioned, are most predictive of PTSD diagnosis and maintenance; North, et al., 2009).

Research has shown CPT to be an evidence-based treatment (EBT) for PTSD among both civilian and military populations. Resick and Schnicke (1992) demonstrated

that CPT was effective in reducing PTSD and depression symptoms among rape survivors, the population for whom CPT was originally developed. Additional work comparing CPT to Prolonged Exposure Therapy (PE) and a waitlist condition showed efficacy for both CPT and PE, with CPT faring better for reducing guilt-related cognitions (Nishith, Resick, & Griffin, 2002). Resick et al. (2008) also conducted a dismantling study, which compared the full treatment, the cognitive components of CPT, and the exposure components of CPT for treating PTSD. In this study, it was found that all three groups experienced significant improvements in PTSD symptoms and depression symptoms and that patients who received the cognitive components of CPT as treatment experienced greater symptom reductions than those who received the exposure components of CPT as treatment, which may suggest that the cognitive aspects of CPT are the nexus for CPT's efficacy in treating PTSD. CPT has been shown to be an effective treatment for PTSD related to childhood sexual abuse (Chard, 2005; Chard, Weaver, & Resick, 1997), OEF/OIF Veterans (Chard, et al., 2010), Veterans with chronic military-related PTSD (Monson, et al., 2006), and importantly to the present study, MST-related PTSD (Surís, Link-Malcolm, et al., 2013).

Therapeutic expectations

Therapeutic expectations as a psychological construct can be broadly defined as encapsulating the extent to which a patient believes that a proposed treatment will improve one's symptoms and makes sense for treating those symptoms (Cohen, Beard, & Björgvinsson, 2015). The idea of therapeutic expectations is variously described, with as-of-yet no systematic nomenclature within the literature, as demonstrated by terms such as

“treatment expectancy,” “pretreatment beliefs,” “treatment credibility beliefs,” “patient expectations” (Tsai, Ogrodniczuk, Sochting, & Mirmiran, 2014), “treatment expectations,” and “improvement expectations” (Barber, et al., 2014). Currently, there are no studies in the literature that have specifically examined therapeutic expectations for MST-related PTSD, Veterans with PTSD, or PTSD generally. However, there are some studies that have investigated the inherent construct of therapeutic expectations (notwithstanding use of heterogeneous terminology), finding a positive relationship between therapeutic expectations prior to commencing treatment and posttreatment psychotherapy outcomes among psychotherapy clients in a university clinic (McClintock, Anderson, & Petrarca, 2015), patients with depression (Barber, et al., 2014; Ekberg, Barnes, Kessler, Malpass, & Shaw, 2016; Tsai, et al., 2014), patients with substance use disorders (Frankl, Philips, & Wennberg, 2014), and psychotherapy clients in community settings (Cohen, et al., 2015). Pairing these more general findings on therapeutic expectations’ positive relationship to treatment outcomes with a host of studies showing treatment dropout and treatment nonresponse for PTSD treatments, a case can be made for the importance of investigating the role of therapeutic expectations among Veterans seeking treatment for MST-related PTSD.

Higher, more positive therapeutic expectations have been shown to consistently correlate with better psychotherapeutic outcomes across a variety of psychotherapies, including interpersonal, psychodynamic, and cognitive-behavioral psychotherapy modalities (Constantino, Ametrano, & Greenberg, 2012). One meta-analysis conducted by Constantino et al. (2012) evaluated 46 independent clinical samples that included over

8,000 patients and found a significant, small effect size ($d = .24$) with greater treatment expectations being positively associated with greater symptom reduction posttreatment.

Some recent, preliminary attempts have been made to understand this relationship between higher therapeutic expectations and better psychotherapy outcomes. One study tested a hypothesized mediation pathway whereby therapeutic alliance was hypothesized to mediate the relationship between pretreatment therapeutic expectations and treatment outcomes, but ultimately found that clients' expectations for therapists' expertise related to treatment outcome, though without mediation (Patterson, Anderson, & Wei, 2014). A study by McClintock et al. (2015) found evidence for a multiple mediation model whereby the effect of therapeutic expectations on treatment outcome was mediated by therapeutic alliance first and then session positivity. This study in particular underscores the importance of therapeutic expectations in fostering a positive therapeutic alliance, which is known to facilitate lower treatment dropout and nonresponse (Barber, et al., 2014). By extension, these findings may also point to the role of poor therapeutic expectations in influencing the well-established higher rates of treatment dropout and nonresponse that occur with PTSD treatments (Najavits, 2015).

As mentioned previously, there appear to be no studies to date that have investigated therapeutic expectations among patients seeking psychotherapy for PTSD, military-related PTSD, or MST-related PTSD. However, researchers have paid considerable attention to treatment dropout among those seeking psychotherapy treatment for PTSD. Treatment dropout is conceptually and empirically (as mentioned above) linked to therapeutic expectations. One meta-analysis on treatment dropout among

patients seeking psychotherapy for PTSD found that treatment dropout rates can vary widely across studies, between 0-41% for exposure-based psychotherapies and between 0-48% for psychotherapies lacking focus on traumatic memory (Imel, Laska, Jakupcak, & Simpson, 2013). In comparing clinical trials for CPT and PE to “real world” studies for these two trauma-focused psychotherapies, higher dropout rates were found in “real world” studies than clinical trial studies (Najavits, 2015). In a study examining predictors of treatment outcome for PTSD treatments, it was found that treatment dropout was negatively associated with the extent to which patients thought that treatment was credible for treating PTSD (Taylor, 2003). For CPT in particular, a 2008 review found dropout rates ranging from 17% to 22% and nonresponse rates to CPT ranging from 9% to 32% (Schottenbauer, et al., 2008). However, the same review article importantly noted that reasons for PTSD treatment dropout are overwhelmingly heterogeneous and understudied, particularly given that most studies do not cite or measure time points for when patients drop out of treatment (i.e., after the first session, after a few sessions, or near the end of treatment). Overall, clients who drop out of PTSD psychotherapy or those who attend sessions inconsistently tend to have worse treatment outcomes than those who regularly attend and complete all treatment sessions (Ehlers, et al., 2013; Schottenbauer, et al., 2008).

Though therapeutic expectations and treatment dropout are different constructs, they are nonetheless correlated based on previous research and additionally, therapeutic expectations can be influenced by many of the same factors that are known to affect treatment dropout (Cohen, et al., 2015; Najavits, 2015; Patterson, et al., 2014). One of the

foremost concerns cited by patients about trauma-focused psychotherapy, particularly modalities that involve exposure to traumatic memories (e.g., PE, CPT), is that engaging in trauma-focused psychotherapy will worsen their symptoms (Imel, et al., 2013; Schottenbauer, et al., 2008; van Minnen, et al., 2002; Zoellner, et al., 2011). Fear of worsening symptoms from trauma-focused psychotherapy has been found to be a commonly voiced fear among novice clinicians as well (Zoellner, et al., 2011). If patients fear that their symptoms will worsen from trauma-focused psychotherapy, this logically and necessarily connotes lowered therapeutic expectations. Within the VA system, it has also been found that female Veterans who feel comfortable with psychological treatments offered by the VA are more likely to adhere to and complete treatment (Fontana & Rosenheck, 2006; Ghahramanlou-Holloway, Cox, Fritz, & George, 2011). From this finding, a natural and logical link could be inferred between increased comfort with care and increased therapeutic expectations among female Veterans by virtue of greater likelihood for treatment adherence and completion. For MST Veterans, it has been found that ratings for VA health care quality are more likely to be lower than those provided by non-MST Veterans (Kimerling, et al., 2011), which may influence MST Veterans to report lower therapeutic expectations for psychotherapy targeted to treat MST-related PTSD. Additionally, many Veterans—particularly those who have experienced MST—have experienced multiple traumas that cumulatively contribute to PTSD symptomatology (Luterek, et al., 2011; Miller & Resick, 2007). Psychotherapies for PTSD offered by the VA, including CPT and PE, often have predetermined protocols for the frequency, number, and structure of sessions and also require the Veteran to identify a

single trauma to target during treatment (Foa, Gillihan, & Bryant, 2013; Resick & Schnicke, 1992). It is commonly understood by clinicians based on theory, research, and clinical practice that therapeutic gains from addressing the single, worst trauma as the treatment target for trauma-focused psychotherapy may be generalized to additional traumas (Foa & Rauch, 2004; Monson, et al., 2006). However, if not adequately provided with this rationale and reassured from the onset of treatment, it may be possible for Veterans to think that the manualized nature and seemingly singular focus on one index trauma within treatment may not be sufficient to treat the complex and severe nature of their PTSD symptoms, thereby inclining them to hold lower therapeutic expectations (Ghahramanlou-Holloway, et al., 2011).

Stigma against mental health problems and seeking treatment, particularly among Veterans, may also contribute to lowered therapeutic expectations for PTSD psychotherapy. Veterans have been found to see seeking help/treatment as a sign of personal weakness (Burns, et al., 2014), and female Veterans with sexual trauma histories have been found to rate discomfort with seeking help and concern about social consequences as barriers to seeking mental health treatment (Ouimette, et al., 2011). Additionally, some recent work on novice therapists working with patients who have experienced sexual trauma shows that novice therapists' expectations for trauma-focused psychotherapy can often mirror client therapeutic expectations, with novice therapists voicing concerns such as "my client will experience intolerable distress" and "exposure techniques will produce vicarious traumatization" (Zoellner, et al., 2011). For Veterans with PTSD, PTSD symptom severity has also been linked with perceived barriers to

seeking care, a small but significant effect that has been particularly associated with avoidance symptoms (Ouimette, et al., 2011). There is already a growing body of research showing that certain psychological overlays ought to be addressed prior to commencing trauma-focused psychotherapy, including active substance abuse (Najavits & Hien, 2013; Ouimette, et al., 1998) and suicidal/self-injurious behaviors (Harned, Jackson, et al., 2010; Harned, Rizvi, et al., 2010). Given the involved nature of trauma-focused psychotherapies and the understandable lay assumption of many PTSD patients that treatment may worsen their symptoms, therapeutic expectations for PTSD treatment (including MST-related PTSD) are an important consideration that ought to be studied by researchers and addressed by clinicians with their clients prior to commencing treatment (Zoellner, et al., 2011). Given the aforementioned findings, additional research that explores links between therapists' expectations for trauma-focused treatment and the therapeutic alliance (Keller, Zoellner, & Feeny, 2010), and research exploring the mediating effect of the therapeutic alliance on the relationship between clients' therapeutic expectations and posttreatment symptom reduction (Patterson, et al., 2014) would pave the way for future work to investigate the role of therapeutic expectations for Veterans seeking psychotherapy treatment for MST-related PTSD.

CHAPTER III

METHODOLOGY

Study design

The study was completed using baseline and end-of-treatment data from a randomized clinical trial (RCT) comparing CPT and PCT as treatment for MST-related PTSD. The original RCT was conducted with male and female Veterans recruited at the VA North Texas Health Care System (VANTHCS) who had a diagnosis of PTSD related to MST. Data collection involved a combination of clinician-administered semi-structured interviews and self-report measures at baseline, throughout treatment, and at end-of-treatment as means for assessing psychiatric symptoms, diagnostic information, PTSD symptom severity, physical functioning, emotional functioning, cognitive functioning, and therapeutic expectations. The primary aims for the original RCT involved comparing treatment efficacy of CPT versus PCT for MST-related PTSD. This study focused on using baseline data to assess variables that may mediate the effect of PTSD severity on therapeutic expectations, in addition to using end-of-treatment PTSD symptom severity data as means for examining whether treatment type (CPT or PCT) moderates the relationship between therapeutic expectations and change in PTSD severity from baseline to end of treatment.

Sample recruitment

Recruitment was conducted at the VANTHCS, which is comprised of the Dallas VA Medical Center, Fort Worth Outpatient Clinic, and Sam Rayburn Memorial VA Center in Bonham, Texas. Participants were recruited through the following referral

sources: clinician referrals and self-referrals from IRB-approved advertisement methods (e.g., flyers placed throughout the VANTHCS, mailed recruitment letters).

A total of 481 Veterans were referred to the RCT. Of the 481 referrals, 320 were screened out during a preliminary screening for the following reasons: 131 for not meeting the study inclusion criteria (see below), 106 chose not to participate, and 83 were lost to follow up. The remaining 161 Veterans were enrolled in the RCT, but 32 Veterans were then removed from the RCT due to not meeting inclusion criteria during the initial assessment phase or declining continued participation in the RCT following enrollment. This resulted in 129 Veterans who were administered baseline measures, thereby comprising the sample for this proposed study (Surís, Link-Malcolm, et al., 2013).

Once referred to the study, Veterans were scheduled for an initial screening with an assessment technician. During this screening, the assessment technician explained the study protocol, provided disclosure information about audiotaping and videotaping of psychotherapy sessions, and reviewed the study informed consent form, which outlined the study purpose, treatment conditions, random assignment of participants to treatment conditions, the time commitment involved to complete treatment and related study assessments, the payment schedule for assessment sessions, and potential risks of harm from participation (including the possibility of worsening symptoms, particularly during early parts of treatment).

Inclusion and exclusion criteria for participation in this study were based on CSP #494 (“A Randomized Clinical Trial of Cognitive-Behavioral Therapy for the Treatment of PTSD in Women”), which was the largest study conducted to date for PTSD treatment

of female Veterans, conducted at 11 sites, including the Dallas VA (the study's top recruitment site). The inclusion and exclusion criteria were intended to be as unrestrictive as possible while still ensuring participants' safety and the study's internal validity.

Inclusion criteria. In order to be included, participants must have 1) been Veterans or active duty, from any service era, with a current PTSD diagnosis related to MST; 2) experienced MST no less than three months prior to beginning the RCT; 3) identified MST as the index trauma causing them the worst current distress (if other traumas had been experienced); 4) at least one clear memory of the index trauma that was sufficient to write an impact statement describing that trauma; 5) consented to be randomized into a treatment condition; 6) not received or be receiving any other psychotherapy for PTSD during the six weeks of active treatment (though psychotherapy for other problems, brief check-ins with an existing psychotherapist, and attendance of self-help groups was permitted); 7) been on a stable medication regimen (if using a psychoactive medication) for two months minimum prior to beginning the RCT.

Exclusion criteria. Interested participants were excluded from the RCT for any of the following reasons: 1) any prior CPT or PCT treatment (as detected from chart review by the study coordinator); 2) current substance dependence; 3) any prior substance dependence not in remission for at least three months; 4) any current psychotic symptoms; 5) any current manic episode or unmanaged/unstable Bipolar Disorder; 6) any prominent current suicidal or homicidal features; 7) any severe cognitive impairment or history of Organic Mental Disorder; 8) any current involvement in a physically abusive relationship.

Procedure

Following the completion of the informed consent process, participants were then interviewed by an assessment technician, who assessed participants' trauma history by using the Life Events Checklist (LEC) and administered the Clinician Administered PTSD Scale (CAPS) to assess for PTSD due to an MST event. If participants endorsed having experienced more than one MST event, they were asked to choose one MST event that was causing the most current distress. The assessment technician then assessed whether the MST event fulfilled criteria A1 and A2 from the CAPS. If that MST event did not fulfill CAPS criteria A1 and A2, then the assessment technician asked the participant about any other potential MST events that may have been experienced and assessed whether one of those met CAPS criteria A1 and A2. Once an MST that fulfilled CAPS A1 and A2 criteria was identified, the assessment technician then administered the CAPS for that MST event. After the CAPS, the assessment technician conducted the Structured Clinical Interview for the DSM-IV (SCID) in order to determine any comorbid psychiatric diagnoses. If the participant was considered eligible for the study after the CAPS and SCID, the assessment technician administered all other baseline measures. Depending on the amount of time required to complete the measures, the assessment technician sometimes scheduled an additional appointment to complete all of the required baseline assessments. When additional appointments were scheduled, all baseline assessment visits occurred within three days.

