AN EXAMINATION OF MORAL INJURY, MORAL EMOTIONS, AND ADULT ATTACHMENT IN THE PREDICTION OF PTSD FOR MALE VETERANS

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
Of the Requirements for the Degree

Doctor of Philosophy

by

Jenny Bannister

August 2016

AN EXAMINATION OF MORAL INJURY, MORAL EMOTIONS, AND ADULT ATTACHMENT IN THE PREDICTION OF PTSD FOR MALE VETERANS

A Dissertation for the Degree
Doctor of Philosophy

by

Jenny Bannister

Approved by Dissertation Committee:

_____
Dr. Frederick G. Lopez, Chairperson

_____
Dr. Candice Alfano, Committee Member

_____
Dr. Andrea Burridge, Committee Member

_____
Dr. Deleene S. Menefee, Committee Member

_____
Dr. Nathan G. Smith, Committee Member

_____
Dr. Robert H. McPherson, Dean
College of Education

August 2016

AN EXAMINATION OF MORAL INJURY, MORAL EMOTIONS, AND ADULT ATTACHMENT IN THE PREDICTION OF PTSD FOR MALE VETERANS

An Abstract
of a Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
Of the Requirements for the Degree

Doctor of Philosophy

by

Jenny Bannister

August 2016

Bannister, Jenny. "An Examination of Moral Injury, Moral Emotions, and Adult Attachment in the Prediction of PTSD for Male Veterans." Unpublished Doctor of Philosophy Dissertation, University of Houston, August 2016.

Abstract

Individuals within the U.S. military frequently experience posttraumatic stress disorder (PTSD); however, not all combat veterans develop PTSD. Attachment theory is a valuable framework for understanding potential vulnerabilities, since there is an inverse relationship between attachment security and PTSD symptom severity. Although attachment insecurity is related to PTSD severity, additional variables that explain this relationship remain unexplored. Moral injury, defined as events in combat that conflict with moral beliefs, may help to explain this relationship, as moral injury is posited to be understood using stable, internal attributions about the self and others. Litz and colleagues (2009) posited a causal model to explicate moral injury, including shame-proneness and guilt in the prediction of PTSD re-experiencing and avoidance/emotional numbing symptom severity. Their model is theoretical and has not been empirically examined. The primary objective of this study was to evaluate the interrelationships of moral injury to selected constructs and to evaluate portions of predictions within the Litz et al. model using DSM 5 criteria for PTSD. A secondary objective was to evaluate a portion of the Litz et al. model. Collectively, the linear relationships were predominantly consistent with the Litz et al. model. A few exceptions were found, including: (a) a significant relationship between moral injury and PTSD hyper-vigilance and (b) no relationship between attachment avoidance and moral injury. The proposed portion of the Litz et al. model that was tested did not fit the data. However, guided by theory and the modification indexes, an acceptable model was found. Collectively, the results indicate

that models of fear-based conditioning are pertinent to the experience of moral injury. The role of attachment within the meaning making process of moral injury remains unclear and was likely temporally misspecified within the Litz et al. model. Limitations are discussed and future directions are provided, including highlighting the importance of future longitudinal research for examining moral injury, adult attachment, and post-trauma psychopathology.

Keywords: combat, moral injury, moral emotions, attachment, and DSM 5 PTSD symptom severity

Table of Contents

Chapter Page

I. Introduction and Problem Statement 1

II. Review of the Literature 6

Traumatic Experiences Common within Military Populations 6

Attachment Theory 13

Research Objectives, Questions, and Hypotheses 26

III. Methodology 32

Participants and Sampling Procedures 32

Study Procedures and Materials 36

Measures 37

Analysis 43

IV. Results 45

Correlational Analyses 46

Regression Analyses 48

Exploratory Path Analysis 50

V. Discussion 57

Relation of Shame to Moral Injury and PTSS Severity 58

Relation of Guilt to Moral Injury and PTSS Severity 59

Role of Attachment in Moral Injury and PTSS 60

Moral Injury and PTSS 65

The Model of Moral Injury 65

Limitations and Future Directions 67

Implications 71

References 77

Appendix A Measures 95

Appendix B Extended Tables and Figures 110

List of Tables

Table Page

1. Sample Demographic Characteristics 34

2. Sample Military History Characteristics 35

3. Descriptive Statistics for Primary Study Variables 45

4. Bivariate Correlations for Hypothesis 1 47

5. Regression Analysis Shame-Proneness Predicting Moral Injury Scores 48

6. Regression Analysis of Moral Injury in Predicting PTSS Reexperiencing 49

7. Regression Analysis of Moral Injury in Predicting PTSS Avoidance 49

8. Regression Analyses of Moral Injury in Predicting PTSS Negative Alterations in Cognition and Mood 50

9. Regression Analyses of Moral Injury in Predicting PTSS Alterations in Arousal and Reactivity 50

10. Overview: Fit Indexes for Examined Models 51

List of Figures

Figure Page

1. Litz et al., 2009, p. 700 - Preliminary Causal Framework for Moral Injury 8

2. The Portion of the Litz el al. Model to be Examined in the Proposed Study 27

3. Proposed Exploratory Model 30

4. Path Analyses for the Original Proposed Mod 52

5. Path Analyses: Revised Model 1 53

6. Path Analyses: Revised Model 5 54

7. Path Analyses: Revised Model 6 55

8. Path Analyses: Revised Model 7 56

Chapter I

Introduction and Problem Statement

As defined by the Diagnostic Statistical Manual – V (DSM 5), posttraumatic stress disorder (PTSD), results from exposure to a traumatic event involving actual or threatened death, injury, or sexual violence (American Psychiatric Association, 2013). Posttraumatic stress disorder is characterized by the recurrence of psychogenic intrusions of the traumatic experience, avoidance of stimuli that would provoke distress, negative alterations in cognition or mood, and physiological hyper-arousal, lasting for more than a month.

In the general population of the United States, using the DSM-IV-TR diagnostic criteria, PTSD has been found to have a lifetime prevalence of 6.8 % (Kessler et al., 2005). Posttraumatic stress disorder is frequently seen in military personnel due to their elevated potential for exposure to trauma during combat. In the current war in Iraq and Afghanistan, the prevalence of PTSD in post-deployment soldiers is believed to be between 10.3% and 17% (Sundin, Fear, Iversen, Rona, & Wessely, 2009). For Vietnam Veterans, the prevalence ranges from 8.5% to 19.3% and between 1.9% and 24% for soldiers in the Operation Desert Storm. Prevalence figures for combat-related PTSD in the military vary widely based upon how much time has elapsed since the trauma, the level of combat exposure, how the symptoms are assessed, the number of completed tours, and the soldier's unit assignment.

Experiencing trauma is a basic component of diagnosing PTSD; however, only a fraction of people who are exposed to a traumatic situation will subsequently meet criteria for the disorder (Elwood, Hahn, Olatunji, & Williams, 2009; Kessler et al., 1995).

Since individual differences emerge in the occurrence and severity of the disorder, it is important to explore potential vulnerabilities to the chronic and pervasive symptoms of trauma captured by the diagnosis of PTSD. Attachment theory is a valuable framework for understanding potential vulnerabilities, since there is an inverse relationship between attachment security and PTSD symptom severity following a traumatic experience (Dekel, Solomon, Ginzburg, & Neria, 2004; Dieperink, Leskela, Thuras, & Engdahl, 2001; Mikulincer, Shaver, & Horesh, 2006; Muller, Sicoli, & Lemieux, 2000).

There is emerging evidence that the adult attachment characteristics of U.S. veterans may meaningfully contribute to PTSD severity (Bannister, 2013; Clark & Owens, 2012; Currier, Holland, & Allen, 2012; Escolas et al., 2012; Nye et al., 2008; Owens et al., 2014; Renaud, 2008), underscoring the need for investigation of additional variables that may further explain this relationship. Across studies, attachment avoidance demonstrates a robust relationship with PTSD severity for veterans, whereas attachment anxiety has demonstrated a more inconsistent pattern, which may implicate the contribution of a fearful attachment to PTSD severity.

It is noteworthy that a longitudinal study of former prisoners of war found that PTSD symptoms predicted attachment insecurity (Solomon, Dekel, & Mikulincer, 2008). Their results provide credence for using attachment as an outcome of combat experiences in adulthood. However, changes in attachment orientation as a consequence of trauma will not be evaluated in this study. This study will assess post-combat adult attachment; bearing in mind that veteran's attachment orientation may have been altered by combat experiences. Future studies should evaluate possible changes in service members' attachment orientation as a consequence of combat trauma. Further investigation may

also shed light on additional meaning-making mechanisms underlying the development of post-trauma pathology. Solomon et al.'s (2008) results echo the theory of shattered assumptions (Janoff-Bulman, 1992), positing that trauma can either shatter positive beliefs or confirm negative previously held beliefs regarding self, others, and the world. Relatedly, the relationship between attachment insecurity and PTSD severity may partially be explained by the prevalence of pre-military experiences among military populations (Brewin, Andrews, & Valentine, 2000; King, King, Foy, Keane, & Fairbank, 1999; Vogt, Smith, King, & King, 2012; Vogt & Tanner, 2007). However, combat exposure corresponding with specific experiences in combat may also meaningfully contribute to the relationship. One such variable is *moral injury*, which is defined by Litz and colleagues (2009) as "perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations" (p. 700). Litz et al. posit that moral injury is processed and reconciled using stable, internal global attributions about the self and others, which will also influence outcomes such as guilt, shame, withdrawal, and PTSD symptoms. Adult attachment provides a theory-driven conceptualization for understanding the emergence of stable, internal global attributions about the self and others.