Once confirmed as eligible for the study based on these assessments, eligible participants were then randomized into one of two treatment conditions: CPT or PCT.

Treatment was to start within 30 days of completing the baseline assessments. If participants waited past two weeks from the baseline assessment to commence treatment, then the CAPS was re-administered. Participants completed a questionnaire assessing therapeutic expectations at their appointment for session 1 of treatment (CPT or PCT).

Measures

All of the following measures were collected prior to commencing treatment. In addition, PTSD severity at the end of treatment was assessed, and this data was used as the dependent variable for testing Model T1.

Demographic information

Participants completed the Subject Interview Questionnaire Sheet at the baseline interview session, which included questions regarding the following characteristics: education status, marital status, race/ethnicity, age, gender, occupation, employment status, monthly income, VA disability, military branch, and dates of service.

PTSD severity

PTSD severity was measured at baseline and end of treatment by a clinician-assessed measure from the Clinician Administered PTSD Scale (CAPS), which was also used to confirm PTSD diagnosis for eligibility in the study.

The CAPS is a semi-structured clinical interview that was administered during the baseline assessment to provide one of two measures for PTSD severity at baseline. Based on the DSM-IV diagnostic criteria for PTSD, the CAPS assesses the intensity and frequency of the 17 DSM-IV symptoms for PTSD with a five-point rating scale that is behaviorally anchored from zero (“never”) to four (“daily or almost daily”), with higher

scores indicating greater symptom severity. With five additional global rating questions, the CAPS also assesses the effect of PTSD symptoms on social and occupational functioning, severity of reported symptoms, improvement from previous administration (for repeated assessments), and overall response validity. Additional questions were added regarding age, educational level, and marital status at the time of the index trauma. The CAPS is a statistically consistent and reliable measure, with internal consistency of .94 for the 17 symptoms and test-retest reliability ranging from .90 to .98. The total PTSD severity score from the CAPS is also strongly correlated with other PTSD measures such as the PK scale from the Minnesota Multiphasic Personality Inventory-2 (.77) and the Mississippi Scale for Combat-Related PTSD (.91) (Blake, et al., 1995).

Therapeutic expectations

Four self-report questions used by Schnurr et al. (2007) were administered at session 1 to assess therapeutic expectations at baseline. Participants were asked to rate their feelings at baseline about the treatment protocol to which they had been randomized, either CPT or PCT. Each question consists of a nine-point rating scale ranging from zero (“not at all”) to nine (“extremely”), with higher scores indicating greater therapeutic expectations. The questions were as follows: 1) How logical does this type of treatment seem to you? 2) How successful do you think that this treatment will be in reducing your trauma-related symptoms? 3) How successful do you think that this treatment will be in reducing other personal problems? 4) How confident would you be in recommending this treatment to a friend with similar problems? A total score was calculated for therapeutic expectations by summing the item ratings.

Quality of life

The Quality of Life Inventory (QOLI) was used to assess self-reported quality of life (Frisch, 1999). The QOLI consists of 32 items for which participants provide ratings of satisfaction versus dissatisfaction for 16 aspects of life, as well as ratings for how important those items are to participants' overall happiness and life satisfaction. Higher scores indicate greater quality life. The QOLI has strong test-retest reliability (.73 over two weeks) and internal consistency (.79), and it has been validated for use in VA psychiatric settings (Frisch, Cornell, Villanueva, & Retzlaff, 1992).

Physical health

The 36-Item Short Form Health Survey (SF-36) was used to provide a broad measure of physical health functioning across various areas of physical, mental, and social health. Each question consists of a rating scale, with the range for the rating scale varying depending on the domain that the question is designed to assess. Scoring is conducted with a computer algorithm that accounts for phrasing of questions and weighting individual item ratings to account for differing scales across items, generating a total score for health functioning (the higher the score, the greater the functioning). In addition to a total score for health functioning, subscores are also calculated for the following domains: physical functioning, social functioning, physical roles, emotional roles, mental health, vitality, bodily pain, general health, and health transition. The domains of the SF-36 each have good internal consistency as measured by Cronbach's α —physical functioning (.88 to .93), social functioning (.60 to .80), physical roles (.76 to .90), emotional roles (.80 to .96), mental health (.67 to .90), vitality (.62 to .96), bodily

pain (.79 to .86), and general health (.80 to .95) (McHorney, Ware, & Raczek, 1993).

The SF-36 also generates a Physical Component Summary (PCS), comprised of an average score for all questions with physical health relevance with higher scores indicating greater physical health functioning. The PCS was used as the measure for physical health in this study.

Anger

The State-Trait Anger Expression Inventory 2 (STAXI-2) is a self-report measure consisting of 57 items, from which six scales, five subscales, and an overall anger index are derived (Spielberger, Sydeman, Owen, & Marsh, 1999). The six scales are as follows: State Anger, Trait Anger, Anger Expression-In, Anger-Expression Out, Anger Control-In, Anger Control-Out). The three subscales for State Anger are: Feeling Angry, Feel Like Expressing Anger Verbally, and Feel Like Expressing Anger Physically. The Trait Anger scale is comprised of the following two subscales: Angry Temperament and Angry Reaction. The STAXI-2 also includes an Anger Expression Index, which provides an overall measure for anger expression, with higher scores indicating greater anger expression. The Anger Expression Index was used as a measure of anger in this study.

Depression

The self-report format for the Quick Inventory of Depressive Symptomatology (QIDS-SR) is a 16-item questionnaire that assessed participants' severity for the nine DSM-IV-TR symptoms of major depression (Rush, et al., 2003). For each item, participants rated the level of symptoms experienced over the past week on a four-point Likert scale ranging from zero to three, thereby yielding total QIDS-SR scores ranging

from zero to 27. The QIDS-SR is highly correlated with the Hamilton Rating Scale for Depression and the Inventory for Depressive Symptomatology (the long form version from which the QIDS-SR was derived), and it has good internal consistency (0.94) and concurrent validity (0.90).

Posttraumatic cognitions

The Posttraumatic Cognitions Inventory (PTCI) (Foa, et al., 1999) is a self-report measure that provides a broadband assessment of the participants' cognitive appraisals of trauma and posttraumatic sequelae. It consists of 33 items that are rated on a seven-point Likert scale ranging from one ("Total disagree") to seven ("Totally agree"), with higher ratings corresponding to more negative cognitive appraisals. The PTCI consists of three separate factors, as yielded from a principal-components factor analysis: 1) Negative Cognitions about the World, 2) Negative Cognitions about Self, and 3) Self-Blame for the Trauma. The PTCI has high internal consistency overall (.97) and for the three factors—Negative Cognitions about the World (.86), Negative Cognitions about Self (.97), Self-Blame for the Trauma (.86).

Suicide-related cognitions

The Suicide Cognition Scale (SCS) is a 20-item self-report inventory in which study participants rated the extent to which they agreed or disagreed with one-sentence statements intended to assess themes of unlovability, unbearability, and unsolvability. Each item is rated on a five-point Likert scale ranging from zero ("Strongly disagree") to five ("Strongly agree"), with higher scores indicating stronger suicide-related cognitions. The SCS has demonstrated good internal consistency (between 0.92-0.94 across two

samples) and validity in predicting suicidal ideation, future suicide attempts, and ability to differentiate between suicide attempts and non-suicidal self-injurious behaviors. The SCS has also been demonstrated as a valid and reliable measure of suicidal ideation among military personnel (Bryan, et al., 2014).

Mediation and moderation—an overview

In conceptual terms, mediation models posit that the relationship between an independent variable and dependent variable (main effect) is *explained* (partially or fully) by the inclusion of a third variable. In statistical terms, mediator variables exert an *indirect* effect such that the independent variable affects the mediating variable, which then affects the dependent variable. Full mediation is rarely found, whereby the main effect (statistically known as the direct effect, i.e., the relationship between the independent variable and dependent variable) is completely explained by the mediating variable such that the inclusion of that mediating variable into the model reduces the direct effect down to zero. Partial mediation is more common, such that the total effect is in part explained by the mediator variable (*indirect effects*) and partly by the main effect (*direct effect*) (Hayes, 2009; Preacher & Hayes, 2008).

Conceptually, moderation models suggest that the *strength/direction* of the relationship between the independent variable and dependent variable (main effect) is *influenced* by the inclusion of a third variable. Statistically, moderation occurs when a third variable has a *conditional effect* on the main effect (i.e., relationship between independent variable and dependent variable) such that either the strength or direction of the main effect depends on the moderating variable (i.e., the moderating variable interacts

with the independent variable and with the dependent variable to influence the main effect) (Hayes, 2009; Preacher & Hayes, 2008).

Broadly speaking, the following terms denote the same underlying theoretical constructs, with the use of various terms being predicated on whether discussion is statistical versus conceptual in nature—a) main effect, direct effect, relationship between independent variable and dependent variable; b) mediation, indirect effect; c) moderation, interactive effect, interaction, conditional effect.

Hypotheses

The primary hypotheses for this study consisted of testing six separate moderated mediation models and one moderation model. The first six hypothesized models propose physical (Models P1 and P2), emotional (Models E1 and E2), and cognitive (Models C1 and C2) variables as hypothesized mediators, with treatment type (CPT or PCT) as a hypothesized moderator, of the following hypothesized main effect: baseline PTSD severity as the independent variable and baseline therapeutic expectations as the dependent variable. For these six moderated mediation models, the hypothesized main effect between PTSD severity (independent variable) and therapeutic expectations (dependent variable) was necessarily causal due to the logically implicit assumption of temporal change, wherein participants entered the study with a certain level of PTSD severity and then formed therapeutic expectations for treatment thereafter. Treatment type was hypothesized as a moderator because participants were informed which treatment they were assigned to prior to being assessed for therapeutic expectations, meaning that knowledge of treatment type could potentially influence how they rated

therapeutic expectations. The last hypothesized model (Model T1) posited a moderated effect as follows—therapeutic expectations as the independent variable, change in PTSD severity from baseline to end-of-treatment as the dependent variable, and treatment type (CPT or PCT) as the moderator variable.

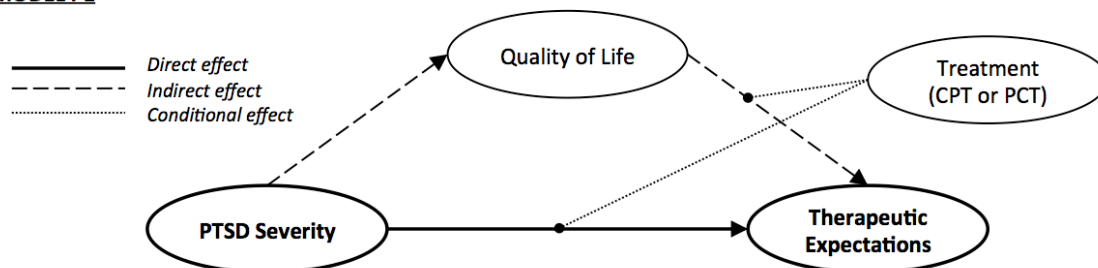
Physical functioning—Models P1 and P2

Models P1 and P2 hypothesized that the relationship between baseline PTSD severity and baseline therapeutic expectations would be mediated by physical functioning and moderated by treatment type. Physical functioning was defined in each model by one of two variables: quality of life and physical health.

Model P1: quality of life. Model P1 hypothesized that baseline PTSD severity would affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the mediating effect of quality of life, and that treatment type would moderate the direct effect by interacting with PTSD severity and quality of life.

Figure 1. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with quality of life as a mediator and treatment type as a moderator.

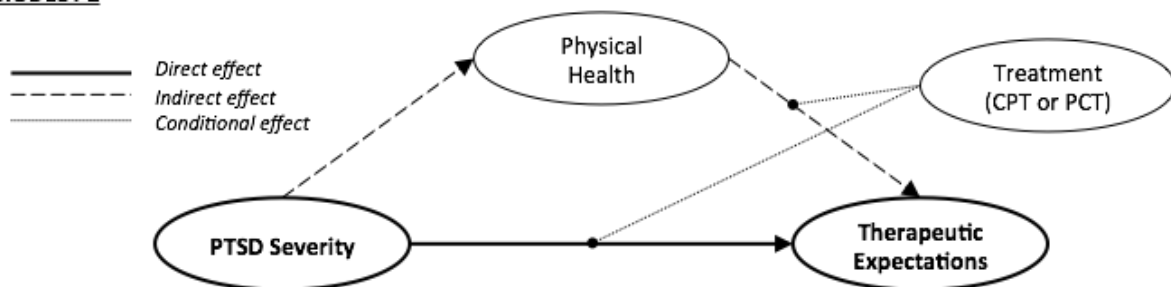
MODEL P1



Model P2: physical health. Model P2 hypothesized that baseline PTSD severity would affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the mediating effect of physical health, and that treatment type would moderate the direct effect by interacting with PTSD severity and physical health.

Figure 2. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with physical health as a mediator and treatment type as a moderator.

MODEL P2



Emotional functioning—Models E1 and E2

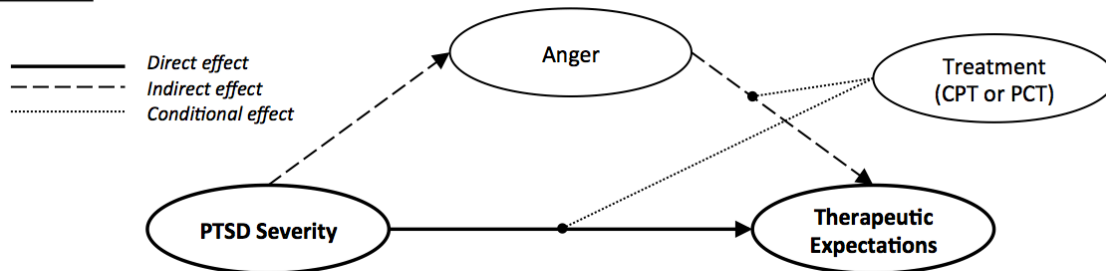
Models E1 and E2 hypothesized that the relationship between baseline PTSD severity and baseline therapeutic expectations would be mediated by emotional functioning and moderated by treatment type. Emotional functioning was defined in each model by one of two variables: anger and depression.

Model E1: anger. Model E1 hypothesized that baseline PTSD severity would affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the mediating effect

of anger, and that treatment type would moderate the direct effect by interacting with PTSD severity and anger.

Figure 3. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with anger as a mediator and treatment type as a moderator.

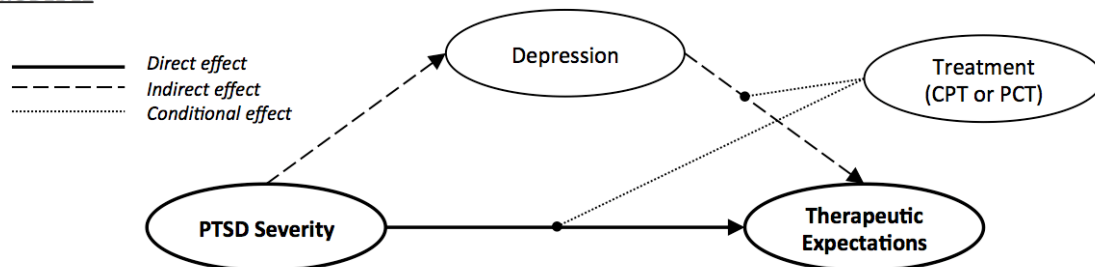
MODEL E1



Model E2: depression. Model E2 hypothesized that baseline PTSD severity will affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the mediating effect of depression, and that treatment type would moderate the direct effect by interacting with PTSD severity and depression.

Figure 4. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with depression as a mediator and treatment type as a moderator.

MODEL E2



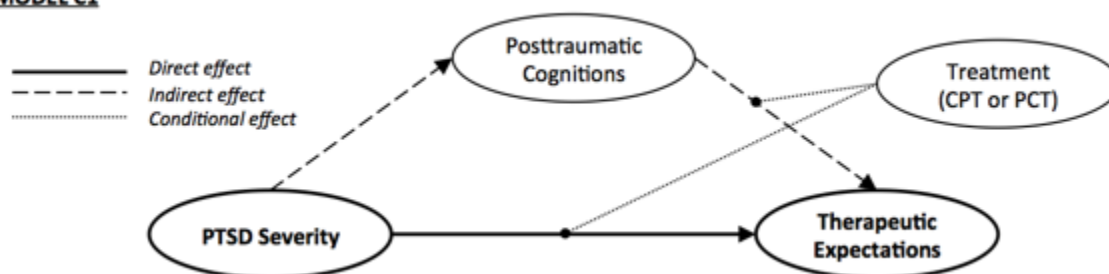
Cognitive functioning—Models C1 and C2

Models C1 and C2 hypothesized that the relationship between baseline PTSD severity and baseline therapeutic expectations would be mediated by cognitive functioning and moderated by treatment type. Emotional functioning was defined in each model by one of two variables: posttraumatic cognitions and suicide-related cognitions.

Model C1: posttraumatic cognitions. Model C1 hypothesized that baseline PTSD severity would affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the mediating effect of posttraumatic cognitions, and that treatment type would moderate the direct effect by interacting with PTSD severity and posttraumatic related cognitions.

Figure 5. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with posttraumatic cognitions as a mediator and treatment type as a moderator.

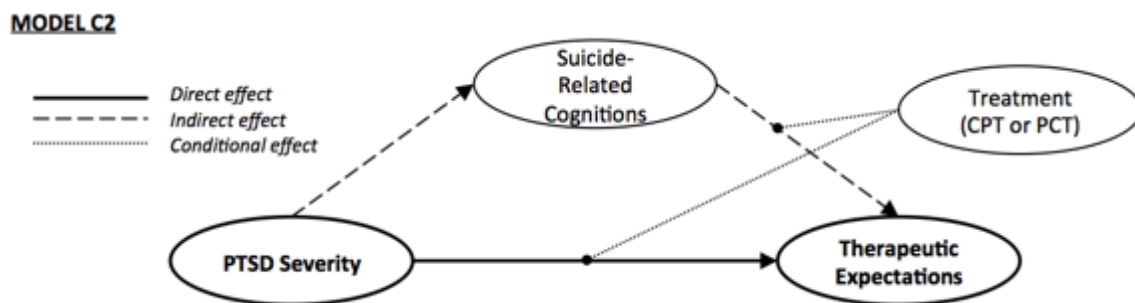
MODEL C1



Model C2: suicide-related cognitions. Model C2 hypothesized that baseline PTSD severity would affect baseline therapeutic expectations (higher PTSD severity → lower therapeutic expectations), that this direct effect would be partially explained by the

mediating effect of suicide-related cognitions, and that treatment type would moderate the direct effect by interacting with PTSD severity and posttraumatic cognitions.

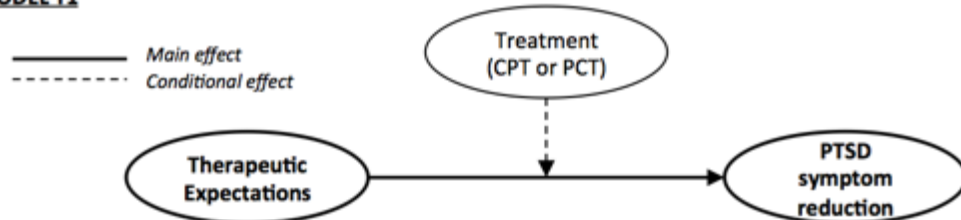
Figure 6. Hypothesized moderated mediation of the effect of PTSD severity on therapeutic expectations, with suicide-related cognitions as a mediator and treatment type as a moderator.



Model T1: moderation by treatment type

Model T1 proposed that baseline therapeutic expectations would have a significant main effect on the change in PTSD severity from baseline to the end of treatment PTSD severity, with an interaction (i.e., conditional effect, moderation) from treatment type (CPT or PCT).

Figure 7. Hypothesized moderation of the effect of therapeutic expectations on change in PTSD severity from baseline to end-of-treatment, with treatment type (CPT or PCT) as a moderator.

MODEL T1

CHAPTER FOUR

RESULTS

Demographics

Demographic analyses were conducted by evaluating frequencies and percentages for categorical variables (gender, marital status, race/ethnicity, number of participants at baseline, number of participants who completed treatment) and means, standard deviations, minimums, maximums, and ranges for continuous variables (years of education, age) (see Table One).

A total of 128 Veterans completed the baseline assessment—113 female Veterans (88.3%) and 15 male Veterans (11.7%). Regarding marital status, 44.5% of Veterans reported being divorced ($n = 57$), while the remaining Veterans reported the following marital status—married ($n = 28$, 21.9%), separated ($n = 17$, 13.3%), never married ($n = 14$, 10.9%), widowed ($n = 7$, 5.5%), and cohabitating ($n = 5$, 3.9%). For race/ethnicity, most Veterans who participated in the baseline assessment were Black/African-American ($n = 54$, 42.2%) or White ($n = 50$, 39.1%), and the remaining Veterans indicated the following racial/ethnic status—other ($n = 11$, 8.6%), Hispanic ($n = 7$, 5.5%), American Indian/Alaskan Native ($n = 4$, 3.1%), and Native Hawaiian/Pacific Islander ($n = 2$, 1.6%).

Of the 128 Veterans who completed the baseline assessment, 71 Veterans (55.5%) were assigned to CPT, and 57 Veterans (44.5%) were assigned to PCT. Additionally, 89 Veterans (69.5%) out of the total 128 Veterans completed their assigned treatments and provided end-of-treatment PTSD severity data. Among the 89 Veterans who completed their assigned treatments, 45 Veterans completed CPT, and 44 Veterans completed PCT,

which indicates that 63.3% of those assigned to CPT at baseline complete the treatment and that 77.2% of those assigned to PCT at baseline complete the treatment.

The mean age for the 128 Veterans who completed the baseline assessment was 45.82 (SD = 9.15), with a minimum age of 24 and maximum age of 68. The mean years of education completed by the 128 Veterans was 14.25 (SD = 2.09), with a minimum of 10 years and maximum of 20 years.

Description of statistical analyses

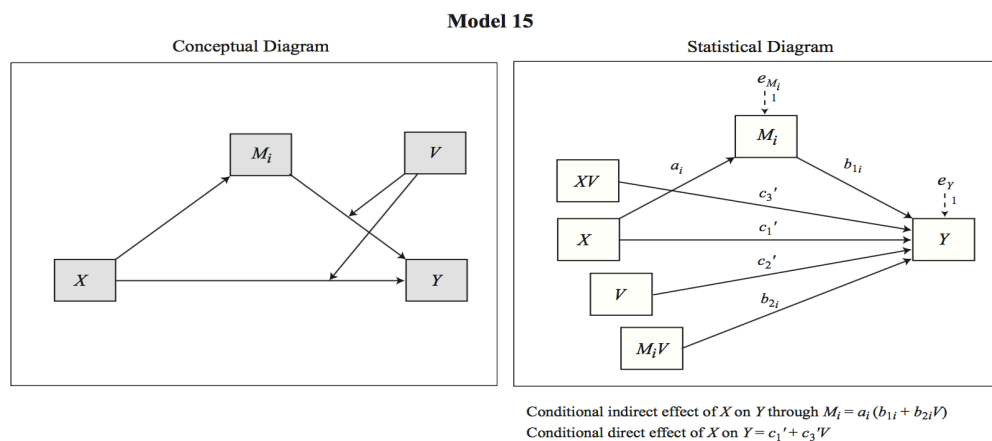
Data analyses were conducted using the Preacher and Hayes PROCESS macro in SPSS (Preacher & Hayes, 2008) for mediation and moderation. The PROCESS macro utilizes a bias-corrected, nonparametric bootstrapping technique that allows testing of the hypothesized indirect effects (i.e., mediation) and conditional effects (i.e., moderation) that contribute to the total path between the independent variable and dependent variable. The bootstrapping procedure generates an approximation of the population distribution by 5,000 resamplings (with replacement) of the original sample, thereby bypassing the need for sample normality assumptions and reducing the likelihood of Type I errors (Hayes, 2009). These resamplings are used as an approximation of the sampling distribution for the indirect and conditional effects from which confidence intervals are generated, which determine whether mediation and/or moderation is statistically present. The indirect effects, which constitute mediation, are defined as the product of the coefficients of the independent variable-to-mediator pathway and the mediator-to-dependent variable pathway. The confidence intervals are interpreted such that significant mediation is detected if zero is not included within the confidence interval. This approach

is currently considered superior because it does not rely on any normality assumptions and better controls for potential Type I statistical errors (Preacher & Hayes, 2008).

Primary analyses

Models P1-2, E1-2, and C1-2 were structured as moderated mediation models, for which primary data analyses were conducted by encoding Model 15, a preprogrammed template for moderated mediation models, of the Preacher and Hayes PROCESS macro model templates (see Figure 8). The independent variable of baseline PTSD severity (operationalized as total CAPS score) was encoded as X , the dependent variable of baseline therapeutic expectations [operationalized as total score on the four self-report questions gleaned from Schnurr, et al. (2007)] was encoded as Y , treatment type (CPT or PCT) was encoded as a moderator (V in Figure 8), and each of the physical, emotional, and cognitive variables were encoded as mediators (M in Figure 8).

Figure 8. Model 15 from Preacher and Hayes PROCESS macro for SPSS.

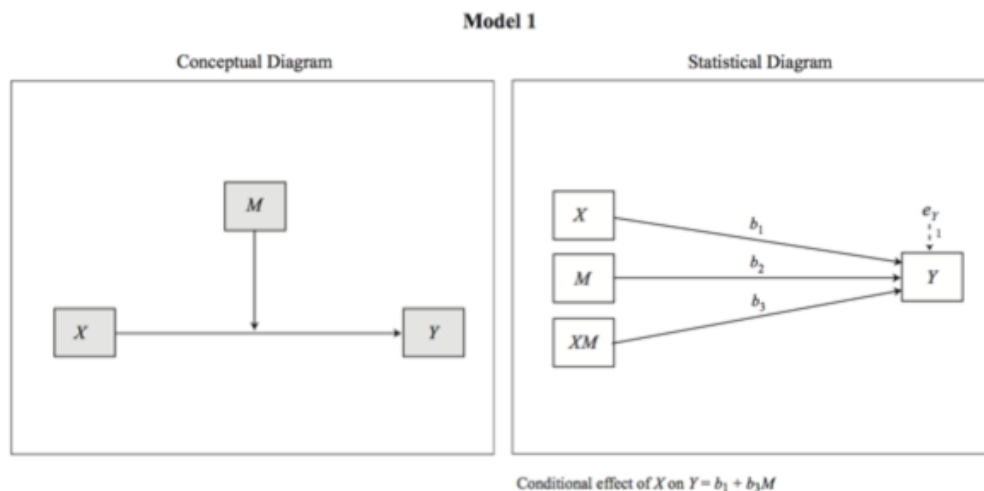


The physical variables of quality of life and physical health used as the mediators were operationalized as total QOLI score in Model P1 and total PCS score in Model P2. For the emotional variables, anger was operationalized in Model E1 as the total Anger

Expression Index score on the STAXI-2, and depression was operationalized in Model E2 as the total QIDS-SR score. The cognitive variables for Model C1 (posttraumatic cognitions) and C2 (suicide-related cognitions) were operationalized as total scores on the PTCI and SCS, respectively.

For Model T1, primary data analysis was conducted by encoding Model 1 from the preprogrammed templates for moderation analysis from the Preacher and Hayes PROCESS macro. The independent variable of baseline therapeutic expectations was encoded as X , the dependent variable of change in PTSD severity from baseline to end-of-treatment was encoded as Y , and treatment type was encoded as the moderator M .

Figure 9. Model 1 from Preacher and Hayes PROCESS macro for SPSS.



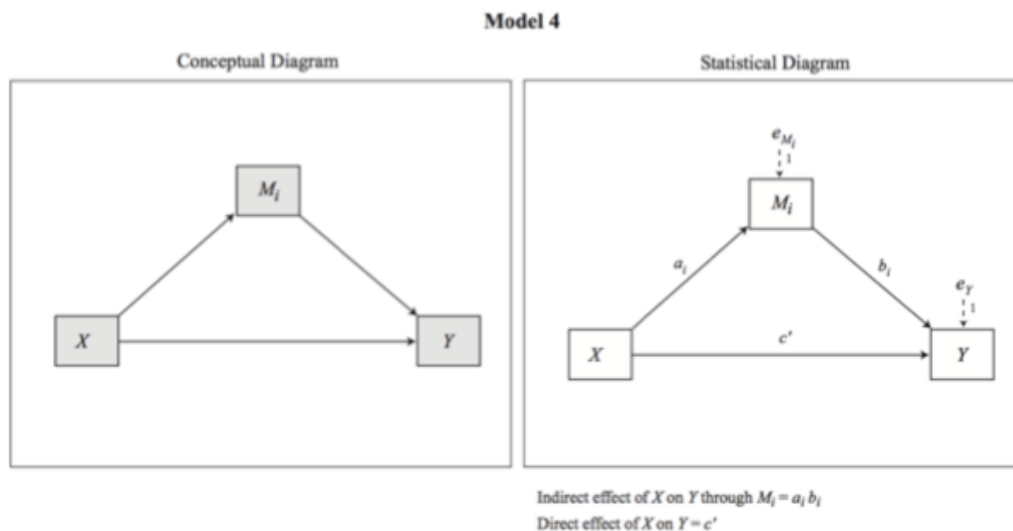
Secondary analyses

After the primary analyses, two sets of secondary analyses were conducted for exploratory purposes.

First, Models P1-2, E1-2, and C1-2 were converted from moderated mediation models to simple mediation models by removing the moderator variable of treatment type

(CPT or PCT) in order to explore potentially significant effects that may have been washed out due to the sample size being parsed by including treatment type as a moderator. To conduct these analyses, Model 4 from the preprogramed templates for mediation analysis from the Preacher and Hayes PROCESS macro were encoded into SPSS. The independent variable of baseline PTSD severity was encoded as X , baseline therapeutic expectations was input as the dependent variable Y , and each of the physical, emotional, and cognitive variables were encoded as a mediator (M).

Figure 10. Model 4 from the Preacher and Hayes PROCESS macro for SPSS.



Additionally, given that avoidance symptoms (Cluster C symptoms) are most predictive of a PTSD diagnosis and that avoidance symptoms have theoretical links to treatment dropout and therapeutic expectations, another set of secondary analyses was conducted by substituting baseline avoidance symptoms for baseline PTSD symptom severity as the independent variable X within the moderated mediation analyses of Models P1-2, E1-2, and C1-2.

Model P1—quality of life

Primary analysis

Model P1 was not found to indicate significant moderated mediation ($SE = .0092$, $CI [-.0263, .0152]$).

Secondary analyses

For exploratory purposes, two additional models were conducted to evaluate potential mediating effects of quality of life. First, Model P1 was revised to remove the moderator of treatment type, yielding a simple mediation model. Results indicated that quality of life did not mediate the relationship between baseline PTSD severity and therapeutic expectations ($\beta = -.0026$, $SE = .0072$, $CI [-.0274, .0058]$). Next, Model P1 was revised to replace the independent variable of baseline PTSD severity with baseline avoidance symptoms. No significant moderated mediation was indicated for this revised model ($SE = .0196$, $CI [-.0514, .0335]$).