Empirical investigation of moral injury is crucial because Litz et al.'s (2009) model has not been empirically examined. Furthermore, the model does not distinguish guilt from shame, despite literature demonstrating the distinction that is guilt is a negative evaluation of a behavior, whereas shame is a negative global evaluation of the self (Tangney, Stuewig, & Mashek, 2007). Clinicians have formulated and implemented interventions based on Litz et al.'s seminal article (Smith, Duax, & Rauch, 2013;

Steenkamp, Nash, Lebowitz, & Litz, 2013; Worthington & Langberg, 2012), despite nonexistent evidence substantiating the model, which further underscores the need for empirical evaluation. The present study examined the interrelationships of a moral injury to selected constructs, evaluated portions of predictions within the model, and then tested a portion of the hypothesized Litz et al. (2009) model. Consistent with their model, I examined the contribution of combat events to moral injury and subsequent attachment anxiety and avoidance. Traumatic guilt was evaluated as an outcome of the aforementioned variables and examined as a predictor of three of the symptom clusters of PTSD (i.e., re-experiencing, avoidance, and negative alterations in cognition or mood). The contribution of shame-proneness to moral injury and attachment anxiety and avoidance were also examined.

Based on the relationship between childhood experiences and PTSD severity, when controlling for combat experiences in military populations (Brewin et al., 2000; King et al., 1999; Vogt et al., 2012; Vogt & Tanner, 2007) and the influence of childhood experiences on moral emotions (Lagattuta & Thompson, 2007), childhood family functioning was included as a predictor within the model. Researchers have commonly introduced gender as a confound in their study by generalizing their results to veterans, when the majority of their sample is comprised of male veterans (Clark & Owens, 2012; Currier et al., 2012; Escolas et al., 2012; Owens et al., 2014). To eliminate the possible confound of gender and with it trauma experiences that women more commonly experience (e.g., sexual trauma, see Tolin & Foa, 2006), this study solely investigated the model for male combat veterans. Prior to clarifying the portion of the Litz et al. model that was tested, the sections that follow will (a) more fully consider the nature of combat

trauma, the construct of moral injury within the full Litz et al. model, as well as the model-related constructs of guilt and shame, and (b) briefly overview the core assumptions and constructs of attachment theory as well as key findings from contemporary theory-guided research on adult attachment that are relevant to both understanding war-related trauma experiences and to testing the Litz et al. model.

Chapter II

Review of the Literature

The DSM 5 diagnostic criteria for PTSD changed significantly from the criteria provided by the Diagnostic Statistical Manual – IV Text Revision (DSM-IV-TR; American Psychiatric Association, 2000). The new criteria provide more specific wording regarding what meets threshold as a traumatic experience. Additionally, the criteria do not require that individuals experience intense fear, helplessness, or horror in reaction to a traumatic event. Finally, the DSM-IV-TR only had three diagnostic clusters for PTSD, whereas the DSM 5 now has four diagnostic clusters. The previous DSM-IV-TR symptom cluster, avoidance and emotional numbing, was divided into two diagnostic clusters: (a) avoidance, and (b) negative alterations in cognition or mood. Emerging evidence suggests that the prevalence of PTSD for military populations using the DSM 5 criteria is similar to the rates found using the DSM-IV-TR criteria (Hoge, Riviere, Wilk, Herrell, & Weathers, 2014).

Traumatic Experiences Common within Military Populations

Combat trauma is distinct from civilian trauma given that the context of war that can exhaust the soldier's resources to cope (Litz & Orsillo, 2004). Veterans may report experiences such as feeling helpless or responsible for combat situations in which comrades were killed or injured. They may have guilt from personally killing enemy combatants, or possibly, innocent bystanders. They may also have traumatic memories of the sights, sounds, and smells of dying men, women, and children. Since war is plagued with constant potential for danger, soldiers are kept hyper-alert so they are prepared to respond to unexpected life-threatening attacks such as ambushes or roadside bombs.

Additionally, observing the consequences of combat, such as seeing or handling human remains or observing communities destroyed by combat can be emotionally and morally distressing. These experiences are endured collectively in the context of deployment, where soldiers are away from their friends, family, and the comforts of home. The demands of war may diminish a soldier's natural resources to cope with daily stressors, increasing their vulnerability to psychological exhaustion and hopelessness.

Moral Injury. Between 7 to 13% of soldiers in units deployed to Iraq between 2007 and 2009 endorsed the item on a report for the Army, "My mental well-being has been adversely affected by the events I have witnessed on this deployment" (Mental Health Advisory Team-VI [MHAT-VI], 2009), despite the possible motivation to underreport psychological impairment in the military. Furthermore, between 4 and 7% of soldiers endorsed the item, "My spiritual well-being has been adversely affected by the events I have witnessed on this deployment." An emerging concept within the literature on combat trauma is moral injury, which reflects the more complex nuances of combat experiences. The importance of understanding moral injury is highlighted by the prevalence of potentially morally injurious situations that deployed units commonly encounter (MHAT-VI, 2009; Mental Health Advisory Team-9 [MHAT-9], 2013). During 2007 to 2013, between 49 and 70% of soldiers reported shooting at the enemy and 20 to 38% reported being directly responsible for the death of an enemy combatant (MHAT-9, 2013). During 2007 to 2009, 34 to 47% of soldiers reported seeing injured or ill women or children that they could not help and 47 to 65% reported seeing dead bodies or human remains (MHAT-VI, 2009). Additionally, in 2003, 20% of Marines endorsed that they were responsible for the death of a non-combatant (Hoge et al., 2004).

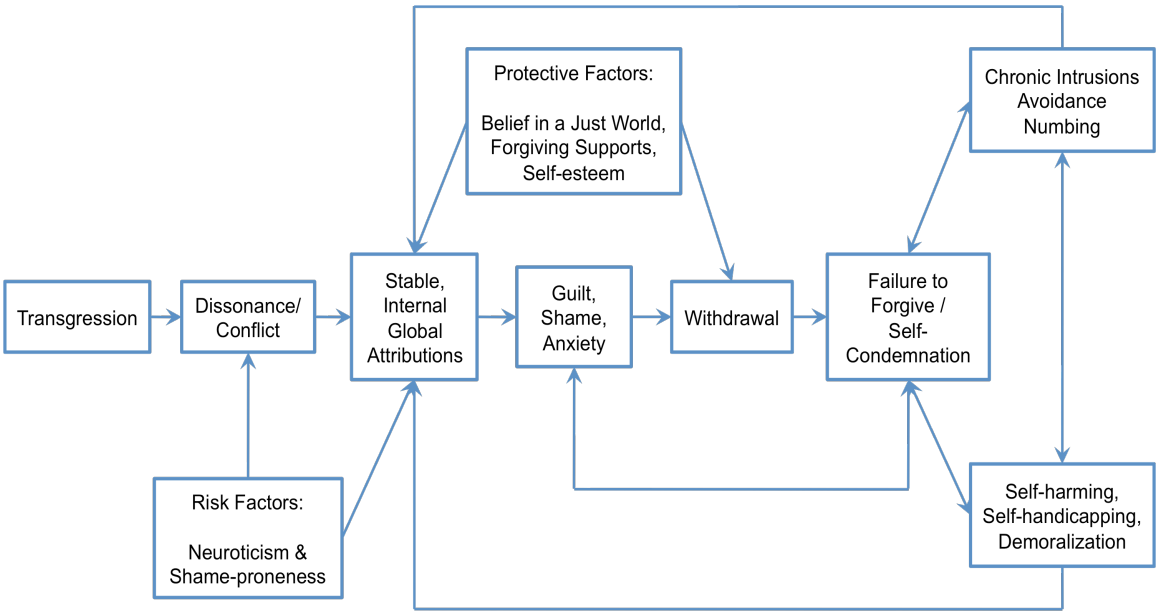

Figure 1. Litz et al., 2009, p. 700 - Preliminary Causal Framework for Moral Injury

Posttraumatic stress disorder is pertinent to moral injury, as a moral injury is posited to commonly occur in diagnostically traumatic combat situations (Litz et al., 2009; Maguen & Litz, 2012). Litz and colleagues propose that moral injury manifests in similar ways to PTSD, but also includes emotions such as shame, guilt, demoralization, self-handicapping through sabotaging relationships, and self-harm. Researchers have focused more attention on suicidal ideation (Selby at al., 2010), because killing in combat has been found to predict suicidal ideation, when controlling for PTSD severity (Maugen et al., 2009, 2011, & 2012). Killing in war has been associated with a number of adverse outcomes, when controlling for exposure to general combat experiences, including PTSD severity, functional impairment, violent behaviors, alcohol abuse, anger, and relationship problems (Fontana & Rosenheck, 1999; Maguen et al., 2009). This provides further evidence that moral injury may contribute to psychological distress, as killing in combat provides a ripe context for moral injury. However, beyond the recent validation of both

available measures of moral injury (i.e., Moral Injury Questionnaire; Currier, Holland, Dresher, Foy, 2013; Moral Injury Events Scale; Nash et al., 2013), there is currently no research on the relationship of moral injury to other psychological variables in the Litz et al. model (see Figure 1).

Moral Emotions. Although the Litz et al. model posits that guilt, shame, and anxiety are all expected correlates of moral injury, clarifying their respective roles in the unfolding of trauma-related reactions is foundational for the future investigation of moral injury, as guilt and shame are not interchangeable concepts (Tangney et al., 2007). *Guilt* has been defined as a negatively-valenced self-conscious moral emotion related to a specific behavior, which orients the individual to be concerned about how their act may have harmed others. *Shame* is also a negatively-valenced self-conscious moral emotion, but, unlike guilt, orients attention on how the act revealed a defective or disreputable aspect of one's self. Both guilt and shame typically emerge within social situations, but guilt is a negative evaluation of a bad behavior, whereas shame involves a negative evaluation of the global self. As such, guilt often positively influences behavior, because the person is motivated to repair the relationship and make amends. Conversely, shame promotes a motivation to "escape" the shame affect through defensiveness, self-concealment, and social withdrawal.

Childhood Experiences and Moral Emotions. In order to experience moral emotions, children must be self-aware, recognize an external standard by which others are evaluating their behavior, and adopt that standard in order to judge whether their current and subsequent behavior is appropriate (Lagattuta & Thompson, 2007). Typically, children have a rudimentary capacity for experiencing moral emotions by two

and a half or three years of age. Between three to five years, children experience rapid language development, wherein their conversations with caregivers formatively shape their understanding of emotions and the standards others use to evaluate their behavior. At this age, their advanced understanding influences their representations of themselves, their abilities, and their personal worth. Experiences with primary caregivers model how people experience moral emotions, and importantly, shape beliefs about the self, based on how caregivers induce feeling of shame or guilt in the child (Tangney & Dearing, 2002). Specifically, when a caregiver criticizes a child's behavior by generalizing their comments to the personhood of the child rather than the behavior, children may become more shame-prone. Additionally, when a child has a caregiver who is chronically depressed, the child is more vulnerable to feeling guilty for the caregiver's emotions (Lagattuta & Thompson, 2007). However, parents who are generally warm and supportive may help a child to experience appropriate guilt about their behavior. Such experiences regulate social behavior and aid the child in assuaging their guilt by changing their behavior.

The formulation of self-conscious emotions occurs in the context of attachment relationships; therefore, securely attached children are prone to being more receptive of positive messages about the self (Lagattuta & Thompson, 2007). Whereas, insecurely attached children are more prone to recalling and internalizing negative messages about the self, making them more sensitive to criticism. Similarly, three- to five-year-old girls who experienced maltreatment also experienced more shame when they failed and less pride when they succeeded, as compared to non-maltreated girls (Lewis, 1992, 2007).

Boys of the same age showed less emotional responses of all kinds, indicating a tendency towards external blame and emotional suppression.

Moral Injury Proxy, Guilt, and Shame in Relation to PTSD. Researchers have investigated a possible proxy of moral injury by evaluating combat guilt. In one study, guilt partially mediated the relationship between atrocity exposure and PTSD (Laufer Yager, Frey-Wouters, & Donnellan, 1981). Henning and Frueh (1997) found that combat guilt, trait guilt, and combat events accounted for 31% of the variance in Clinician Administered PTSD Scale (re-experiencing and avoidance) scores. Further, the aforementioned variables accounted for 34% of the variance in scores on the Mississippi Scale for Combat-Related PTSD. Importantly, trait guilt and combat events did not evidence a relationship with either outcome variable, whereas combat guilt did exhibit a significant relationship with both PTSD severity variables. Additional research suggests that exposure to atrocities is primarily related to the re-experiencing (Beckham, Feldman, & Kirby, 1998; Fontana, Rosenheck, & Brett, 1992; Yehuda, Southwick, & Giller, 1992) and avoidance clusters of PTSD (Laufer, Brett, & Gallops, 1985). Based on the recent changes to the diagnostic clusters for PTSD, this research should be re-examined to evaluate how the results vary. Criteria for PTSD has since divided the single cluster of avoidance and emotional numbing cluster into two clusters: (a) avoidance and (b) negative alterations in cognition or mood (APA, 2013).

Both guilt and shame were related to PTSD severity in a study investigating the influence of shame and guilt on suicidal ideation in an active duty sample (Bryan Morrow, Etienne, & Ray-Sannerud, 2013). They found that individuals who endorsed suicidal ideation also endorsed greater shame and guilt than those who did not endorse

suicidal ideation. However, only guilt independently predicted suicidal ideation. Many clinicians have emphasized the influence of shame and guilt on trauma symptoms (Singer, 2004; Steencamp et al., 2013; Worthington & Lanberg, 2012), but there is little empirical evidence to substantiate how both shame and guilt contribute to PTSD symptoms. It is particularly notable that, although shame and guilt are laden within the discussion of moral injury (Litz et al., 2009), the respective roles that these variables play in moral injury and their relationship with PTSD severity have not been empirically examined.

Pre-military Experiences and PTSD. Combat trauma is a predictor of PTSD; however, traumatic experiences before joining the military also serve as a risk factor for developing the disorder (Brewin et al., 2000; Litz & Orsillo, 2004). Prior to enlistment, military personnel experience more trauma than the general population (Wolfe et al., 2005). Wolfe et al. (2005) found that in the Marine Corps, 47.5% of men and 68.1% of women reported experiencing at least one interpersonal trauma before joining the military. Childhood physical abuse in the general population influences 3.2% of men and 4.8% of women (Kessler et al., 1999). In the Marines, 26.7% of men and 38.3% of women endorsed experiencing childhood physical abuse. The elevation of pre-military traumatic experiences for Marines mirrors the prevalence rates reported by personnel in the other military branches (Rosen & Martin, 1996; Seifert, Polusny, & Murdoch, 2011; Stretch, Durland, & Knudson, 1998).

Relatedly, the quality of interactions within one's family of origin can either confer resilience when confronting military trauma or can serve as a risk factor for post-trauma psychopathology. More specifically, for male Vietnam veterans, having an

instable family of origin was indirectly related to PTSD, by way of compromising a Veteran's ability to form, seek, and maintain social support (King et al., 1999). Conversely, optimal childhood family functioning was indirectly related to PTSD for male Gulf War Veterans, as a function of post-deployment social support and life stressors (Vogt & Tanner, 2007). For OEF/OIF veterans, childhood family functioning was negatively related to PTSD, depression, and anxiety (Vogt et al., 2012). Vogt and Tanner (2007) defined childhood family functioning as having the three components of cohesion, accord, and closeness. Cohesion captures amount of time a family spends engaging in shared activities. Accord captures either the frequency of arguments or harmony within a family. Lastly, closeness is the extent to which the family shares an emotional bond.

Attachment Theory

Attachment theory (Bowlby, 1969/1982; 1988) provides a valuable lifespan developmental framework for understanding the mechanisms underlying coping with trauma, since experiencing trauma does not always lead to the development of PTSD (Elwood et al., 2009). Bowlby first introduced attachment theory as a novel means of understanding personality development. He defined *attachment behavior* as "any form of behavior that results in a person attaining or maintaining proximity to some other clearly identifiable individual who is conceived as better able to cope with the world" (1988, p. 26). Bowlby regarded the human need for attachment as the expression of an innate motivational system (i.e., "the attachment system") that was evolutionarily designed to regulate the nature of support-seeking behavior during episodes of stress, fatigue, or threat. This system is essential for survival during infancy and affects the experiences of

physical safety and psychological security (Bowlby, 1988). Infants cognitively internalize working models of their ability to elicit and maintain proximity to caregivers (Ainsworth Blehar, Waters, & Wall, 1978; Bowlby, 1988). Working models develop from patterns in the caregiver's responsiveness and sensitivity to the infant's needs, coupled with their physical and psychological availability and acceptance of the infant.

Children seek proximity to their caregiver if they perceive an increased probability of danger (Bowlby, 1973). Bowlby's construct of the *internal working model of self and others* contains assumptions about one's lovability, ability to have their needs met by others, and one's global sense of safety. An individual's a*ttachment orientation* is believed to be the manifest patterns of care-seeking behavior that reflect the person's internal working model of themselves, others, and the relational patterns that have emerged between the two. As the child ages, exposure to a nurturing and consistent caregiver enables them in learning how to self-regulate their emotions. Children who are exposed to an inconsistent or rejecting caregiver will develop maladaptive relational strategies for restoring a feeling of safety and security following lived experiences that trigger threat or uncertainty. Bowlby posited that the attachment orientation formed in childhood remains relatively stable over the lifespan; however, emotionally significant events later in life that disconfirm previously held internal working models can reconfigure their working models, influencing one's adult attachment orientation.

Bowlby (1988) delineated three terms for conceptualizing a child's attachment orientation. First, a child is said to have a *secure attachment* orientation when they are confident that their caregiver will consistently be there for them in times of need, enabling confident exploration of their environment. A child is said to have an *anxious*

resistant attachment orientation when they fear being abandoned and are unsure whether their caregiver will meet their needs, because the caregiver inconsistently responds to their needs. Consequently, the child is often overly clingy and is ambivalent about exploring their environment. Next, an *anxious avoidant attachment* orientation results from a caregiver who consistently does not meet the child's needs, disposing them to reject their need for close relationships and the support of others. More recently, researchers have identified a fourth orientation (*dismissive-disorganized*) embodying characteristics of both anxious resistant and anxious avoidant orientations (George & Solomon, 1999). For these children, an attachment figure that is expected to provide a semblance of safety instead becomes frightened or frightening. These children are unable to internalize a consistent working model to obtain security as a result of maltreatment, neglect, or distressing/ confusing global messages from their caregiver regarding safety. These are messages commonly provoked by the caregiver's trauma history (Main & Hesse, 1990 is cited in Allen, 2001). A child's attachment system scaffolds the development of a framework of self-regulation and self-soothing that is carried into adulthood (Mikulincer & Shaver, 2007).