Model P2—physical health

Primary analysis

Model P2 was not significant for moderated mediation ($SE = .0152$, $CI [-.0647, .0033]$).

Secondary analyses

Two additional models were analyzed for exploratory purposes to evaluate potential mediation through physical health. Model P2 was first restructured as a simple mediation model by removing treatment type as a moderator variable. No significant mediation by physical health was detected ($SE = -.0012$, $CI [-.0196, .0091]$). Then, the

independent variable of baseline PTSD severity in Model P2 was replaced with baseline avoidance symptoms. With this substitution, there was no significant moderated mediation effect detected ($SE = .0252$, $CI [-.0943, .0202]$).

Model E1—anger

Primary analysis

No significant moderated mediation was indicated for Model E1 ($SE = .0104$, $CI [-.0388, .0092]$).

Secondary analyses

Anger was further evaluated as a potential mediator within two exploratory analyses. First, Model E1 was reformatted as a simple mediation model with the removal of treatment type as a moderator. No significant mediation was detected ($\beta = -.0069$, $SE = .0094$, $CI [-.0344, .0054]$). Model E1 was then revised by replacing baseline PTSD severity with baseline avoidance symptoms. No significant moderated mediation was found ($SE = .0243$, $CI [-.0772, .0283]$).

Model E2—depression

Primary analysis

Model E2 did not yield significant moderated mediation ($SE = .0519$, $CI [-.0598, .1549]$).

Secondary analyses

For exploratory means, two additional models to evaluate potential mediation through depression were examined. Model E2 was first redrafted to be a simple mediation model by removing treatment type as a moderator. No significant mediation

was detected ($\beta = -.0169$, $SE = .0262$, $CI [-.0908, .0205]$). Model E2 was then revised by swapping out the independent variable of baseline PTSD severity with baseline avoidance symptoms, for which results indicated no significant moderated mediation ($SE = .0464$, $CI [-.0860, .2671]$).

Model C1—posttraumatic cognitions

Primary analysis

There was no significant moderated mediation for Model C1 ($SE = .0414$, $CI [-.0167, .1431]$).

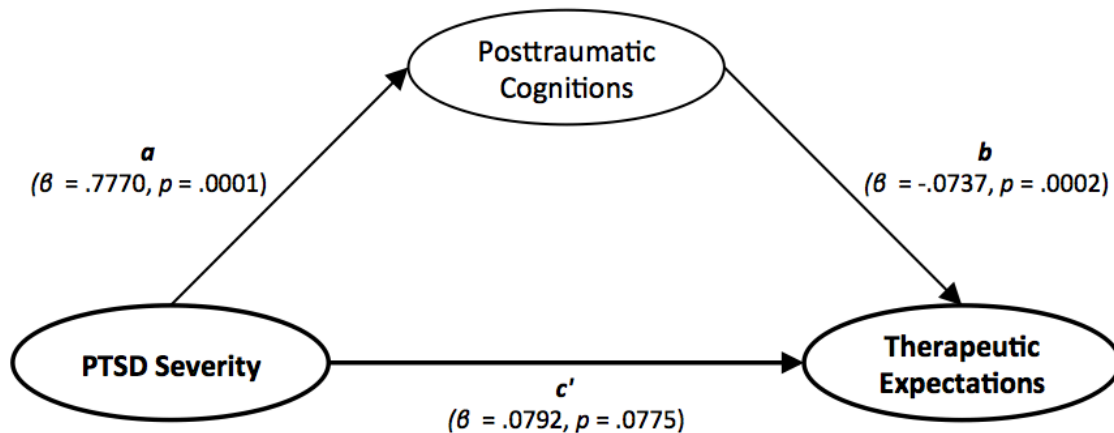
Secondary analyses

Exploratory analyses were conducted to examine potential mediation by posttraumatic cognitions, particularly in light of the significant conditional indirect effects for CPT and PCT.

First, Model C1 was revised by deleting treatment type as a moderator, thereby creating a simple mediation model. A significant relationship was detected between baseline PTSD severity (independent variable) and the mediator of posttraumatic cognitions (a path in the figure below), as well as a significant relationship between posttraumatic cognitions and therapeutic expectations as the dependent variable (b path in the figure below). The PROCESS macro indicated a significant indirect effect through posttraumatic cognitions for the relationship between baseline PTSD severity and therapeutic expectations ($\beta = -.0573$, $SE = .0247$, $CI [-.1240, -.0209]$). The direct effect between baseline PTSD severity and therapeutic expectations ($\beta = .0792$, $SE = .0445$, $p =$

.0775, $CI [-.0089, .1673]$) was not significant (c' in the figure below) after accounting for the indirect effect.

Figure 11. Significant mediation of the relationship between baseline PTSD severity and therapeutic expectations via posttraumatic cognitions



Next, Model C1 was modified by replacing baseline PTSD severity with baseline avoidance symptoms for the independent variable, which yielded no significant moderated mediation ($SE = .0562$, $CI [-.0188, .1998]$).

Model C2—suicide-related cognitions

Primary analysis

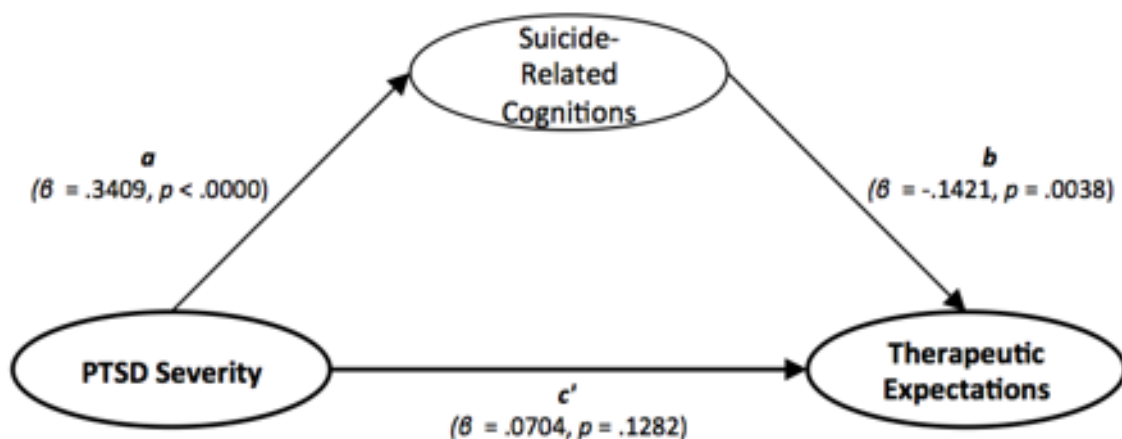
No significant moderated mediation was indicated for Model C2 ($SE = .0016$, $CI [-.0649, .0825]$).

Secondary analyses

Suicide-related cognitions were further explored in exploratory analyses as a potential mediator variable, especially in light of the significant conditional indirect effects for both CPT and PCT.

Model C2 was first redrafted by taking out the moderator variable of treatment type, yielding a simple mediation model for the effect of baseline PTSD severity on therapeutic expectations being mediated by suicide-related cognitions. There was a significant relationship between the independent variable of baseline PTSD severity and the mediator of suicide-related cognitions (*a* path in the figure below), in addition to a significant relationship between the mediator and dependent variable of therapeutic expectations (*b* path in the figure below). The PROCESS macro indicated that there was a significant mediational relationship (i.e., indirect effect) from baseline PTSD severity to therapeutic expectations through suicide-related cognitions ($\beta = -.0484$, $SE = .0201$, $CI [-.0995, -.0178]$). The direct effect of baseline PTSD severity on therapeutic expectations was not significant ($\beta = .0704$, $SE = .0459$, $p = .1282$, $CI [-.0206, .1613]$) after accounting for the aforementioned indirect relationship (*c'* in the figure below).

Figure 12. Significant mediation of the relationship between baseline PTSD severity and therapeutic expectations via suicide-related cognitions



Additionally, Model C2 was revised by swapping the independent variable of baseline PTSD severity with baseline avoidance symptoms, which resulted in no significant moderated mediation ($SE = .0562$, $CI [-.1022, .1248]$).

Model T1—moderation by treatment type

It was hypothesized that the relationship between baseline therapeutic expectations and change in PTSD severity from baseline to end-of-treatment would be moderated by treatment type. Model 1 indicated that treatment type was not a significant moderator ($\beta = .4195$, $SE = .9340$, $CI [-1.4376, 2.2767]$, $p = .6545$).

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the role of physical, emotional, or cognitive variables in influencing the relationship between PTSD severity and therapeutic expectations for Veterans who were seeking psychotherapy for PTSD related to MST. Additionally, this study sought to examine whether the relationship between therapeutic expectations prior to starting psychotherapy and change in PTSD severity from baseline to the end of treatment is influenced by the type of treatment that Veterans were assigned (CPT or PCT). Six models of moderated mediation were hypothesized for the relationship between baseline PTSD severity and therapeutic expectations, each of which included treatment type as a moderator. The six moderated mediation models differed on the hypothesized mediator variables—quality of life (Model P1), physical health (Model P2), anger (Model E1), depression (Model E2), posttraumatic cognitions (Model C1), and suicide-related cognitions (Model C2). One model of moderation was also hypothesized (Model T1), whereby treatment type (CPT or PCT) was hypothesized to moderate the relationship between therapeutic expectations at baseline and change in PTSD severity from baseline to end-of-treatment.

PTSD severity was assessed at baseline and at the end of treatment by the Clinician Administered PTSD Scale (CAPS), which produced total score for PTSD severity that is based on symptom intensity and frequency. To calculate the change in PTSD severity, the total CAPS score at the end of treatment was subtracted from the baseline total CAPS score. Therapeutic expectations were measured by four self-report

questions with nine-point ratings, which were then summed for a total score. For the physical variables examined in Models P1 and P2, quality of life was examined in Model P1 by using the overall score for quality of life produced by the Quality of Life Inventory (QOLI), and physical health for Model P2 was assessed with the total score for Physical Component Summary, which is an average score for all physical health-related questions on the Short Form (36) Health Survey. Emotional variables were investigated as potential mediators by using the Anger Expression Index from the STAXI-2 as a broadband measure of anger in Model E1 and by the total score on the QIDS-SR for depression in Model E2. Cognitive variables were examined as mediators in Models C1 and C2, which used total scores for the Posttraumatic Cognitions Inventory and the Suicide Cognitions Scale, respectively.

Findings and conclusions

Model P1—quality of life

Model P1 did not detect significant moderated mediation through quality of life for the relationship between baseline PTSD severity and therapeutic expectations, as moderated by treatment type (CPT or PCT). Exploratory analyses, which dropped treatment type as a moderator and looked separately at baseline avoidance symptoms instead of total PTSD severity, did not indicate a significant influence from quality of life either. One reason for the lack of significant findings may be the global nature of the total QOLI score. The total QOLI score is an index for overall quality of life based on a wide range of personal domains—health, self-esteem, goals and values, money, work, play, learning, creativity, helping, love, friends, children, relatives, home, neighborhood,

community (Frisch, 1999). Given the vast spectrum of areas assessed, it is possible that overall quality of life may be less influential than more specific domains of quality of life in understanding therapeutic expectations. Specifically, given the negative effects of MST and MST-related PTSD on interpersonal functioning (Kelly, et al., 2011), it may be that particular subscales for quality of life with greater relevance to interpersonal functioning (e.g., love, friends, children, relatives) are more influential in explaining the relationship between PTSD severity and therapeutic expectations. Alternatively, given previous evidence showing that quality of life ratings did not change significantly for Veterans with MST-related PTSD who engaged in either CPT or PCT (Holliday, et al., 2015), it is also possible that quality of life perceptions are not meaningfully related to either therapeutic expectations, PTSD severity prior to treatment, or outcomes from PTSD treatment.

Model P2—physical health

Model P2 did not indicate significant moderated mediation of the relationship between PTSD severity and therapeutic expectations through physical health as a mediator and treatment type as a moderator. Exploratory analyses of physical health within a simple mediation model (without treatment type as a moderator) or with avoidance symptoms as the independent variable also did not yield significant results. These results were contrary to expectations, particularly given that a wealth of evidence has demonstrated that Veterans with MST-related PTSD contend with negative physical health consequences (e.g., cardiovascular disease, sleep problems, gynecological and urological problems, neurological issues) (Boscarino, 2004) and that women with a

history of MST have been found have lower ratings of health-related quality of life than women without MST history (Hyun & Pavaio, 2009).

Despite the previous research on links between MST-related PTSD and physical health, one reason for the lack of significant findings in this study could be that Veterans think about their physical health as unrelated and separate from their PTSD symptoms. This possibility may speak to a potential distinction between expectations for medical treatment versus expectations for mental health treatment, which could help explain why physical health may not influence the relationship between PTSD severity and therapeutic expectations for PTSD treatment. It is also possible that the association between PTSD severity and physical health is stronger in the reverse direction than what was hypothesized in this study—i.e., it may be that physical health influences PTSD severity, which then influences therapeutic expectations, rather than PTSD severity influencing therapeutic expectations through physical health (as hypothesized).

Additionally, the lack of significant findings for physical health in this study may be partially attributable to construct and discriminant validity concerns for the measure used to assess physical health—the Physical Component Summary (PCS) from the SF-36. The PCS is a subscale of the SF-36 that is calculated by averaging all questions with relevance to physical health, and it is contrasted with the Mental Component Summary, which averages all emotionally relevant questions. Despite wide clinical and research use of the PCS for assessing physical health, some research has challenged its discriminant validity by pointing out that scoring for PCS and MCS are interrelated such that positive physical health via the PCS presupposes poor mental health on the MCS and vice versa.

Simulation analyses have demonstrated that because of the aforementioned interdependence, at extremes of both measures, the PCS is more a measure of poor mental health than poor physical health, and vice versa for the MCS (Taft, Karlsson, & Sullivan, 2001). Given the potential issues with construct and discriminant validity for the PCS, the possibility cannot be entirely ruled out that physical health has some role in partially explaining the association between PTSD severity and therapeutic expectations. Furthermore, although the PCS was used as an approximate measure for overall physical health, it may be possible that specific subscales of the SF-36 yield significance (e.g., the physical functioning and bodily pain subscales).

Model E1—anger

Model E1 did not yield significant moderated mediation for the relationship between PTSD severity and therapeutic expectations through mediation of anger and moderation of treatment type. Significant findings did not result from the exploratory analyses of simple mediation through anger or avoidance symptoms as the independent variable in a revised moderated mediation model. These nonsignificant findings were not expected in light of previous research demonstrating the prevalence of anger among Veterans with PTSD (Chemtob, et al., 1997), as well as specific findings indicating problems with emotional regulation for Veterans with MST-related PTSD (Luterek, et al., 2011).

While significant mediation was not detected in any of the analyses, it may nonetheless be noteworthy that in a regression analysis of therapeutic expectations as the outcome variable, with PTSD severity and anger serving as predictors, the influence of

anger was trending towards significance ($p = .0519$) in the expected direction ($\beta = -.0846$). This may indicate that a relationship between anger and therapeutic expectations cannot entirely be ruled out, and so future research ought to further investigate associations between anger, therapeutic expectations, and PTSD severity with larger sample sizes. Moreover, given that the Anger Expression Index, which is the aggregate scale from the STAXI-2 that encompasses all subscales, it is also possible that particular aspects of anger are more important in influencing the relationship between PTSD severity and therapeutic expectations. Specifically, future research ought to investigate potential differences in state versus trait anger in the context of therapeutic expectations, especially in light of increasing research demonstrating the role of anger, emotional dysregulation, and personality dysfunction in the context of PTSD (Badour & Feldner, 2013; Lutwak, 2013).

Model E2—depression

Model E2 did not indicate significant moderated mediation for the relationship between PTSD severity and therapeutic expectations via depression as a mediator and treatment type as a moderator. Additionally, exploratory analyses for Model E2 through a simple mediation model and a revision of avoidance symptoms as the independent variable instead of PTSD severity did not yield significant findings. These findings were contrary to expectations given extensive previous research that has established links between PTSD and depression, as well as MST-related PTSD and depression (Surís, et al., 2011).

Nonetheless, the nonsignificant findings may suggest that despite the high comorbidity between PTSD and depression among Veterans, depressive symptoms may not be sufficiently associated with potential risk of tamping down therapeutic expectations for PTSD treatment. This possibility is somewhat encouraging given that the lack of association may argue against suggestions that Veterans with MST-related PTSD first engage in treatment targeted at depressive disorders (e.g., Major Depressive Disorder) prior to engaging in CPT or other PTSD psychotherapies, thereby furthering the case for Veterans with MST-related PTSD to commence trauma-focused psychotherapy as soon as they are willing and/or able. Additionally, another possible explanation for the lack of significant findings in Model E2 may again be the heterogeneous nature of depressive symptoms, which include various emotions (e.g., sadness, anhedonia), behavioral changes (e.g., sleep disturbances, psychomotor agitation/retardation) and cognitive distress (e.g., low self-esteem). Future research ought to investigate whether specific depressive symptoms are more influential in explaining the link between PTSD severity and therapeutic expectations.

Model C1—posttraumatic cognitions

Model C1 did not result in significant moderated mediation through posttraumatic cognitions for the relationship between PTSD severity and therapeutic expectations (moderated by treatment type). Exploratory analysis for a revised version of Model C1 with avoidance symptoms as the independent variable instead of PTSD severity also did not demonstrate significant moderated mediation. However, exploratory analysis did yield significant findings for mediation through posttraumatic cognitions of the

relationship between PTSD severity and therapeutic expectations, showing that posttraumatic cognitions played a significant role in partially explaining the main relationship between PTSD severity and therapeutic expectations.

Regarding the primary analysis for Model C1, the lack of significant findings may be due to statistical power limitations for the sample size used ($n = 121$), particularly given that the treatment type variable split the sample within the moderator component of the bootstrapping method employed by the PROCESS macro (thereby further reducing statistical power). The concern about statistical power for Model C1 is corroborated by the significant mediation through posttraumatic cognitions that was detected at both levels of treatment type (i.e., conditional indirect effects)—CPT ($\beta = -.0744$, $SE = .0360$, $CI [-.1729, -.0232]$) and PCT ($\beta = -.0330$, $SE = .0213$, $CI [-.0865, -.0005]$). Moreover, the significant conditional indirect effects for CPT and PCT indicated an increased likelihood of statistical significance for the exploratory analysis of evaluating Model C1 without the moderator, instead through a simple mediation model. The exploratory analysis of simple mediation did indeed yield significant mediation through posttraumatic cognitions.

In interpreting this significant finding, it is first important to delineate posttraumatic cognitions from PTSD severity. PTSD severity captures the overall experience of PTSD through assessment of the intensity and frequency of PTSD symptoms, while posttraumatic cognitions specifically encapsulate the cognitive impact of the posttraumatic experience—a distinction that is further illustrated by reiterating that not all individuals who experience negative consequences (including cognitions) from trauma will go on to develop PTSD. That is to say, while PTSD severity can be related to

posttraumatic cognitions, the two constructs are separate and distinct from one another in important ways, most crucial of which being the differences between symptoms versus cognitions and PTSD diagnosis versus posttraumatic consequences.

With this distinction between PTSD severity and posttraumatic cognitions in mind, some important implications follow from the significant mediation through posttraumatic cognitions of the relationship between PTSD severity and therapeutic expectations. First, it is noteworthy that posttraumatic cognitions mediated the relationship between PTSD severity and therapeutic expectations given that therapeutic expectations can be broadly conceptualized as a cognitive construct. This means that the cognitive fallout of having experienced MST is significantly influencing how confident Veterans with MST-related PTSD are about trauma-focused psychotherapy, including how likely they think the therapy is to help them with their PTSD symptoms and/or other personal problems. This association may point to a clinical implication of therapists needing to spend more time prior to commencing trauma-focused psychotherapy on bolstering Veterans' confidence in the prescribed treatment, particularly for Veterans with more severe MST-related PTSD symptoms who might thereby be likely to have more negative posttraumatic cognitions and lower therapeutic expectations.

The significant mediation through posttraumatic cognitions of the relationship between PTSD severity and therapeutic expectations could also hold relevance for how CPT is administered to Veterans with MST-related PTSD and the need to assess posttraumatic cognitions before, throughout, and at the end of treatment. The CPT treatment manual dedicates sessions 8-12 to discussing broad domains relevant to

posttraumatic symptoms, including safety, trust, power/control, esteem, and intimacy, while the PTCI assesses specific areas of posttraumatic cognitions (negative cognitions about self, negative cognitions about world, self-blame). CPT as a cognitive-behavioral treatment is designed to restructure negative cognitions as one means of reducing PTSD symptoms, yet the approach used to alter cognitions (i.e., discussing broad domains relevant to PTSD) is more generic than targeted as it relates to specifically improving posttraumatic cognitions. Thus, in light of the significant finding of mediation through posttraumatic cognitions, it may be important for clinicians to assess the role of posttraumatic cognitions in Veterans' experience of MST-related PTSD by administering the PTCI prior to starting CPT or other trauma-focused psychotherapy. Administering the PTCI prior to treatment may also point clinicians toward needing to assess and augment therapeutic expectations before Veterans with MST-related PTSD begin treatment, particularly for those Veterans with more severe PTSD and/or higher posttraumatic cognitions. Additionally, administering the PTCI before, during, and at the end of treatment could help clinicians to better target and track specific areas of problematic posttraumatic cognitions for discussing and restructuring throughout treatment. This recommendation may help clinicians to effectively target "stuck points," a key intervention goal within CPT, by helping them to better identify particular posttraumatic cognitions as potential stuck points and then track improvements across treatment through re-administrations of the PTCI. Future research on the role of posttraumatic cognitions in explaining the link between PTSD severity and therapeutic expectations ought to inquire into specific domains of posttraumatic cognitions, including the

particular subscales of the PTCI (negative cognitions about self, negative cognitions about world, self-blame), in order to better understand whether some domains are more relevant to assessment and treatment of MST-related PTSD than others.

Model C2—suicide-related cognitions

Model C2 did not indicate significant moderated mediation through suicide-related cognitions for the relationship between PTSD severity and therapeutic expectations, as moderated by treatment type. Significant moderated mediation was also not detected for the exploratory analysis of replacing avoidance symptoms for PTSD severity as the independent variable. However, significant mediation through suicide-related cognitions, without a moderator variable, was detected in exploratory analysis of the relationship between PTSD severity and therapeutic expectations. It was found that suicide-related cognitions played a significant role in partially explaining the association between PTSD severity and therapeutic expectations.

As with the primary analysis in Model C1, the lack of significant findings for the primary analysis of Model C2 may stem from limitations in statistical power for the sample size ($n = 121$), especially given the fact that the moderator variable of treatment type divided the sample for the moderator portion of the bootstrapping method used by the PROCESS macro. This hypothesis of limitations on statistical power for the primary analysis was evidenced by the significant mediation through suicide-related cognitions that was separately detected (i.e., conditional indirect effects) for CPT ($\beta = -.0493$, $SE = .0304$, $CI [-.1320, -.0051]$) and PCT ($\beta = -.0478$, $SE = .0231$, $CI [-.1039, -.0101]$). The significant conditional indirect effects for CPT and PCT pointed to a greater likelihood of

statistical significance for exploratory analysis of Model C2 without a moderator variable, which is indeed what results showed in detecting significant mediation through suicide-related cognitions for the relationship between PTSD severity and therapeutic expectations.

The significant mediation through suicide-related cognitions of the relationship between PTSD severity and therapeutic expectations may point to important implications for clinical work and future research. Research suggests that individuals with PTSD related to interpersonal trauma, including MST, are likely to have more severe PTSD symptoms than individuals with PTSD related to non-interpersonal traumas (e.g., natural disasters) (Dorahy, et al.; D. Forbes, et al., 2014). The Suicide Cognitions Scale (SCS), which was used to assess suicide-related cognitions, encapsulates themes of unlovability, unbearability, and unsolvability. These areas speak to important associations with therapeutic expectations regarding hopelessness and interpersonal connectedness, especially as therapeutic expectations can relate in large part to the alliance between therapist and client. Thoughts of unlovability by definition hold an interpersonal relevance in relating to how one views others as seeing oneself as lovable versus unlovable, and thoughts of unbearability and unsolvability relate strongly to themes of hopelessness and interpersonal isolation.

Given that MST is a form of interpersonal trauma and the existing research showing greater PTSD severity from interpersonal traumas, the interpersonal theory of suicide (Van Orden, et al., 2010) may help in understanding the role of suicide-related cognitions in explaining the link between PTSD severity and therapeutic expectations for

Veterans with MST-related PTSD. The interpersonal theory of suicide posits that suicidality arises from the combination of thwarted belongingness and perceived burdensomeness, which are described as not feeling accepted by others and believing oneself to be a burden on others and/or society, respectively. It may be possible that suicide-related cognitions significantly help to explain the relationship between PTSD severity and therapeutic expectations because of the interpersonal ramifications—i.e., having low therapeutic expectations for MST-related PTSD treatment being uniquely influenced by thwarted belongingness and perceived burdensomeness, all of which can be exacerbated by thoughts of unlovability, unbearability, and unsolvability. It may be that individuals who endorse more suicide-related cognitions are more likely to feel a sense of thwarted belongingness and perceived burdensomeness, which in turn contributes to feeling less confident and hopeful that MST-related PTSD psychotherapy will help to improve their symptoms (PTSD-related and otherwise).

Additionally, it may be possible that Veterans with more severe MST-related PTSD are more likely to have greater feelings of hopelessness, thereby increasing the likelihood of endorsing more suicide-related cognitions and having lower expectations for trauma-focused psychotherapy. Future research ought to focus on identifying specific areas of suicide-related cognitions that are more or less likely to influence therapeutic expectations prior to treatment, as well as treatment outcomes by the end of treatment. Specifically, future directions for research include examining whether particular subscales of the SCS can significantly explain the role and importance of therapeutic expectations prior to psychotherapy for MST-related PTSD.

This finding also yields important clinical implications in pointing to the importance of hopelessness and interpersonal connectedness as these areas relate to suicide-related cognitions influencing therapeutic expectations for MST-related PTSD psychotherapy. Veterans with severe MST-related PTSD may benefit from having clinicians spend time prior to trauma-focused psychotherapy on bolstering hopefulness in the prescribed treatment, explaining its benefits and mechanisms of action, aligning with the patient on commitment to see the Veteran through potentially difficult moments during therapy, and allaying fears and anxieties related to potentially worsening symptoms during treatment. Previous research has established the role of strong therapeutic alliances in reducing suicidality and improving psychotherapeutic outcomes (Krupnick, et al., 1996). Moreover, for MST populations, it may be particularly important to address hopefulness and trust since many Veterans with MST-related PTSD endorse strong fears that others will not believe them if they report or speak about the trauma. This finding contributes to the existing research by pointing to the importance of suicide-related cognitions in influencing therapeutic expectations for Veterans with MST-related PTSD, which by extension strengthens the case for the importance of interpersonal dynamics and mutual hopefulness in the therapeutic alliance for Veterans undergoing psychotherapy for MST-related PTSD.

Model T1—moderation by treatment type

Model T1, which hypothesized that the relationship between therapeutic expectations at baseline and change in PTSD severity from baseline to end of treatment would be moderated by treatment type (CPT or PCT), was not significant. This

nonsignificant finding was contrary to expectations since it was predicted that there would be a conditional effect, differing based on assignment to CPT or PCT, on the hypothesized association between therapeutic expectations prior to treatment and change in PTSD severity from baseline to end of treatment.

There are several possibilities for the lack of significant findings for Model T1, including concerns about statistical power and limitations in detecting effects due to treatment dropout. First, statistical power may be a concern due to the sample size of 89 participants being too small to allow significant detection of a potential effect. The sample size of 89 is also important to note in comparison to the sample size of 121 used for all other hypothesized models, with the difference in sample size being due to the dropout of 32 participants from the baseline assessment to the end-of-treatment assessment. This yields a dropout rate of 26%, which may also indicate clues into the lack of significant findings for Model T1. For example, it may be that participants for whom low therapeutic expectations might have had a greater influence on PTSD symptom change were more likely to drop out than participants who ended up completing treatment. Since these participants would not be included in testing Model T1, this possibility might help to explain the nonsignificant results. Future research ought to investigate whether baseline therapeutic expectations are more likely to influence differential treatment dropout rates across individual psychotherapy sessions and/or based on treatment group assignment.

Another reason for the nonsignificant results with Model T1 may be that there is in fact not a moderating effect by treatment type for the relationship between therapeutic

expectations before starting psychotherapy for MST-related PTSD and change in PTSD severity from before treatment to after treatment. It is possible that by the time that Veterans with MST-related PTSD finish psychotherapy, any potential effects from baseline therapeutic expectations on PTSD symptom change are negligible, undetectable, and/or nonexistent. It also may be that baseline therapeutic expectations are more influential early on in treatment, but that after a certain number of sessions, any potential effects from baseline therapeutic expectations are diminished and/or obviated because the effects from treatment itself are stronger than pre-treatment variables in influencing change in PTSD severity. Future research ought to use modeling approaches to examine whether the effects of baseline therapeutic expectations on PTSD severity change, decrease, plateau, or remain nonsignificant across sessions, which would be in contrast to relying on before/after treatment comparisons alone as done in this study.

Alternatively, despite the fact that in this study, therapeutic expectations were assessed and ostensibly formed after knowledge of which treatment type one was assigned, it may be that therapeutic expectations are not significantly and/or meaningfully predicated on a specific treatment type—rather, that therapeutic expectations is a general construct related to psychotherapy and mental health treatment, as opposed to a construct that is meaningfully defined by and predicated upon a particular psychotherapy modality. This possibility may also dovetail with the lack of significant moderated mediation found in any of the other hypothesized models, including the original forms of the models for cognitive variables for which significance was detected only upon the removal of treatment type as a moderating variable.

Study limitations

One major limitation of this study was the limits in statistical power associated with the hypothesized moderated mediation models (Models P1-2, E1-2, and C1-2) and the reduced sample size used for Model T1. Given the inclusion of both moderation and mediation within the hypothesized setup of Models P1-2, E1-2, and C1-2, the PROCESS macro parsed the sample size of 121 during the moderation portion of the bootstrapping technique, which reduced statistical power. It is also important to note that hypothesized models with more variables and complex setups such as moderated mediation models usually require much larger sample sizes, typically in the hundreds to thousands, in order to increase the likelihood of detecting statistical significance for the overall model (Preacher & Hayes, 2008). Furthermore, statistical power was reduced in the moderation analysis conducted through the PROCESS macro for Model T1 due to the testing of only those participants who completed both baseline and end-of-treatment assessments of therapeutic expectations and PTSD severity.

Another limitation of the statistical analyses with this study relates to the increased likelihood of Type I errors due to multiple analyses being conducted without corrections, though the impact of this limitation may be somewhat attenuated by the fact that most of the analyses were exploratory in nature.