Adult Attachment. Adult attachment has been conceptualized using an array of terms to categorize securely attached and insecurely attached individuals. Hazan and Shaver (1987) initiated these efforts by extending the theory to the domain of romantic relationships. Similar to Bowlby, they posited that adult attachment consists of three primary orientations, *secure*, *avoidant*, and *anxious-resistant*. A *secure attachment* orientation indicates ease in developing close and mutually reliable relationships, without fear of abandonment. An *anxious-resistant* orientation reflects an intense need for

intimacy and closeness, which is overwhelming to their partner, leading to persistent fear of abandonment. Finally, an *avoidant* orientation is demonstrated by a difficulty with trusting, depending on, and getting close to romantic partners. Somewhat later, Bartholomew and Horowitz (1991) proposed a four-category model of adult attachment. They posited that attachment is comprised of two relatively orthogonal dimensions: view of self (as worthy or unworthy of love and support) and view of others (as trustworthy and reliable or untrustworthy and unreliable). Using their four-category model, attachment is classified as: (a) *secure*, a positive image of self and others; (b) *preoccupied*, a positive view of others, but a negative self-image; (c) *dismissive-avoidant*, a positive view of self, but a negative view of others; and (d) *fearful-avoidant*, a negative view of both self and of others. Individuals who have a dismissive-avoidant attachment compulsively prefer self-reliance and emotional distancing to protect themselves from being disappointed by others. Alternatively, individuals with a fearful-avoidant attachment style long for close relationships, but concurrently are fearful of trusting or depending on others, confident that they will be hurt or rejected.

Brennan, Clark, and Shaver's (1998) use of continuous scales to capture attachment anxiety and avoidance provided a more sensitive means of conceptualizing and assessing variability in patterns of adult attachment organization (Lopez, 2003). They classified attachment organization in terms of two orthogonal continua of attachment anxiety and avoidance. *Attachment anxiety* reflects an individual's level of preoccupation with others meeting their needs and the frequency to which they engage in maladaptive strategies to gain attention from others to regulate their own distress (Mikulincer & Shaver, 2007). Individuals with high attachment anxiety feel ambivalent about their

ability to regulate their emotions and often overburden those around them in order to have their needs met. *Attachment avoidance* reflects an individual's discomfort with intimacy, mistrust of others, and unwillingness to be emotionally vulnerable with or dependent on them (Mikulincer & Shaver, 2007). In short, individuals who evidence high levels of attachment avoidance are likely to deny their need for attachment. In addition to capturing more variability in attachment organization, Brennan et al.'s measure (1998) also maps onto Bartholomew and Horowitz's (1991) four-category model. A *dismissive-avoidant attachment* style reflects high attachment avoidance and low attachment anxiety. Conversely, a *preoccupied attachment* style reflects high attachment anxiety and low attachment avoidance. Having both high attachment anxiety and avoidance is classified as *fearful-avoidant*; whereas, having both low attachment anxiety and avoidance is classified as *secure*. Since overlap exists between the various attachment related classifications, from here forward I will use the following four terms to discuss attachment related dispositions: *secure*, *anxious*, *avoidant*, and *fearful* (with the last three orientations referring to insecure attachment styles). In the sections that follow, I discuss the relevance of attachment theory to understanding the development and chronicity of PTSD, and I consider the interrelationships of adult attachment orientations and moral emotions.

Attachment and Posttraumatic Stress Disorder. Following the basic assumptions of attachment theory, Mikulincer and Shaver (2003) proposed that a traumatic event triggers an attachment control-system response, which begins with the activation of the attachment system and concludes with achieving emotional stabilization. Normatively, once their attachment system is activated by perceived threat, persons rely

on internal representations of security to alleviate their emotional distress. Individuals who are unable to summon internal representations of security are at risk for developing PTSD.

When someone with an insecure attachment orientation encounters a situation that they perceive as unsafe and appraise that they lack the resources to cope, they may have one of two reactions (Cassidy & Kobak, 1988). Individuals will use a *hyper-activating strategy* if they believe that they are unable to help themselves, and therefore become very demanding and hyperactive about obtaining the love, care, and support of others (Mikulincer & Shaver, 2003; 2007). Conversely, one may engage in *deactivating strategies*, which includes isolating from others and refusing to ask for or accept emotional support. Individuals implement a strategy based on their beliefs about whether seeking reassurance from others will result in a positive or negative outcome. People who engage in hyper-activating strategies are more likely to experience intrusive recollections of the trauma; whereas, those who employ deactivating strategies engage in avoidance and emotional numbing more commonly, in attempt to escape memories of the trauma (Mikulincer et al., 2006). Both reactions enable the symptoms of PTSD because they promote an oscillation between avoidance and intrusive recollections of the trauma, potentially related to changes in the individual's assumptions about the world, others, and their ability to cope with traumatic experiences (Janoff-Bulman, 1992). In contrast, a secure attachment orientation is believed to confer resilience in the face of trauma, since individuals who utilize internal representations of security are also more inclined to appropriately summon support from attachment figures, thus decreasing the risk of developing PTSD (Mikulincer et al., 2006).

Adult Attachment and Moral Emotions. Despite the influence of moral emotions on affiliative motivations, only a handful of studies have investigated attachment orientations in relation to guilt and/or shame (Gross & Hansen, 2000; Lopez at al., 1997; Matos, Pinto-Gouveia, & Costa, 2013; Wei, Shaffer, Young, & Zakalik, 2005). Specifically, Lopez and colleagues (1997) found that college undergraduates who had an anxious or fearful attachment were more shame-prone than individuals with a secure or dismissive attachment. Guilt was negatively related to attachment avoidance. Women in the sample were more guilt-prone than men. Furthermore, when controlling for guilt proneness, attachment insecurity was significantly related to shame-proneness, whereas attachment insecurity was not significantly related to guilt-proneness, after shame-proneness was first controlled.

Similarly, Gross and Hansen (2000) found that attachment security was negatively related to shame-proneness for college undergraduates on the Brief Shame Rating Scale (Hibbard, 1992 & 1994) accounting for 25% of the variance in shame-proneness. Attachment anxiety and fearfulness were positively related to shame-proneness (Gross & Hansen, 2000). However, Gross and Hansen found no support for their hypothesis that avoidant attachment would be negatively related to shame-proneness. To explain this unexpected finding, they suggested that, “the quality of the positive self for [avoidant] individuals is more defensive and fragile than that of securely attached persons. Their negative other stance may develop out of self-protection, belying a pseudo-positive sense of self. If such were the case, then outwardly [avoidant] individual would consciously report low shame while internally distrusting their own worthiness” (p. 904).

More recently, Wei and colleagues (2010) investigated the relations of adult attachment, distress (shame, depression, and loneliness), and basic psychological needs satisfaction (for autonomy, competence, and relatedness) among college undergraduates. They found that basic psychological needs satisfaction fully mediated the relationship between attachment avoidance and distress and partially mediated the relationship between attachment anxiety and distress. For individuals with high attachment avoidance, experiencing shame, depression, and loneliness can be explained by individuals not feeling satisfied that their basic needs for autonomy, competence, and relatedness have been met.

Finally, Matos and colleagues (2013) investigated the influence of emotion regulation strategies (rumination, thought suppression, and dissociation) on the relationship between traumatic shame memories and depression in a community sample. They found that certain emotion regulation processes (brooding, thought suppression, and dissociation) mediated the relationship between traumatic shame memories with others (i.e., peers, teachers, strangers, or other people), whereas the same emotion regulation processes did not mediate the relationship between traumatic shame memories with a caregiver and depression (with exception of brooding partially mediating this relationship). Traumatic shame memories with a caregiver evidenced a direct relationship with depression, leading Matos and colleagues to suggest that when people have memories of a caregiver shaming them that is traumatic, they may integrate those experiences into their self-narrative, causing priming of negatively valenced emotions, leading to involuntary self-defeating responses.

Attachment, Trauma, and Posttraumatic Stress Disorder Severity. Several studies have reported significant correlations between attachment insecurity and PTSD symptom severity for military populations (Bannister, 2013; Clark & Owens, 2012; Currier et al., 2012; Dekel et al., 2004; Dieperink et al., 2001; Escolas et al., 2012; Mikulincer et al., 2006; Muller et al., 2000; Owens et al., 2014; Renaud, 2008). This relationship could be attributed to the absence of an internalized framework for adaptively regulating one's emotions (Benoit, Bouthillier, Moss, Rousseau, & Brunet, 2010). Insecurely attached individuals may rely on maladaptive strategies in place of emotion regulation techniques, such as substance abuse or focusing on negative emotions of self-blame or guilt, which serve to exacerbate PTSD severity.

Although attachment theory has been investigated in relation to most trauma-exposed populations, it has only been sparsely applied to military personnel. Israel has taken a particular interest in military psychology because every Israeli citizen is required to serve in the military. The bulk of the emerging research investigating the influence of attachment on coping with military-related trauma has been generated using Israeli samples. The research on Israeli citizens and soldiers mirrors research with other trauma stricken populations in demonstrating that attachment security can act as a protective factor from the development of PTSD (Dekel et al., 2004; Dieperink et al., 2001) and finding that complex or ongoing trauma may alter one's attachment orientation (Besser, Neria, & Haynes, 2009; Solomon et al., 2008).

The most notable study examining attachment and PTSD, longitudinally investigated the influence of being held captive as a prisoner of war on Israeli soldiers' attachment system as compared to soldiers who had not been prisoners of war (Solomon

et al., 2008). This study classified all of the ex-prisoners of war as having suffered complex trauma. Complex trauma is characterized by prolonged and repeated trauma from which the victim is captive, unable to escape, or under the control of the perpetrator (Herman, 1992). Solomon et al. investigated whether ex-prisoners of war who experienced complex trauma exhibited more PTSD symptoms and were more likely to report an anxious or avoidant attachment orientation, relative to veterans who had not experienced complex trauma. Solomon et al. assessed attachment orientation and PTSD at 18 years (Time 1) and 30 years (Time 2) after the war had ended. They assessed attachment using a three-category continuous measure (Mikulincer & Erev, 1991; Mikulincer, Florian, & Tolmacz, 1990). Solomon et al. found that Time 1 PTSD symptoms predicted attachment avoidance and anxiety at Time 2, but Time 1 attachment avoidance and anxiety did not predict Time 2 PTSD. The results of this study are unique because they suggest a converse relationship between PTSD and attachment style as compared to what is commonly suggested. Many previous studies suggest that an insecure attachment orientation is a risk factor for developing PTSD (Mikulincer & Shaver, 2007). Solomon et al.'s results indicated that PTSD resulting from complex trauma might, over time, influence an individual's likelihood for developing an insecure attachment orientation. Additionally, this study found that the ex-prisoners' of wars symptoms increased concurrently with attachment avoidance and anxiety from Time 1 to Time 2.

Solomon et al.'s (2008) study demonstrated that veterans' attachment orientation may become progressively less stable over time if the veteran reported having fewer resources to cope with his or her trauma history. It also underscored that cross sectional

studies on attachment and combat-related PTSD should acknowledge that they are examining post-combat attachment orientations, which may have been altered by traumatic experiences. Theories regarding the development and maintenance post-trauma pathology implicate traumatic experiences as potentially "shattering" positive beliefs or confirming and inflaming previously held negative beliefs about the self, others, and the world (Foa & Rothbaum, 2001; Herman, 1992; Janoff-Bulman, 1992). Solomon et al.'s findings, coupled with theories on post-trauma pathology, emphasize the need for future longitudinal investigation of possible changes in military population's attachment structure, by evaluating attachment before and after combat experiences.

A handful of studies have used psychometrically sound measures to examine relations between adult attachment characteristics and PTSD in U.S. military samples. Emerging research suggests that attachment avoidance evidences a consistent relationship with PTSD severity for Vietnam (Owens et al., 2014; Renaud, 2008) and OEF/OIF veterans (Operation Enduring Freedom/Operation Iraqi Freedom; Clark & Owens, 2012; Currier, Holland, & Allen 2012; Owens et al., 2014), and active duty soldiers (Escolas et al., 2012). Attachment anxiety has demonstrated a more inconsistent relationship with PTSD severity. Specifically, Renaud (2008) found that attachment anxiety and avoidance on the Experiences in Close Relationships measure (Brennan et al., 1998) were both related to and predicted PTSD severity for Vietnam veterans, but avoidance was more robustly related to PTSD severity. Additionally, Owens et al. (2014) found that veterans with PTSD only and both PTSD and hazardous substance use were more avoidantly attached than veterans in the hazardous use only group, whereas they did not find differences among the groups in terms of attachment anxiety.

Currier et al. (2012) found that attachment avoidance predicted posttraumatic stress symptoms (PTSS) and psychiatric distress, whereas attachment anxiety predicted PTSS, psychiatric distress, total alcohol use, and hazardous drinking. They also examined the prevalence of the various attachment styles, based on the styles proposed by Bartholomew and Horowitz (1991), using latent profile analysis. They found that 43% of their sample was securely attached, 43% were classified as anxiously attached, and 14% were classified as being fearfully attached. None of their sample was classified as purely avoidantly attached. However, it is unclear whether this was due to a methodological flaw, since they approached patients in waiting rooms during their initial visit to the VA, which may have led to a self-selection bias. Escolas et al. (2012) found that soldiers with a fearful attachment orientation had the most severe PTSD scores, followed by soldiers who were classified as preoccupied or dismissing. Soldiers with a secure attachment (i.e., low levels of both anxiety and avoidance) on average had the least severe PTSD symptomatology. The possible interaction of attachment anxiety and avoidance is noteworthy and should be consistently examined in this line of inquiry.

There are three consistent gaps within the literature on attachment and post-traumatic pathology. First, within the literature specific to attachment, as well as more broadly, researchers often examine PTSD in military and veteran populations without investigating specific pre-military experiences as predictors of this post-trauma reaction. This potentially implies that only combat experiences directly contribute to PTSD, without considering other traumatic experiences that veterans encounter at higher rates than the general population, such as childhood abuse (Wolfe et al., 2005). Further, this overlooks family environments that ill prepare the veteran to cope following a traumatic

experience (King et al., 1999; Vogt et al., 2012; Vogt & Tanner, 2007). This is particularly pronounced when measures are used that only focus on combat experiences in relation to PTSD (Clark & Owens, 2012; Owens et al., 2014), despite the common theoretical notion that beliefs in childhood lay the foundation for how people make sense of traumatic experiences in adulthood (Herman, 1992; Janoff-Bulman, 1992).

Second, due to the variation in interpersonal trauma experiences between genders (see Tolin & Foa, 2006), it is important to note that many of the studies on attachment and PTSD in military samples generalize their results to all veterans, despite having a predominantly male sample (Clark & Owens et al., 2012; Currier et al., 2012; Escolas et al., 2012; Owens et al., 2014). Again, the variation in traumatic experiences is problematic and introduces an unnecessary confound within this domain of inquiry. If researchers deem that it is important to capture a phenomenon for a mixed gender group in order to generalize their results, they must also control for specific trauma experiences that female veterans commonly experience (e.g., childhood physical and sexual assault: Seifert et al., 2011; Wolfe et al., 2005 and military sexual trauma: Himmelfarb Yaeger, & Mintz, 2006; Yaeger, Himmelfarb, Cammack, & Mintz, 2006).

Finally, despite the contribution of attachment (specifically, attachment avoidance) in predicting maladaptive psychological outcomes for veterans, the extant literature has not provided an explanation of variables that may help contribute to this relationship. Further investigation is thus warranted. The framework provided by Litz et al. (2009) advances one construct that may influence this relationship, since they posit that moral injury is processed and reconciled using stable, internal global attributions about the self and others. Drawing upon both the Litz et al. model as well as on

attachment theory and contemporary research on adult attachment, the proposed study will provide a theory-driven conceptualization for clarifying the interplay of moral injury and stable, internal global attributions about the self and others, and PTSD experiences among male combat veterans.

Research Objectives, Questions, and Hypotheses

Given the absence of any prior quantitative analysis of moral injury or empirical evaluation of Litz el al.'s model (2009) the primary objective of this study was to evaluate the interrelationships of a moral injury to selected constructs and evaluate portions of predictions within the model. A secondary objective was to evaluate a portion of the Litz et al. model (see Figure 1 on p. 8, Figures 2 & 3). Their model informs the investigation of the model depicted in Figure 3 for the current study. Specifically, I examined the following variables from the original model within this study: Transgression, dissonance/conflict, shame-proneness, stable, internal global attributions about self and others, guilt, and the PTSD symptom clusters re-experiencing and avoidance/emotional numbing. Due to changes in the diagnostic criteria for PTSD (APA, 2013), PTSD was examined using current diagnostic criteria. I evaluated interrelationships and the delineated portion of the model (Figure 3) in relation to re-experiencing, avoidance, and negative alterations in cognition or mood, which are the three DSM 5 symptom clusters that correspond with the original two DSM-IV-TR symptom clusters.

Litz et al. (2009) proposed that combat events (i.e., transgressions) that contradict an individual's moral code (i.e., moral injury) produce dissonance or inner conflict

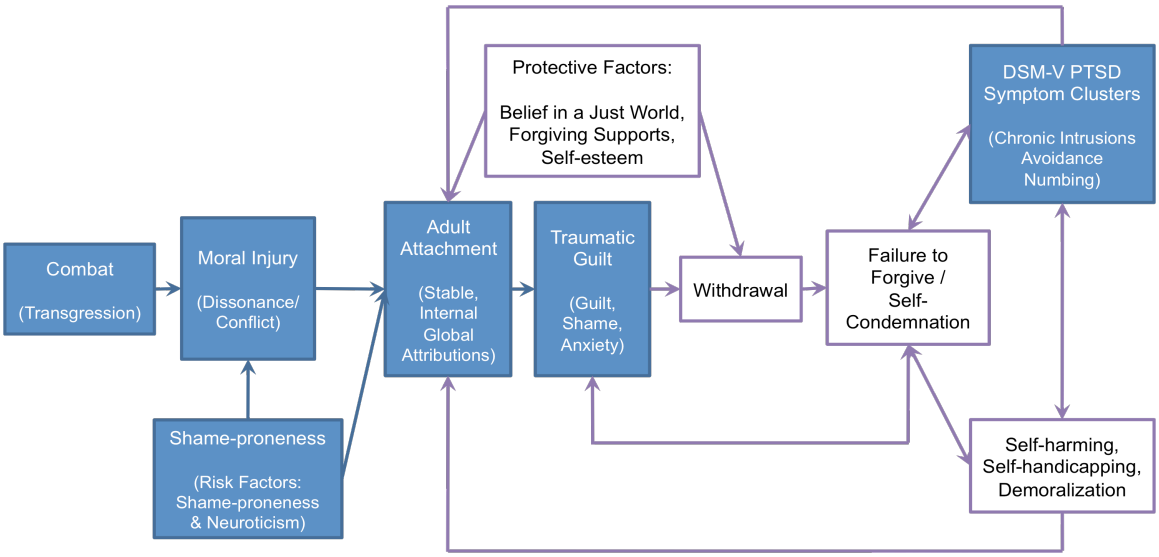

Figure 2. The Portion of the Litz el al. Model that will be examined in the Proposed Study. The portions of the model that will be examined in this study are depicted in blue (the shaded observed variables). The remaining portion of the model, which will not be examined in the proposed study, is depicted in purple (the unshaded variables).