An additional limitation of the current study is lack of a validated assessment for therapeutic expectations. For this study, the construct of therapeutic expectations was operationalized by summing the self-report ratings of four questions, which were acquired from previous work by Schnurr, et al. (2007) but have unfortunately have not

yet been assessed for validity and reliability. As previously discussed, the existing research on therapeutic expectations is limited in scope and lacks homogeneity in defining the construct, both qualitatively and quantitatively, and so the four self-report questions used to assess therapeutic expectations provided the best available measure. However, given the lack of well-established research consensus and consistency for defining, codifying, and operationalizing therapeutic expectations, this current study presents with limitations on construct validity.

Implications

This study provided a first step in understanding the importance of therapeutic expectations, an understudied area, in the treatment of PTSD related to MST. Despite study limitations, results revealed the significant role of posttraumatic cognitions and suicide-related cognitions in influencing the relationship between MST-related PTSD severity and therapeutic expectations, in addition to pointing to future research directions for investigating therapeutic expectations for MST-related PTSD treatment and elucidating implications for treatment readiness and preparedness.

Findings did not reflect a significant influence from quality of life, depression, anger, or physical health in explaining the relationship between MST-related PTSD severity and therapeutic expectations. This may actually provide some evidence for the argument that non-PTSD related symptomatology and psychosocial factors do not alone indicate caution or contraindication for trauma-focused psychotherapy. This possibility is encouraging given the wide range of comorbidities with which Veterans with MST-related and non MST-related PTSD often contend. Nonetheless, future research ought to

continue examining the role of these and other physical and emotional factors in explaining PTSD symptoms, therapeutic expectations, treatment dropout, and treatment outcomes for Veterans with MST-related PTSD.

Despite the nonsignificant findings for the originally hypothesized models, this study yielded significant exploratory findings for posttraumatic cognitions and suicide-related cognitions that suggest important implications for treatment and assessment of PTSD symptoms for Veterans with MST-related PTSD. For both cognitive variables, this study found that cognitions play a significant role in partially explaining the relationship between PTSD severity and therapeutic expectations, which may point to the importance of clinicians spending time with Veterans to augment hopefulness and strengthen the therapeutic alliance prior to starting CPT or PCT. Clinicians may also need to consider assessing posttraumatic cognitions and suicide-related cognitions before, during, and after trauma-focused psychotherapy by administering the PTCI and SCS alongside the PCL in order to better track treatment outcomes, particularly for Veterans presenting with greater PTSD severity and/or Veterans with lower therapeutic expectations. Furthermore, future research ought to use modeling approaches to investigate whether posttraumatic cognitions, suicide-related cognitions, and/or other relatedly important factors (e.g., hopefulness, interpersonal functioning, perceived burdensomeness, cognitions about self, others, and the world) play a significant role in mediating treatment outcomes and treatment dropout rates across sessions, at the end of treatment, and at follow-up intervals.

Across all findings, it was found that treatment type (CPT or PCT) had no significant moderating effects within any of the hypothesized models, which could be interpreted several ways. As previously discussed, it could be that the lack of findings based on treatment type was a result of statistical power limitations, in which case future research with larger sample sizes may yield significant results. Alternatively, it could be that for Veterans with MST-related PTSD, therapeutic expectations are not meaningfully contingent on the specific treatment modality prescribed, which may be somewhat relieving to clinicians and researchers who might fear that insufficiently explaining the specific treatment rationale for CPT, PCT, PE, or other psychotherapies may result in Veterans feeling less confident about the treatment's effectiveness. Rather, based on the significant role of posttraumatic cognitions and suicide-related cognitions found in this study, it may be that emphasizing hopefulness and interpersonal connectedness are more important than previously thought for positively influencing therapeutic expectations, particularly for Veterans with more severe MST-related PTSD. Additional research is needed in this area in order to fully elucidate either of these or other possible explanations.

The significant link of cognitive variables with therapeutic expectations may also serve to further reinforce the centrality of cognitions for MST-related PTSD. Though treatment type did not provide significant moderation in any of the analyses, the potential for CPT to provide better means for addressing therapeutic expectations (in addition to posttraumatic cognitions and suicide-related cognitions) ought not be fully ruled out given that restructuring negative cognitions is a central tool for change within CPT.

Nonetheless, in light of these findings, it may be beneficial to consider modifications to the CPT protocol of specifically assessing, identifying, and altering negative posttraumatic and suicide-related cognitions, both of which, as mentioned previously, are currently not direct treatment targets within CPT.

Future research ought to continue evaluating whether therapeutic expectations play a significant role in the assessment and treatment of PTSD for Veterans who experienced MST. Larger sample sizes may point to significant relationships between therapeutic expectations and PTSD severity prior to treatment. Moreover, modeling approaches may help to elucidate whether therapeutic expectations relatively contribute to PTSD severity and/or other psychosocial outcomes before treatment, across treatment sessions, at the end of treatment, and various post-treatment follow-up intervals. Additional research on therapeutic expectations for Veterans seeking psychotherapy for MST-related PTSD also ought to incorporate assessments of the therapeutic alliance throughout the treatment process in order to increase understanding of the importance of interpersonal factors between clinicians and clients for treatment outcomes and symptom improvement. Such efforts may yield improvements and new directions in the treatment of MST-related PTSD.

TABLE ONE
DEMOGRAPHICS

BASELINE ASSESSMENT		
Categorical variables		
	Sample size (<i>n</i> = 128)	Sample %
Gender		
Female	113	88.3
Male	15	11.7
Marital status		
Divorced	57	44.5
Married	28	21.9
Separated	17	13.3
Never married	14	10.9
Widowed	7	5.5
Cohabiting	5	3.9
Race/ethnicity		
Black/African-American	54	42.2
White	50	39.1
Other	11	8.6
Hispanic	7	5.5
American Indian/Alaskan Native	4	3.1
Native Hawaiian/Pacific Islander	2	1.6
Continuous variables		
	Age	Years of education
Mean	45.82	14.25
SD	9.15	2.09
Minimum	24	10
Maximum	68	20
Treatment assignment		
	Sample size (<i>n</i> = 128)	Sample size (%)
CPT	71	55.5
PCT	57	44.5
END OF TREATMENT		
	Sample size (<i>n</i> = 89)	Sample %
Total N – treatment completion	89	69.5 (89/128)
CPT	45	63.3 (45/71)
PCT	44	77.2 (44/57)

REFERENCES

- Allard, C. B., Nunnink, S., Gregory, A. M., Klest, B., & Platt, M. (2011). Military sexual trauma research: a proposed agenda. *J Trauma Dissociation*, 12(3), 324-345. doi: 10.1080/15299732.2011.542609
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders: DSM-III*. Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders: DSM- IV*. Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Arlington, VA: American Psychiatric Publishing.
- Badour, C. L., & Feldner, M. T. (2013). Trauma-related reactivity and regulation of emotion: Associations with posttraumatic stress symptoms. *Journal of Behavior Therapy and Experimental Psychiatry*, 44(1), 69-76. doi: 10.1016/j.jbtep.2012.07.007
- Badour, C. L., & Feldner, M. T. (2016). Disgust and imaginal exposure to memories of sexual trauma: Implications for the treatment of posttraumatic stress. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(3), 267-275. doi: 10.1037/tra0000079
- 10.1037/tra0000079.supp (Supplemental)

- Badour, C. L., Ojserkis, R., McKay, D., & Feldner, M. T. (2014). Disgust as a unique affective predictor of mental contamination following sexual trauma. *Journal of Anxiety Disorders*, 28(7), 704-711. doi: 10.1016/j.janxdis.2014.07.007
- Bar-Shai, M., & Klein, E. (2015). Vulnerability to PTSD: Psychosocial and demographic risk and resilience factors. In M. P. Safir, H. S. Wallach, A. S. Rizzo, M. P. Safir, H. S. Wallach & A. S. Rizzo (Eds.), *Future directions in post-traumatic stress disorder: Prevention, diagnosis, and treatment*. (pp. 3-30). New York, NY, US: Springer Science + Business Media.
- Barber, J. P., Zilcha-Mano, S., Gallop, R., Barrett, M., McCarthy, K. S., & Dinger, U. (2014). The associations among improvement and alliance expectations, alliance during treatment, and treatment outcome for major depressive disorder. *Psychotherapy Research*, 24(3), 257-268. doi: 10.1080/10503307.2013.871080
- Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., et al. (1995). The development of a clinician-administered PTSD scale. *Journal of traumatic stress*, 8(1), 75-90.
- Bolton, E. E., Litz, B. T., Britt, T. W., Adler, A., & Roemer, L. (2001). Reports of prior exposure to potentially traumatic events and PTSD in troops poised for deployment. *Journal of Traumatic Stress*, 14(1), 249-256. doi: 10.1023/A:1007864305207
- Boscarino, J. A. (2004). Posttraumatic Stress Disorder and Physical Illness: Results from Clinical and Epidemiologic Studies. In R. Yehuda, B. McEwen, R. Yehuda & B.

- McEwen (Eds.), *Biobehavioral stress response: Protective and damaging effects*. (pp. 141-153). New York, NY, US: New York Academy of Sciences.
- Breslau, N., Chilcoat, H. D., Kessler, R. C., & Davis, G. C. (1999). Previous exposure to trauma and PTSD effects of subsequent trauma: Results from the Detroit Area Survey of Trauma. *The American Journal of Psychiatry*, 156(6), 902-907.
- Bryan, C. J., Bryan, A. O., & Clemans, T. A. (2015). The association of military and premilitary sexual trauma with risk for suicide ideation, plans, and attempts. *Psychiatry Research*. doi: 10.1016/j.psychres.2015.01.030
- Bryan, C. J., Rudd, D., Wertenberger, E., Etienne, N., Ray-Sannerud, B., Morrow, C., et al. (2014). Improving the detection and prediction of suicidal behavior among military personnel by measuring suicidal beliefs: an evaluation of the Suicide Cognitions Scale. *J Affect Disord*, 159, 15-22. doi: 10.1016/j.jad.2014.02.021
- Buchanan, N. T., Settles, I. H., & Woods, K. C. (2008). Comparing sexual harassment subtypes among black and white women by military rank: Double jeopardy, the jezebel, and the cult of true womanhood. *Psychology of Women Quarterly*, 32(4), 347-361. doi: 10.1111/j.1471-6402.2008.00450.x
- Burns, B., Grindlay, K., Holt, K., Manski, R., & Grossman, D. (2014). Military sexual trauma among US servicewomen during deployment: A qualitative study. *American Journal of Public Health*, 104(2), 345-349.
- Chard, K. M. (2005). An evaluation of cognitive processing therapy for the treatment of posttraumatic stress disorder related to childhood sexual abuse. *Journal of*

- Consulting and Clinical Psychology*, 73(5), 965-971. doi: 10.1037/0022-006X.73.5.965
- Chard, K. M., Schumm, J. A., Owens, G. P., & Cottingham, S. M. (2010). A comparison of OEF and OIF veterans and Vietnam veterans receiving cognitive processing therapy. *Journal of Traumatic Stress*, 23(1), 25-32.
- Chard, K. M., Weaver, T. L., & Resick, P. A. (1997). Adapting cognitive processing therapy for child sexual abuse survivors. *Cognitive and Behavioral Practice*, 4(1), 31-52. doi: 10.1016/S1077-7229(97)80011-9
- Chemtob, C. M., Novaco, R. W., Hamada, R. S., Gross, D. M., & Smith, G. (1997). Anger regulation deficits in combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, 10(1), 17-36. doi: 10.1002/jts.2490100104
- Cohen, M., Beard, C., & Björgvinsson, T. (2015). Examining patient characteristics as predictors of patient beliefs about treatment credibility and expectancies for treatment outcome. *Journal of Psychotherapy Integration*, 25(2), 90-99. doi: 10.1037/a0038878
- Constantino, M. J., Ametrano, R. M., & Greenberg, R. P. (2012). Clinician interventions and participant characteristics that foster adaptive patient expectations for psychotherapy and psychotherapeutic change. *Psychotherapy*, 49(4), 557-569. doi: 10.1037/a0029440
- Cook, J. M., Thompson, R., Harb, G. C., & Ross, R. J. (2013). Cognitive-behavioral treatment for posttraumatic nightmares: An investigation of predictors of dropout

- and outcome. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5(6), 545-553. doi: 10.1037/a0030724
- Cox, B. J., Mota, N., Clara, I., & Asmundson, G. J. (2008). The symptom structure of posttraumatic stress disorder in the National Comorbidity Replication Survey. *J Anxiety Disord*, 22(8), 1523-1528. doi: 10.1016/j.janxdis.2008.03.009
- Crocker, L. D., Haller, M., Norman, S. B., & Angkaw, A. C. (2016). Shame versus trauma-related guilt as mediators of the relationship between PTSD symptoms and aggression among returning veterans. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(4), 520-527. doi: 10.1037/tra0000151
- Crocq, M. A., & Crocq, L. (2000). From shell shock and war neurosis to posttraumatic stress disorder: a history of psychotraumatology. *Dialogues Clin Neurosci*, 2(1), 47-55.
- Department of Veterans Affairs. Military Sexual Trauma Retrieved September 15, 2015, 2015, from <http://www.ptsd.va.gov/public/types/violence/military-sexual-trauma-general.asp>
- Department of Veterans Affairs. (2013). *Military sexual trauma (MST) screening report, fiscal year 2012*. Washington, D.C.: Author.
- DeViva, J. C., Sheerin, C. M., Southwick, S. M., Roy, A. M., Pietrzak, R. H., & Harpaz-Rotem, I. (2015). Correlates of VA Mental Health Treatment Utilization Among OEF/OIF/OND Veterans: Resilience, Stigma, Social Support, Personality, and Beliefs About Treatment. *Psychol Trauma*. doi: 10.1037/tra0000075

- Dorahy, M. J., Corry, M., Shannon, M., MacSherry, A., Hamilton, G., McRobert, G., et al. Complex PTSD, interpersonal trauma and relational consequences: Findings from a treatment-receiving Northern Irish sample. *Journal of Affective Disorders*, 112(1), 71-80. doi: 10.1016/j.jad.2008.04.003
- Driscoll, M. A., Higgins, D. M., Seng, E. K., Buta, E., Goulet, J. L., Heapy, A. A., et al. (2015). Trauma, social support, family conflict, and chronic pain in recent service veterans: Does gender matter? *Pain Medicine*, 16(6), 1101-1111. doi: 10.1111/pme.12744
- Drossman, D. A. (2011). Abuse, trauma, and GI illness: is there a link? *Am J Gastroenterol*, 106(1), 14-25. doi: 10.1038/ajg.2010.453
- Ehlers, A., Grey, N., Wild, J., Stott, R., Liness, S., Deale, A., et al. (2013). Implementation of cognitive therapy for PTSD in routine clinical care: Effectiveness and moderators of outcome in a consecutive sample. *Behaviour Research and Therapy*, 51(11), 742-752. doi: 10.1016/j.brat.2013.08.006
- Ekberg, S., Barnes, R. K., Kessler, D. S., Malpass, A., & Shaw, A. R. G. (2016). Managing clients' expectations at the outset of online Cognitive Behavioural Therapy (CBT) for depression. *Health Expectations*, 19(3), 557-569. doi: 10.1111/hex.12227
- Fairbank, J. A. (2008). The Epidemiology of Trauma and Trauma Related Disorders in Children and Youth *PTSD Research Quarterly*, 20(2).