regarding the event. Remarkably, Litz et al. do not specify which observed variable captures moral injury within their model. However, when discussing moral injury, multiple researchers discuss moral injury as combat experiences that provoke dissonance or inner conflict in relation to deeply held moral beliefs (Currier et al., 2013; Drescher et al., 2011; Litz et al., 2009; Maguen & Litz, 2012; Nash et al., 2013;). Further, Nash et al. (2013) noted that "inner conflict" may be a more accepted term by service members to describe the phenomena of moral injury. Therefore, the measure of moral injury developed by Nash et al. (2013) was used to assess the experience of conflictual dissonance. Additionally, Litz et al. posit that an individual's dissonance or moral conflict is understood in light of their self and other schemas (i.e., stable, internal global attributions) and may provoke the individual to revise existing schemas. Individuals who experience remorse about the event are proposed to experience guilt; whereas, those who

blame themselves because of an inadequacy or flaw will experience shame. Trauma-related guilt associated with combat experiences provides a more accurate means of evaluating guilt, because it solely focuses on unpleasant feelings resulting from an individual's belief that they should have thought, acted, or felt differently in the context of this particular traumatic event (Kubany et al., 1996). Litz et al. proposed that shame-proneness might activate preexisting self or other schemas and thus heighten the likelihood of moral injury. An attachment theory-guided conceptualization of stable and internal global attributions of self and others in relation to shame and guilt provides a more nuanced framework for these possible relationships. Further, shame-proneness may help to explain the variability in post-combat attachment as a function of childhood family experiences. Previous research suggests that shame-proneness is related to attachment anxiety and fearfulness (Gross & Hansen, 2000; Lopez et al., 1997).

Based on the prevalence of childhood abuse among veterans (Wolfe et al., 2005) and the influence of family functioning on the development of psychopathology following military trauma (King et al., 1999; Vogt et al., 2012; Vogt & Tanner, 2007), childhood family experiences were investigated within this study. Childhood family experiences were examined as a predictor of shame-proneness. In keeping with the original model in the exploratory model, shame-proneness was examined as a predictor of moral injury and attachment anxiety and avoidance. Attachment was evaluated for having an indirect influence on PTSSs, re-experiencing, avoidance, and negative alterations in cognition or mood via trauma related guilt. Finally, Litz et al. proposed that individuals who experience a moral injury should report higher PTSS for the re-

experiencing and avoidance/emotional numbing symptom clusters, which were examined as an outcome variable using the current DSM 5 symptom clusters.

Primary Hypotheses.

Hypothesis 1: Significant linear relationships consistent with those depicted in the Litz et al. model will be observed.

1a. Shame-proneness will be positively related to moral injury.

1b. Moral injury will be positively related to trauma-related guilt.

1c. Moral injury will be positively related to attachment anxiety.

1d. Moral injury will be positively related to attachment avoidance.

1e. Moral injury will be positively related to severity of PTSS, re-experiencing.

1f. Moral injury will be positively related to severity of PTSS, avoidance.

1g. Moral injury will be positively related to severity of PTSS, negative alterations in cognitions and mood.

1h. Moral injury will be unrelated to severity of PTSS, hyper-vigilance.

1i. Attachment anxiety will be positively related to trauma-related guilt.

1j. Attachment avoidance will be positively related to trauma-related guilt.

Hypothesis 2: Optimal childhood family experiences will be negatively related to attachment anxiety and avoidance.

Hypothesis 3: When controlling for childhood family experiences and combat events, shame-proneness will predict moral injury.

Hypothesis 4: When controlling for childhood family experiences and combat events, moral injury will predict the PTSD cluster symptom severity delineated by the Litz et al. model.

4a. When controlling for childhood family experiences and combat events, moral injury will predict severity of PTSD re-experiencing symptoms.

4b. When controlling for childhood family experiences and combat events, moral injury will predict severity of PTSD avoidance symptoms.

4c. When controlling for childhood family experiences and combat events, moral injury will predict severity of PTSD negative alterations in cognitions and mood symptoms.

4d. When controlling for childhood family experiences and combat events, moral injury will not predict severity of hyper-vigilance.

Exploratory Portion of the Litz et al. Model.

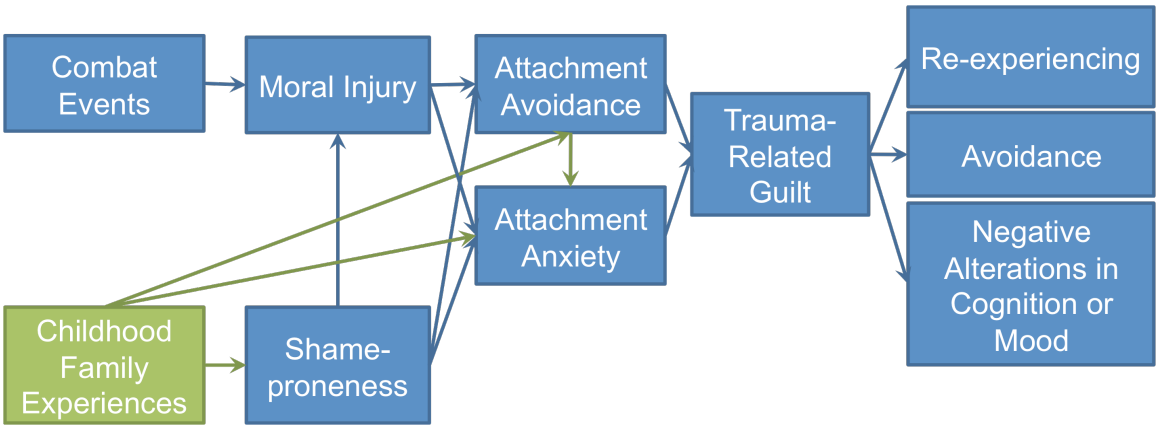

Figure 3. Proposed Exploratory Model. The portions of the proposed model that directly reflect those postulated in the original Litz et al. model are depicted in blue. Variables and paths that were added to the model on the basis of past research are depicted in green.

Lastly, the exploratory model in Figure 3 will be examined. Preexisting empirical literature may provide justification for alternate models to explain the relationship between moral emotions, moral injury, adult attachment, and PTSD severity; however, the foundational model proposed by Litz et al. will be examined first. Shame-proneness

will be examined as an outcome of childhood family functioning. I hypothesize that childhood experiences will indirectly predict attachment anxiety and avoidance via shame-proneness. Within the original model, attachment avoidance was hypothesized to directly predict traumatic guilt and also indirectly predict traumatic guilt via attachment anxiety, capturing a fearful attachment orientation.

Chapter III

Methodology

Participants and Sampling Procedures

With approval from the Committee for the Protection of Human Subjects at the University of Houston, a sample of male combat veterans was recruited to participate in this study. Eligibility criteria for the study included current or previous enlistment in the US military and at least one deployment to a combat zone over the past 25 years. Further, all participants were required to be English speaking. During the time of data collection, 355 participants provided consent to be involved in the study. Of these, 195 participants either provided partial or complete data beyond the demographics form. Of these participants, 47.2% (N = 92) of the data came from University of Houston (UH) students and 52.8% (N = 103) came from external recruitment efforts. Quality control items and validity of military history items were reviewed and 46 cases were removed from the dataset due to failing over half of the quality control items (N = 27), providing invalid responses regarding MOS and/or rank (N = 17), or both (N = 2). This brought the sample size to 148 participants. The literature recommends between 5-20 participants per parameter within a path model (Kline, 2011). With 19 parameters within the hypothesized model, the collected sample provides adequate power to evaluate the proposed model.

The sample demographic characteristics are reported as follows. Participants were male with a mean age of 34.27 years old (SD = 10.59). The majority of participants reported their ethnicity as Caucasian (59.5%). Participants were predominantly married (42.6%). Further, the majority of the sample was employed full-time (54.1%) or were

full-time students (22.3%). Educational level of participants included some college credit without acquisition of a degree (33.1%) followed by holding a Bachelor's degree (25%). The sample primarily came from the Southwest (45.9%) and the Southeast (20.9%). See Table 1 for additional information regarding the demographic characteristics of the sample. The military characteristics of the sample are reported as follows. The majority of the sample served in the Army (53.7%) followed by the Marines (25.9%) and served during the OEF/OIF War Era (44.9%). Participants completed an average of 1.97 deployments (SD = 1.27). Lastly, the sample was predominantly comprised of veterans (69.4%). See Table 2 for further military characteristics of the sample.

On Campus Recruitment. Combat veterans enrolled at University of Houston (UH) were recruited through SONA, the UH Veteran's Services listserv, and classroom announcements. Additionally, a convenience sampling method was used, allowing students to receive SONA credit if they recruited a combat veteran who met study criteria and completed the survey on their behalf. Following the completion of the informed consent, participants were asked to provide an email address of the student for whom they were completing the survey in order to assign research credit. During data cleaning, student email addresses were removed from the dataset to assure anonymity.

External Agency and Social Media Recruitment. Multiple external agencies were contacted to aid with recruitment efforts. To increase the incentive to participate, external participants who provided complete and valid responses were emailed a $5 Starbucks gift card. Participants provided their email in a separate survey and these email addresses were saved in an independent password protected database. The gift cards were sent directly through the Starbucks website from a password protected login.

Table 1
Sample Demographic Characteristics

	N	% of Sample	Mean	*SD*
Age	145		34.27	(10.59)
Race				
African American	14	9.5%		
Asian/Pacific Islander	13	8.8%		
Caucasian	88	59.5%		
Hispanic	21	14.2%		
Multi-racial	6	4.1%		
Other	3	2%		
Decline to respond	1	0.7%		
Missing	2	1.4%		
Dating/Marital Status				
Single	27	18.2%		
Married	63	42.6%		
In a committed relationship, not living with partner	12	8.1%		
In a committed relationship, living with partner	19	12.8%		
Divorced, not remarried	17	11.5%		
Divorced, remarried	5	3.4%		
Other	1	0.7%		
Decline to respond	1	0.7%		
Missing	3	2%		
Employment Status				
Employed full time	80	54.1%		
Employed part time	10	6.8%		
Full time student	33	22.3%		
Part time student	4	2.7%		
Unemployed, seeking employment	4	2.7%		
Unemployed, not seeking employment	3	2%		
Disabled, not able to work	6	4.1%		
Other	4	2.7%		
Missing	4	2.7%		
Education Level				
High school diploma	15	10.1%		
High school equivalency degree (e.g. GED)	1	0.7%		
Some college credit, no degree	49	33.1%		
Trade/technical/vocational training	12	8.1%		
Associate's degree	20	13.5%		
Bachelor's degree	37	25%		
Master's degree	9	6.1%		
Professional degree	2	1.4%		
Doctorate degree	1	0.7%		
Missing	2	1.4%		
Region				
Far West	9	6.1%		
Great Lakes	12	8.1%		
Mideast	8	5.4%		
New England	4	2.7%		
Plains	10	6.8%		
Rocky Mountains	4	2.7%		
Southeast	31	20.9%		
Southwest	68	45.9%		
Missing	2	1.4%		

Table 2

Sample Military History Characteristics

	N	% of Sample	Mean	*SD*
Branch of Service				
Army	79	53.7%		
Air Force	10	6.8%		
Marines	38	25.9%		
Navy	15	10.2%		
Two branches	4	2.7%		
Missing	1	0.7%		
Era/s of Service				
OND	22	15%		
OEF/OIF	66	44.9%		
OND and OEF/OIF	26	17.7%		
Gulf War	12	8.2%		
Post-Vietnam	1	0.7%		
Vietnam	4	2.7%		
Multiple eras	16	10.9%		
Deployment Locations				
Iraq	82	55.8%		
Afghanistan	58	39.5%		
Kuwait (Gulf War)	35	23.8%		
Bosnia	8	5.4%		
Korea	3	2%		
Vietnam	7	4.8%		
Number of Deployments	131		1.97	(1.27)
Service Status				
Active duty	22	15%		
Reserves	22	15%		
Veteran	102	69.4%		
Missing	1	0.7%		
If Discharged, Length of Time Since Discharge (in years)	113		7.69	(7.12)
If Discharged, Type of Discharge				
Honorable	109	74.1%		
Medical	8	5.4%		
Dishonorable	0	0%		
Not applicable	30	20.4%		
Current or Past Employment as a First Responder				
Yes	28	19%		
No	118	80.3%		
Missing	1	0.7%		

Note. 39 participants endorsed being deployed to two locations and 4 endorsed being deployed to three locations; therefore, deployment locations do not add up to 100%.

Agencies were contacted via a number of modalities, soliciting their help with recruitment, by providing recruitment materials to veterans within their network/agency, both electronically (e.g., listservs and on social media accounts) and in hard copy (using

materials preapproved by IRB). With preapproval, hard copy flyers were distributed throughout the community and were displayed throughout a VA Medical Center in the Southeast US. Also, as initiatives through the White House (2012) have increased the incentive for fire and police departments to hire returning veterans. I approached the Houston Fire Department to send out a recruitment email through the listserv to recruit combat veterans who were also firefighters. I also targeted locations serving these agencies in distributing the hard copy fliers.

Further, participants were recruited using a convenience snowball sampling method on social media sites (e.g., Facebook, Reddit, and Tumblr). I provided a standard link to be "shared" on Facebook, which provided a general overview of the study. I recruited participants by posting the link on my Facebook profile and asking colleagues and friends to also "share" the link if they were comfortable doing so, so that their friends who are combat veterans could also participate. Additionally, organizations that aid veterans were contacted regarding their receptivity to "posting" the link to their organization's Facebook page to recruit veterans served through their organization. Data collection through Facebook, Reddit, and Tumblr does not violate the terms and conditions listed on their websites. If participants clicked on the link to participate, they were directly taken to the survey webpage.

Study Procedures and Materials

Participants completed the study on SurveyGizmo ©. Participants were first directed to the informed consent detailing the procedures associated with participation in the study. Individuals who provided informed consent were directed to the initial portion of the study. If a participant was completing the survey so that a UH student could

receive research credit they were asked to provide the student's email address. Next, they completed the survey packet online. It was made explicitly clear that participation was completely voluntary. The survey packet contained a demographic questionnaire along with research measures identified in the following section. Finally, given the nature of the information that was collected for the study, participation concluded with a page detailing psychological services both within the VA and outside of the VA, which are available to veterans.

Measures

Demographic Questionnaire. Participants answered general demographic questions and questions regarding military service. Participants were asked to provide their age, race, dating/marital status, employment status, education level, and geographic region of their primary residence. Participants were also asked to provide: branch/es of service, service status (i.e., active duty, reserve, or veteran), highest rank obtained, military specialty occupation (MOS), era/s of service, combat regions to which they were deployed and deployment status (e.g., active or reserves), and if applicable, length of time since service and type of discharge. The majority of the demographic questions provided categorical answers for participants to select; however, participants were also provided open-ended responses for their MOS and their highest rank obtained. Due to the range of recruitment strategies, these items served as a validity check that participants are veterans, since providing an appropriate response required an awareness of the terms germane to military settings.

Deployment Risk and Resiliency Inventory 2 (DRRI-2). Two scales from the DRRI-2 were used in the study (Vogt et al., 2012 & 2013). The DRRI-2 contains 17

different scales that can be used independently or administered as a complete set. The instrument was designed to assess psychosocial factors that have implications for the mental health and wellbeing of war veterans. The original DRRI was developed during the Gulf War (King et al., 2006); therefore, the revised and validated measure was updated to include more contemporary warfare experiences, adequately cover family-related risk and resilience, shorten the inventory, and revise items so that they better generalize to all war eras.

Childhood Family Experiences Scale. Childhood experiences were assessed using the Childhood Family Experiences Scale from the DRRI-2 (see Appendix A1; Vogt et al., 2012 & 2013), which is a 12-item self-report scale designed to assess childhood family functioning, capturing optimal experiences. These items evaluate the quality of family relationships in their family of origin in regards to communication and closeness. Respondents are asked to rate their agreement regarding statements about their relationships with their family when they were growing up. An example item is, "I felt like my contributions to my family were appreciated." Respondents rate their agreement using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) generating a total score ranging from 12 to 60. The scale produces a sum score and higher scores indicate more positive family functioning. The internal consistency reliability of the measure is .95 and scale scores have been negatively correlated with PTSD severity for OEF/OIF/OND Veterans (Vogt et al., 2013).

Combat Experiences Scale. Combat experiences was assessed using the Combat Experiences Scale from the DRRI-2 (see Appendix A2; Vogt et al., 2012 & 2013), which is a 17-item self-report scale designed to assess exposure to combat-related

circumstances. The items ask about frequency of objective events and circumstances in combat, which are worded to exclude interpretations or subjective judgments of what occurred. An example item is, "… I personally witnessed enemy combatants being seriously wounded or killed." Respondents rate how frequently particular events occurred during their deployment using a 6-point Likert scale ranging from 1 (never) to 6 (daily or almost daily) generating a total score ranging from 17 to 102. The scale produces a sum score and higher scores indicate greater exposure to the aftermath of combat. For OEF/OIF veterans in the Vogt et al. (2013) study, the internal consistency reliability of the measure is .91 and the scale positively correlated with PTSD severity.

Moral Injury Events Scale (MIES). Moral injury was assessed using the MIES (see Appendix A3; Nash et al., 2013), which is a 9-item self-report scale designed to measure violation or betrayals of moral beliefs in combat. The items evaluate perceived transgressions by self or others and perceived betrayals by others either within or outside of the military. Respondents are asked to rate their agreement with statements regarding their experiences since joining the military. An example item is, "I acted in ways that violated my own moral code or values." Respondents rate their agreement using a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree) generating a total score ranging from 9 to 54. The scale intentionally precludes a neutral rating of the items and item ratings are summed to produce a total score. For ease of interpretation, this scale was reverse scored so that higher scores indicate having experienced a greater intensity of morally injurious events. The internal consistency reliability of the measure is .90 and total scale scores positively correlated with PTSD and depression severity scores, and negatively correlated with social support scores.