- Foa, E., Ehlers, A., Clark, D., Tolin, D., & Orsillo, S. (1999). The Posttraumatic Cognitions Inventory (PTCI): Development and validation. *Psychological Assessment, 11*(3), 303-314.
- Foa, E., Gillihan, S., & Bryant, R. (2013). Challenges and successes in dissemination of evidence-based treatments for posttraumatic stress: Lessons learned from prolonged exposure therapy for PTSD. *Psychological Science in the Public Interest, 14*(2), 65-111. doi: 10.1177/1529100612468841
- Foa, E., & Kozak, M. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*(1), 20-35. doi: 10.1037/0033-2909.99.1.20
- Foa, E., & Rauch, S. (2004). Cognitive Changes During Prolonged Exposure Versus Prolonged Exposure Plus Cognitive Restructuring in Female Assault Survivors With Posttraumatic Stress Disorder. *Journal of Consulting and Clinical Psychology, 72*(5), 879-884. doi: 10.1037/0022-006X.72.5.879
- Foa, E., Riggs, D., & Gershuny, B. (1995). Arousal, numbing, and intrusion: symptom structure of PTSD following assault. *Am J Psychiatry, 152*(1), 116-120. doi: 10.1176/ajp.152.1.116
- Fontana, A., & Rosenheck, R. (2006). Treatment of female veterans with posttraumatic stress disorder: The role of comfort in a predominantly male environment. *Psychiatric Quarterly, 77*(1), 55-67. doi: 10.1007/s11126-006-7961-y
- Forbes, D., Lockwood, E., Elhai, J. D., Creamer, M., O'Donnell, M., Bryant, R., et al. (2011). An examination of the structure of posttraumatic stress disorder in relation

- to the anxiety and depressive disorders. *Journal of Affective Disorders*, 132(1-2), 165-172. doi: 10.1016/j.jad.2011.02.011
- Forbes, D., Lockwood, E., Phelps, A., Wade, D., Creamer, M., Bryant, R. A., et al. (2014). Trauma at the hands of another: distinguishing PTSD patterns following intimate and nonintimate interpersonal and noninterpersonal trauma in a nationally representative sample. *J Clin Psychiatry*, 75(2), 147-153. doi: 10.4088/JCP.13m08374
- Frankl, M., Philips, B., & Wennberg, P. (2014). Psychotherapy role expectations and experiences—Discrepancy and therapeutic alliance among patients with substance use disorders. *Psychology and Psychotherapy: Theory, Research and Practice*, 87(4), 411-424. doi: 10.1111/papt.12021
- Frayne, S. M., Skinner, K. M., Sullivan, L. M., & Freund, K. M. (2003). Sexual assault while in the military: Violence as a predictor of cardiac risk? *Violence and Victims*, 18(2), 219-225. doi: 10.1891/vivi.2003.18.2.219
- Freedman, S. A., Brandes, D., Peri, T., & Shalev, A. (1999). Predictors of chronic post-traumatic stress disorder: A prospective study. *The British Journal of Psychiatry*, 174, 353-359. doi: 10.1192/bjp.174.4.353
- Friedman, M. J., Resick, P. A., Bryant, R. A., & Brewin, C. R. (2011). Considering PTSD for DSM-5. *Depress Anxiety*, 28(9), 750-769. doi: 10.1002/da.20767
- Friedman, M. J., Resick, P. A., Bryant, R. A., Strain, J., Horowitz, M., & Spiegel, D. (2011). Classification of trauma and stressor-related disorders in DSM-5. *Depress Anxiety*, 28(9), 737-749. doi: 10.1002/da.20845

- Frisch, M. B. (1999). Quality of Life Assessment/Intervention and the Quality of Life Inventory TM (QOLI®).
- Frisch, M. B., Cornell, J., Villanueva, M., & Retzlaff, P. J. (1992). Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment*, 4(1), 92-101. doi: 10.1037/1040-3590.4.1.92
- Gander, M. L., & von Kanel, R. (2006). Myocardial infarction and post-traumatic stress disorder: frequency, outcome, and atherosclerotic mechanisms. *Eur J Cardiovasc Prev Rehabil*, 13(2), 165-172. doi: 10.1097/01.hjr.0000214606.60995.46
- Garcia, H. A., Kelley, L. P., Rentz, T. O., & Lee, S. (2011). Pretreatment predictors of dropout from cognitive behavioral therapy for PTSD in Iraq and Afghanistan war veterans. *Psychological Services*, 8(1), 1-11. doi: 10.1037/a0022705
- Gerber, M. R., Iverson, K. M., Dichter, M. E., Klap, R., & Latta, R. E. (2014). Women veterans and intimate partner violence: Current state of knowledge and future directions. *Journal of Women's Health*, 23(4), 302-310. doi: 10.1089/jwh.2013.4513
- Germain, C. L., Kangas, M., Taylor, A., & Forbes, D. (2016). The role of trauma-related cognitive processes in the relationship between combat-PTSD symptom severity and anger expression and control. *Australian Journal of Psychology*, 68(2), 73-81. doi: 10.1111/ajpy.12097
- Ghahramanlou-Holloway, M., Cox, D. W., Fritz, E. C., & George, B. J. (2011). An evidence-informed guide for working with military women and veterans.

- Professional Psychology: Research and Practice*, 42(1), 1-7. doi: 10.1037/a0022322
- Gonzalez, O. I., Novaco, R. W., Reger, M. A., & Gahm, G. A. (2016). Anger intensification with combat-related PTSD and depression comorbidity. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(1), 9-16. doi: 10.1037/tra0000042
- Hankin, C. S., Skinner, K. M., Sullivan, L. M., Miller, D. R., Frayne, S., & Tripp, T. J. (1999). Prevalence of depressive and alcohol abuse symptoms among women VA outpatients who report experiencing sexual assault while in the military. *Journal of Traumatic Stress*, 12(4), 601-612. doi: 10.1023/A:1024760900213
- Harned, M. S., Jackson, S. C., Comtois, K. A., & Linehan, M. M. (2010). Dialectical behavior therapy as a precursor to PTSD treatment for suicidal and/or self-injuring women with borderline personality disorder. *J Trauma Stress*, 23(4), 421-429. doi: 10.1002/jts.20553
- Harned, M. S., Rizvi, S. L., & Linehan, M. M. (2010). Impact of co-occurring posttraumatic stress disorder on suicidal women with borderline personality disorder. *Am J Psychiatry*, 167(10), 1210-1217. doi: 10.1176/appi.ajp.2010.09081213
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, 76(4), 408-420. doi: 10.1080/03637750903310360

- Holliday, R., Link-Malcolm, J., Morris, E. E., & Suris, A. (2014). Effects of cognitive processing therapy on PTSD-related negative cognitions in veterans with military sexual trauma. *Mil Med*, 179(10), 1077-1082. doi: 10.7205/milmed-d-13-00309
- Holliday, R., Williams, R., Bird, J., Mullen, K., & Suris, A. (2015). The role of cognitive processing therapy in improving psychosocial functioning, health, and quality of life in veterans with military sexual trauma-related posttraumatic stress disorder. *Psychol Serv*, 12(4), 428-434. doi: 10.1037/ser0000058
- Hyun, J. K., & Pavao, J. (2009). Military sexual trauma. *PTSD Research Quarterly*, 20(2).
- Imel, Z. E., Laska, K., Jakupcak, M., & Simpson, T. L. (2013). Meta-analysis of dropout in treatments for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 81(3), 394-404. doi: 10.1037/a0031474
- 10.1037/a0031474.supp (Supplemental)
- Jones, J. A. (2013). From Nostalgia to Post-Traumatic Stress Disorder: A Mass Society Theory of Psychological Reactions to Combat. *Student Pulse*, 5(02). Retrieved from <http://www.studentpulse.com/a?id=727>
- Kang, H. K., Natelson, B. H., Mahan, C. M., Lee, K. Y., & Murphy, F. M. (2003). Post-traumatic stress disorder and chronic fatigue syndrome-like illness among Gulf War veterans: a population-based survey of 30,000 veterans. *Am J Epidemiol*, 157(2), 141-148.
- Keller, S. M., Zoellner, L. A., & Feeny, N. C. (2010). Understanding factors associated with early therapeutic alliance in PTSD treatment: Adherence, childhood sexual

- abuse history, and social support. *Journal of Consulting and Clinical Psychology*, 78(6), 974-979. doi: 10.1037/a0020758
- Kelly, U. A., Skelton, K., Patel, M., & Bradley, B. (2011). More than military sexual trauma: Interpersonal violence, PTSD, and mental health in women veterans. *Research in Nursing & Health*, 34(6), 457-467. doi: 10.1002/nur.20453
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*, 52(12), 1048-1060.
- Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *J Trauma Stress*, 26(5), 537-547. doi: 10.1002/jts.21848
- Kimerling, R., Gima, K., Smith, M. W., Street, A., & Frayne, S. (2007). The Veterans Health Administration and Military Sexual Trauma. *American Journal of Public Health*, 97(12), 2160-2166. doi: 10.2105/AJPH.2006.092999
- Kimerling, R., Pavao, J., Valdez, C., Mark, H., Hyun, J. K., & Saweikis, M. (2011). Military sexual trauma and patient perceptions of veteran health administration health care quality. *Women's Health Issues*, 21(4, Suppl), S145-S151. doi: 10.1016/j.whi.2011.04.007
- Kimerling, R., Street, A., Pavao, J., Smith, M., Cronkite, R., Holmes, T., et al. (2010). Military-related sexual trauma among Veterans Health Administration patients

- returning from Afghanistan and Iraq. *Am J Public Health*, 100(8), 1409-1412. doi: 10.2105/ajph.2009.171793
- Kline, A., Ciccone, D. S., Weiner, M., Interian, A., Hill, L. S., Falca-Dodson, M., et al. (2013). Gender differences in the risk and protective factors associated with PTSD: A prospective study of National Guard troops deployed to Iraq. *Psychiatry: Interpersonal and Biological Processes*, 76(3), 256-272.
- Koenen, K. C., Lyons, M. J., Goldberg, J., Simpson, J., Williams, W. M., Toomey, R., et al. (2003). A High Risk Twin Study of Combat-Related PTSD Comorbidity. *Twin Research*, 6(3), 218-226. doi: 10.1375/136905203765693870
- Krupnick, J. L., Sotsky, S. M., Simmens, S., Moyer, J., Elkin, I., Watkins, J., et al. (1996). The role of the therapeutic alliance in psychotherapy and pharmacotherapy outcome: Findings in the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *Journal of Consulting and Clinical Psychology*, 64(3), 532-539. doi: 10.1037/0022-006X.64.3.532
- Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., et al. (1990). *Trauma and the Vietnam war generation: Report of findings from the National Vietnam Veterans Readjustment Study*. Philadelphia, PA, US: Brunner/Mazel.
- Littleton, H. (2007). An evaluation of the coping patterns of rape victims: integration with a schema-based information-processing model. *Violence Against Women*, 13(8), 789-801. doi: 10.1177/1077801207304825

- Luterek, J. A., Bittinger, J. N., & Simpson, T. L. (2011). Posttraumatic sequelae associated with military sexual trauma in female veterans enrolled in VA outpatient mental health clinics. *Journal of Trauma & Dissociation*, 12(3), 261-274. doi: 10.1080/15299732.2011.551504
- Lutwak, N. (2013). Military sexual trauma increases risk of post-traumatic stress disorder and depression thereby amplifying the possibility of suicidal ideation and cardiovascular disease. *Military Medicine*, 178(4), 359-361. doi: 10.7205/MILMED-D-12-00427
- Magruder, K. M., & Yeager, D. E. (2009). The prevalence of PTSD across war eras and the effect of deployment on PTSD: A systematic review and meta-analysis. *Psychiatric Annals*, 39(8), 778-788. doi: 10.3928/00485713-20090728-04
- Mason, E. C., & Richardson, R. (2012). Treating disgust in anxiety disorders. *Clinical Psychology: Science and Practice*, 19(2), 180-194. doi: 10.1111/j.1468-2850.2012.01282.x
- Mattocks, K. M., Haskell, S. G., Krebs, E. E., Justice, A. C., Yano, E. M., & Brandt, C. (2012). Women at war: Understanding how women veterans cope with combat and military sexual trauma. *Social Science & Medicine*, 74(4), 537-545. doi: 10.1016/j.socscimed.2011.10.039
- McClintock, A. S., Anderson, T., & Petrarca, A. (2015). Treatment expectations, alliance, session positivity, and outcome: An investigation of a three-path mediation model. *Journal of Clinical Psychology*, 71(1), 41-49. doi: 10.1002/jclp.22119

- McHorney, C. A., Ware, J. E., Jr., & Raczek, A. E. (1993). The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care*, *31*(3), 247-263.
- Merrill, L. L., Newell, C. E., Thomsen, C. J., Gold, S. R., Milner, J. S., Koss, M. P., et al. (1999). Childhood abuse and sexual revictimization in a female Navy recruit sample. *J Trauma Stress*, *12*(2), 211-225. doi: 10.1023/a:1024789723779
- Miles, S. R., Smith, T. L., Maieritsch, K. P., & Ahearn, E. P. (2015). Fear of losing emotional control is associated with cognitive processing therapy outcomes in U.S. Veterans of Afghanistan and Iraq. *Journal of Traumatic Stress*, *28*(5), 475-479. doi: 10.1002/jts.22036
- Miller, M. W., & Resick, P. A. (2007). Internalizing and externalizing subtypes in female sexual assault survivors: Implications for the understanding of complex PTSD. *Behavior Therapy*, *38*(1), 58-71. doi: 10.1016/j.beth.2006.04.003
- Monson, C. M., Schnurr, P. P., Resick, P. A., Friedman, M. J., Young-Xu, Y., & Stevens, S. P. (2006). Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *74*(5), 898-907. doi: 10.1037/0022-006X.74.5.898
- Morris, E. E., Smith, J. C., Farooqui, S. Y., & Surís, A. M. (2014). Unseen battles: The recognition, assessment, and treatment issues of men with military sexual trauma (MST). *Trauma, Violence, & Abuse*, *15*(2), 94-101. doi: 10.1177/1524838013511540

- Murdoch, M., Polusny, M. A., Hodges, J., & O'Brien, N. (2004). Prevalence of in-service and post-service sexual assault among combat and noncombat veterans applying for Department of Veterans Affairs posttraumatic stress disorder disability benefits. *Military Medicine*, 169(5).
- Najavits, L. (2015). The problem of dropout from "gold standard" PTSD therapies. *F1000Prime Rep*, 7, 43. doi: 10.12703/p7-43
- Najavits, L., & Hien, D. (2013). Helping Vulnerable Populations: A Comprehensive Review of the Treatment Outcome Literature on Substance Use Disorder and PTSD. *Journal of Clinical Psychology*, 69(5), 433-479. doi: 10.1002/jclp.21980
- Natelson, R. (2009). A Case for Federal Oversight of Military Sexual Harassment. *Clearinghouse Review*, 43(3), 277-281.
- National Center for PTSD. (2016). Epidemiology of PTSD Retrieved August 14, 2016, from <http://www.ptsd.va.gov/professional/PTSD-overview/epidemiological-facts-ptsd.asp>
- Nishith, P., Nixon, R. D. V., & Resick, P. A. (2005). Resolution of trauma-related guilt following treatment of PTSD in female rape victims: A result of cognitive processing therapy targeting comorbid depression? *Journal of Affective Disorders*, 86(2-3), 259-265. doi: 10.1016/j.jad.2005.02.013
- Nishith, P., Resick, P. A., & Griffin, M. G. (2002). Pattern of change in prolonged exposure and cognitive-processing therapy for female rape victims with posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 70(4), 880-886. doi: 10.1037/0022-006X.70.4.880

- North, C. S., Suris, A. M., Davis, M., & Smith, R. P. (2009). Toward validation of the diagnosis of posttraumatic stress disorder. *Am J Psychiatry*, 166(1), 34-41. doi: 10.1176/appi.ajp.2008.08050644
- Northcut, T. B., & Kienow, A. (2014). The trauma trifecta of military sexual trauma: A case study illustrating the integration of mind and body in clinical work with survivors of MST. *Clinical Social Work Journal*, 42(3), 247-259. doi: 10.1007/s10615-014-0479-0
- O'Brien, B. S., & Sher, L. (2013). Military sexual trauma as a determinant in the development of mental and physical illness in male and female veterans. *International Journal of Adolescent Medicine and Health*, 25(3), 269-274.
- Oquendo, M. A., Friend, J. M., Halberstam, B., Brodsky, B. S., Burke, A. K., Grunebaum, M. F., et al. (2003). Association of comorbid posttraumatic stress disorder and major depression with greater risk for suicidal behavior. *The American Journal of Psychiatry*, 160(3), 580-582. doi: 10.1176/appi.ajp.160.3.580
- Ouimette, P., Brown, P., & Najavits, L. (1998). Course and treatment of patients with both substance use and posttraumatic stress disorders. *Addictive Behaviors*, 23(6), 785-795. doi: [http://dx.doi.org/10.1016/S0306-4603\(98\)00064-1](http://dx.doi.org/10.1016/S0306-4603(98)00064-1)
- Ouimette, P., Vogt, D., Wade, M., Tirone, V., Greenbaum, M. A., Kimerling, R., et al. (2011). Perceived barriers to care among veterans health administration patients with posttraumatic stress disorder. *Psychological Services*, 8(3), 212-223. doi: 10.1037/a0024360

- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129(1), 52-73. doi: 10.1037/0033-2909.129.1.52
- Park, S. E. (2014). *Relationships between posttraumatic stress disorder, attachment, self-blame, and social support among women veterans with a history of childhood and/or military sexual trauma*. 75, ProQuest Information & Learning, US.
- Retrieved from
<http://ezproxy.lib.utexas.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psych&AN=2014-99160-504&site=ehost-live> Available from EBSCOhost psych database.
- Parker, S., & Thomas, R. (2009). Psychological differences in shame vs. guilt: Implications for mental health counselors. *Journal of Mental Health Counseling*, 31(3), 213-224. doi: 10.17744/mehc.31.3.f405217281988832
- Patterson, C. L., Anderson, T., & Wei, C. (2014). Clients' pretreatment role expectations, the therapeutic alliance, and clinical outcomes in outpatient therapy. *Journal of Clinical Psychology*, 70(7), 673-680. doi: 10.1002/jclp.22054
- Pavao, J., Turchik, J. A., Hyun, J. K., Karpenko, J., Saweikis, M., McCutcheon, S., et al. (2013). Military sexual trauma among homeless veterans. *Journal of General Internal Medicine*, 28(Suppl 2), S536-S541. doi: 10.1007/s11606-013-2341-4
- Payne, A. J., Joseph, S., & Tudway, J. (2007). Assimilation and accommodation processes following traumatic experiences. *Journal of Loss and Trauma*, 12(1), 73-89. doi: 10.1080/15325020600788206

- Pitman, R. K., Gilbertson, M. W., Gurvits, T. V., May, F. S., Lasko, N. B., Metzger, L. J., et al. (2006). Clarifying the Origin of Biological Abnormalities in PTSD Through the Study of Identical Twins Discordant for Combat Exposure. *Annals of the New York Academy of Sciences*, 1071, 242-254. doi: 10.1196/annals.1364.019
- Ponniah, K., & Hollon, S. D. (2009). Empirically supported psychological treatments for adult acute stress disorder and posttraumatic stress disorder: A review. *Depression and Anxiety*, 26(12), 1086-1109. doi: 10.1002/da.20635
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. doi: 10.3758/BRM.40.3.879
- Prigerson, H. G., Maciejewski, P. K., & Rosenheck, R. A. (2001). Combat trauma: Trauma with highest risk of delayed onset and unresolved posttraumatic stress disorder symptoms, unemployment, and abuse among men. *Journal of Nervous and Mental Disease*, 189(2), 99-108. doi: 10.1097/00005053-200102000-00005
- Resick, P. A., Galovski, T. E., Uhlmansiek, M. O. B., Scher, C. D., Clum, G. A., & Young-Xu, Y. (2008). A randomized clinical trial to dismantle components of cognitive processing therapy for posttraumatic stress disorder in female victims of interpersonal violence. *Journal of Consulting and Clinical Psychology*, 76(2), 243-258. doi: 10.1037/0022-006X.76.2.243
- Resick, P. A., & Schnicke, M. K. (1992). Cognitive processing therapy for sexual assault victims. *Journal of Consulting and Clinical Psychology*, 60(5), 748-756. doi: 10.1037/0022-006X.60.5.748

- Rizvi, S. L., Vogt, D. S., & Resick, P. A. (2009). Cognitive and affective predictors of treatment outcome in cognitive processing therapy and prolonged exposure for posttraumatic stress disorder. *Behaviour Research and Therapy*, 47(9), 737-743. doi: 10.1016/j.brat.2009.06.003
- Roth, T. L. (2014). How traumatic experiences leave their signature on the genome: An overview of epigenetic pathways in PTSD. *Frontiers in Psychiatry*, 5.
- Rush, A. J., Trivedi, M. H., Ibrahim, H. M., Carmody, T. J., Arnow, B., Klein, D. N., et al. (2003). The 16-item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): A psychometric evaluation in patients with chronic major depression. *Biological Psychiatry*, 54(5), 573-583. doi: 10.1016/S0006-3223(02)01866-8
- Sadler, A., Booth, B., Cook, B., & Doebbeling, B. (2003). Factors associated with women's risk of rape in the military environment. *Am J Ind Med*, 43(3), 262-273. doi: 10.1002/ajim.10202
- Sadler, A., Booth, B., Mengeling, M., & Doebbeling, B. (2004). Life Span and Repeated Violence against Women during Military Service: Effects on Health Status and Outpatient Utilization. *Journal of Women's Health*, 13(7), 799-811. doi: 10.1089/jwh.2004.13.799
- Schnurr, P., Friedman, M., Engel, C., Foa, E., Shea, T., Chow, B., et al. (2007). Cognitive behavioral therapy for posttraumatic stress disorder in women: a randomized controlled trial. *JAMA*, 297(8), 820-830. doi: 10.1001/jama.297.8.820

- Schottenbauer, M. A., Glass, C. R., Arnkoff, D. B., Tendick, V., & Gray, S. H. (2008). Nonresponse and dropout rates in outcome studies on PTSD: Review and methodological considerations. *Psychiatry: Interpersonal and Biological Processes*, 71(2), 134-168. doi: 10.1521/psyc.2008.71.2.134
- Schulz, P. M., Resick, P. A., Huber, L. C., & Griffin, M. G. (2006). The Effectiveness of Cognitive Processing Therapy for PTSD With Refugees in a Community Setting. *Cognitive and Behavioral Practice*, 13(4), 322-331. doi: 10.1016/j.cbpra.2006.04.011
- Skinner, K. M., Kressin, N., Frayne, S., Tripp, T. J., Hankin, C. S., Miller, D. R., et al. (2000). The prevalence of military sexual assault among female Veterans' Administration outpatients. *Journal of Interpersonal Violence*, 15(3), 291-310. doi: 10.1177/088626000015003005
- Sobel, A. A., Resick, P. A., & Rabalais, A. E. (2009). The effect of cognitive processing therapy on cognitions: Impact statement coding. *Journal of Traumatic Stress*, 22(3), 205-211. doi: 10.1002/jts.20408
- Spielberger, C. D., Sydeman, S. J., Owen, A. E., & Marsh, B. J. (1999). Measuring anxiety and anger with the State-Trait Anxiety Inventory (STAI) and the State-Trait Anger Expression Inventory (STAXI). In M. E. Maruish & M. E. Maruish (Eds.), *The use of psychological testing for treatment planning and outcomes assessment (2nd ed.)*. (pp. 993-1021). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

- Spitzer, C., Barnow, S., Völzke, H., John, U., Freyberger, H. J., & Grabe, H. J. (2009). Trauma, posttraumatic stress disorder, and physical illness: Findings from the general population. *Psychosomatic Medicine*, *71*(9), 1012-1017. doi: 10.1097/PSY.0b013e3181bc76b5
- Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). Psychotherapy for Military-Related PTSD: A Review of Randomized Clinical Trials. *Jama*, *314*(5), 489-500. doi: 10.1001/jama.2015.8370
- Street, A. E., Stafford, J., Mahan, C. M., & Hendricks, A. (2008). Sexual harassment and assault experienced by reservists during military service: prevalence and health correlates. *J Rehabil Res Dev*, *45*(3), 409-419.
- Surís, A., Holliday, R., & North, C. (2016). The Evolution of the Classification of Psychiatric Disorders. *Behavioral Sciences*, *6*(1), 5.
- Surís, A., Holliday, R., Weitlauf, J., & North, C. (2013). Military sexual trauma in the context of veterans' life experiences. *Federal Practitioner*, *30*, 16s-20s.
- Surís, A., & Lind, L. (2008). Military sexual trauma: a review of prevalence and associated health consequences in veterans. *Trauma Violence Abuse*, *9*(4), 250-269. doi: 10.1177/1524838008324419
- Surís, A., Lind, L., Kashner, T. M., & Borman, P. D. (2007). Mental Health, Quality of Life, and Health Functioning in Women Veterans: Differential Outcomes Associated with Military and Civilian Sexual Assault. *Journal of Interpersonal Violence*, *22*(2), 179-197. doi: 10.1177/0886260506295347

- Surís, A., Lind, L., Kashner, T. M., Borman, P. D., & Petty, F. (2004). Sexual assault in women veterans: An examination of PTSD risk, health care utilization, and cost of care. *Psychosomatic Medicine*, 66(5), 749-756. doi: 10.1097/01.psy.0000138117.58559.7b
- Surís, A., Link-Malcolm, J., & North, C. S. (2011). Predictors of suicidal ideation in veterans with PTSD related to military sexual trauma. *Journal of Traumatic Stress*, 24(5), 605-608.
- Surís, A., Link-Malcolm, J., Chard, K., Ahn, C., & North, C. (2013). A randomized clinical trial of cognitive processing therapy for veterans with PTSD related to military sexual trauma. *Journal of Traumatic Stress*, 26(1), 28-37.
- Taft, C., Karlsson, J., & Sullivan, M. (2001). Do SF-36 summary component scores accurately summarize subscale scores? *Qual Life Res*, 10(5), 395-404.
- Tanielian, T., Haycox, L. H., Schell, T. L., Marshall, G. N., Burnam, M. A., Eibner, C., et al. (2008). Invisible wounds of war. Summary and recommendations for addressing psychological and cognitive injuries. Santa Monica, CA: RAND Corporation.
- Taylor, S. (2003). Outcome Predictors for Three PTSD Treatments: Exposure Therapy, EMDR, and Relaxation Training. *Journal of Cognitive Psychotherapy*, 17(2), 149-161. doi: 10.1891/jcop.17.2.149.57432
- Tewksbury, R. (2007). Effects of sexual assaults on men: Physical, mental and sexual consequences. *International Journal of Men's Health*, 6(1).

- Tjaden, T., & Thoennes, N. (2000). Full report of the prevalence, incidence, and consequences of violence against women. *Rep. no. NCJ, 183781*.
- True, W. R., Rice, J., Eisen, S. A., Heath, A. C., Goldberg, J., Lyons, M. J., et al. (1993). A twin study of genetic and environmental contributions to liability for posttraumatic stress symptoms. *Archives of General Psychiatry, 50*(4), 257-264. doi: 10.1001/archpsyc.1993.01820160019002
- Tsai, M., Ogrodniczuk, J. S., Sochting, I., & Mirmiran, J. (2014). Forecasting success: Patients' expectations for improvement and their relations to baseline, process and outcome variables in group cognitive-behavioural therapy for depression. *Clinical Psychology & Psychotherapy, 21*(2), 97-107. doi: 10.1002/cpp.1831
- Turchik, J. A., McLean, C., Rafie, S., Hoyt, T., Rosen, C. S., & Kimerling, R. (2013). Perceived barriers to care and provider gender preferences among veteran men who have experienced military sexual trauma: A qualitative analysis. *Psychological Services, 10*(2), 213-222. doi: 10.1037/a0029959
- Valente, S., & Wight, C. (2007). Military sexual trauma: Violence and sexual abuse. *Military Medicine, 172*(3), 259-265.
- van Minnen, A., Arntz, A., & Keijsers, G. P. J. (2002). Prolonged exposure in patients with chronic PTSD: Predictors of treatment outcome and dropout. *Behaviour Research and Therapy, 40*(4), 439-457. doi: 10.1016/S0005-7967(01)00024-9
- Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S., Selby, E. A., & Joiner, T. E. (2010). The Interpersonal Theory of Suicide. *Psychological review, 117*(2), 575-600. doi: 10.1037/a0018697

- van Zuiden, M., Heijnen, C. J., Maas, M., Amarouchi, K., Vermetten, E., Geuze, E., et al. (2012). Glucocorticoid sensitivity of leukocytes predicts PTSD, depressive and fatigue symptoms after military deployment: A prospective study. *Psychoneuroendocrinology*, 37(11), 1822-1836. doi: 10.1016/j.psyneuen.2012.03.018
- Vogt, D. S., Pless, A. P., King, L. A., & King, D. W. (2005). Deployment Stressors, Gender, and Mental Health Outcomes Among Gulf War I Veterans. *Journal of Traumatic Stress*, 18(2), 115-127. doi: 10.1002/jts.20018
- Voller, E., Polusny, M. A., Noorbaloochi, S., Street, A., Grill, J., & Murdoch, M. (2015). Self-efficacy, male rape myth acceptance, and devaluation of emotions in sexual trauma sequelae: Findings from a sample of male veterans. *Psychological Services*, 12(4), 420-427. doi: 10.1037/ser0000046
- Williams, R., Holliday, R., Clem, M., Anderson, E., Morris, E. E., & Suris, A. (2015). Borderline Personality Disorder and Military Sexual Trauma: Analysis of Previous Traumatization and Current Psychiatric Presentation. *J Interpers Violence*. doi: 10.1177/0886260515596149
- Williamson, V., & Mulhall, E. (2009). Invisible Wounds: Psychological and Neurological Injuries Confront a New Generation of Veterans. *Iraq and Afghanistan Veterans of America*. Retrieved from <https://tsar.omeka.net/items/show/59>
- Worthen, M. (2011). The relations between traumatic exposures, posttraumatic stress disorder, and anger in male and female veterans. *Journal of Feminist Family*

- Therapy: An International Forum*, 23(3-4), 188-201. doi: 10.1080/08952833.2011.604535
- Yaeger, D., Himmelfarb, N., Cammack, A., & Mintz, J. (2006). DSM-IV diagnosed posttraumatic stress disorder in women veterans with and without military sexual trauma. *Journal of General Internal Medicine*, 21(Suppl 3), S65-S69. doi: 10.1111/j.1525-1497.2006.00377.x
- Yehuda, R. (2002). Current status of cortisol findings in post-traumatic stress disorder. *Psychiatric Clinics of North America*, 25(2), 341-368. doi: 10.1016/S0193-953X(02)00002-3
- Yehuda, R., Daskalakis, N. P., Lehrner, A., Desarnaud, F., Bader, H. N., Makotkine, I., et al. (2014). Influences of maternal and paternal PTSD on epigenetic regulation of the glucocorticoid receptor gene in Holocaust survivor offspring. *The American Journal of Psychiatry*, 171(8), 872-880.
- Zoellner, L. A., Feeny, N. C., Bittenger, J. N., Bedard-Gilligan, M. A., Slagle, D. M., Post, L. M., et al. (2011). Teaching trauma-focused exposure therapy for PTSD: Critical clinical lessons for novice exposure therapists. *Psychological Trauma: Theory, Research, Practice, and Policy*, 3(3), 300-308. doi: 10.1037/a0024642