Test of Self-Conscious Affect (TOSCA-3). Shame-proneness was assessed using the TOSCA-3 (see Appendix A4; Tangney, Dearing, Wagner, & Gramzow, 2000; Tangney & Dearing, 2002). The TOSCA-3 provides a scenario-based assessment of self-conscious emotions and is regarded as the gold standard for assessing shame and guilt (Ferguson, Brugman, White, Eyre, 2007). This study will solely examine the shame-proneness subscale from the TOSCA-3 (Tangney et al., 2000; Tangney & Dearing, 2002). Respondents are presented with fifteen day-to-day situations (five positive and ten negative) and are asked to envision themselves in the situation and rate their likelihood of particular responses. Respondents are presented with four to five possible responses that reflect dimensions of affective tendencies capturing: Guilt-proneness (16 items, $\alpha = .78$), shame-proneness (16 items, $\alpha = .77$), externalization (16 items, $\alpha = .75$), pride in one's self (alpha pride; five items, $\alpha = .48$), pride in one's behavior (beta pride; five items, $\alpha = .51$), and detachment/unconcern (11 items, $\alpha = .72$). An example item assessing shame-proneness is, "You break something at work and then hide it… You would think about quitting." Respondents rate their likelihood of responding in each manner using a 5-point Likert scale ranging from 1 (not likely) to 5 (very likely) with higher scores indicating greater shame-proneness. This measure intentionally excludes the words shame and guilt, so that participants are not required to understand the nuances of these emotions in order to appropriately respond to the measure.

Experiences in Close Relationships-Short Form (ECR-S). Attachment orientation was assessed using the ECR-S, which is a 12-item self-report questionnaire designed to assess attachment anxiety and attachment avoidance (see Appendix A5: Wei, Russell, Mallinckrodt, & Vogel, 2007). Half of the items measure attachment anxiety and

the other half assesses attachment avoidance. Respondents are asked to consider their general demeanor in close relationships rather than considering their relationship with a romantic partner. An example of a (low) avoidance item is, “It helps to turn to my romantic partner in times of need.” Respondents rate their typical feelings in close relationships using a 7-point Likert scale ranging from 1 (not at all) to 7 (very much). This measure was shortened from the 36 item Experiences in Close Relationships measure and the shortened measure exhibits comparable psychometric properties. For college students, attachment anxiety on the ECR-S was related in expected directions to scores on independent measures of excessive reassurance seeking, depression, anxiety, interpersonal distress, loneliness, psychological distress, and emotional reactivity (Wei et al., 2007). Further, attachment avoidance was related in expected directions to scores on independent measures of emotional cutoff, depression, anxiety, interpersonal distress, loneliness, psychological distress, fear of intimacy, and discomfort with self-disclosure. Additionally, the ECR-S has shown adequate internal consistency for military samples (Clark & Owens, 2012; Owens et al., 2014), for attachment anxiety (between .73 and .68) and avoidance scores (between .81 and .77).

Trauma-Related Guilt Inventory (TRGI). Guilt was assessed using the TRGI (see Appendix A6; Kubany et al., 1996). The TGRI is a 32-item self-report questionnaire assessing degree of unpleasant feelings resulting from an individual’s belief that they should have thought, acted, or felt differently in the context of a traumatic event. An example item is, “I blame myself for something I did, thought, or felt.” Participants rate how true statements have been for them using a 5-point Likert scale ranging from extremely true to not at all true for statements regarding hindsight bias/responsibility,

violation of personal standards, and lack of justification for actions. The global guilt scale contains items where respondents rate the degree of guilt they are experiencing using a 5-point Likert scale. The total guilt cognitions scale will be used to assess guilt within the proposed model. For Vietnam veterans, the internal consistencies for the scales were: Global guilt (four items, α = .90), distress (six items, α = .86), and guilt cognitions (22 items, α = .86). The guilt cognitions scale can be summed or separated into the following subscales: Hindsight-Bias/Responsibility (seven items, α = .82), Wrongdoing (five items, α = .75), Lack of Justification (four items, α = .67). In samples of Vietnam veterans and battered women, the subscales of this measure were related to trait guilt, PTSD severity, poor self-esteem, social anxiety and avoidance, and suicidal ideation (Kubany et al., 1996).

PTSD Checklist-5 (PCL-5). Posttraumatic stress disorder severity was assessed using the PCL-5 (see Appendix A7; Weathers et al., 2013). The PCL-5 is a 20-item self-report questionnaire assessing degree of disturbance experienced related to a traumatic event/s within the past month using the four DSM 5 criteria symptom clusters (five intrusion/re-experiencing symptoms, two avoidance symptoms, seven negative cognition or mood symptoms, and six hyper-arousal symptoms). An example item assessing re-experiencing symptoms is, “Indicate how much you have been bothered by… Repeated, disturbing, and unwanted memories of the stressful experience?” Respondents rate the extent to which they have been bothered by a particular symptom ranging from 0 (not at all) to 4 (extremely), generating a total score ranging from 0 to 80. The full scale demonstrated an internal consistency of 0.96 for both a general active duty sample and

individuals who were deployed to Iraq or Afghanistan, which mirrors the reliability findings for the DSM-IV-TR (Hoge et al., 2014).

Analysis

Correlational analyses were used to test Hypotheses 1 and 2, and multiple regression analysis was used to test Hypotheses 3 and 4. I tested hypothesis 3 by first entering childhood family experiences and combat experiences in step one of the regression equation. In step two, I entered shame-proneness in the prediction of moral injury. To test hypothesis 4, I entered childhood family experiences and combat experiences in step one of the regression equation. In step two, I entered moral injury in the prediction of PTSS severity for the four symptom clusters. I ran four regression equations in the prediction of: (a) re-experiencing, (b) avoidance, (c) negative alterations in cognitions and mood, and (d) hyper-vigilance.

The hypothesized model (see Figure 3 on p. 30) was evaluated using exploratory path analysis, since path analysis approximates evaluating causal analyses (when the model is appropriately specified; Kline, 2011), and Litz et al. (2009) proposed a "causal framework." Further, each construct was assessed using a single observed measure and latent variables are not included in the model (Kline, 2011). I used AMOS rather than regression, so that the interrelationships between the variables of interest could be evaluated simultaneously. Statistical analysis used the following goodness of fit indices: the chi-square test (evaluating the difference in fit between an over-identified model and a just identified version, giving preference to simplest model), the comparative fit index (CFI; comparing the proposed model and degree of fit in contrast to a baseline model), the normed fit index (NFI; examining sample-based fit indices), and the root mean square

error of approximation (RMSEA; providing the degree of misspecification of the proposed model). In addition to a non-significant chi-square, the following cutoff criteria put forward by Hu and Bentler (1999) were used to assess the fit indices: a CFI ≥ .95, a NFI > .90, and a RMSEA ≤ .06. The proposed fit indices reflect practice recommendations for the statistics that should be provided in written summaries of analyses to ensure that results are not being preferentially chosen based on statistically significant and insignificant results (Boomsma, 2000; McDonald & Ho, 2002). Two exogenous variables will be examined (combat events and childhood family experiences) and eight endogenous variables will be examined (moral injury, shame-proneness, attachment anxiety, attachment avoidance, traumatic guilt, re-experiencing, avoidance, and negative alterations in cognitions or mood) to evaluate the proposed model. Based upon the fit of the proposed model, alternate models will examined on the basis of the modification indexes and previous literature.

Chapter IV

Results

Data for this study were collected from April 2015 to March 2016. Data were screened for accuracy and were then transferred to SPSS Version 23.0. Preliminary examination of the data included outlier analysis, descriptive analysis, and a check for the distribution of data. Analyses of assumptions for regression showed the data contained no outliers, and was within normal limits for linearity, collinearity, homoscedasticity, and independence of error that is random and normally distributed.

Table 3
Descriptive Statistics for Primary Study Variables

	Measures	N	α	Mean	(SD)
1.	Combat Experiences	147	.95	39.79	(17.24)
2.	Moral Injury: Total Score	138	.88	24.34	(10.74)
3.	Moral Injury: Transgressions Score	138	.92	16.44	(8.26)
4.	Moral Injury: Betrayal Score	138	.77	7.90	(4.11)
5.	Attachment Avoidance	132	.85	20.02	(8.02)
6.	Attachment Anxiety	132	.82	20.85	(8.19)
7.	PTSD Checklist: Total	127	.95	27.46	(17.66)
8.	PTSD Checklist: Reexperiencing	129	.92	6.42	(4.78)
9.	PTSD Checklist: Avoidance	128	.85	2.91	(2.28)
10.	PTSD Checklist: Negative Alterations	128	.89	8.75	(6.73)
11.	PTSD Checklist: Hypervigilance	128	.88	9.36	(5.95)
12.	Trauma Related Guilt: Global	113	.95	1.15	(1.09)
13.	Trauma Related Guilt: Distress	114	.91	1.40	(1.07)
14.	Trauma Related Guilt: Cognitions	112	.92	0.98	(0.75)
15.	Shame-proneness	105	.84	43.66	(11.71)
16.	Childhood Family Experiences	106	.95	41.30	(12.26)

Correlational Analyses

Correlational data for all study variables are depicted in Appendix B, Table B1. Results directly related to the advanced hypotheses are summarized in Table 4. Both tables provide significance values for two-tailed bivariate correlations. However, directionality was hypothesized for most of the examined correlations; therefore, results in the narrative below reflect significance values for one-tailed bivariate correlations. Specifically, if the significance values for the one-tailed analyses differed from two-tailed analyses, then additional results were included in the narrative. If the significance values were consistent between one- and two-tailed analyses, only the total score for a given measure is reported, below.

Hypothesis 1. Linear relationships were hypothesized to be consistent with the Litz et al. model. Shame-proneness evidenced a positive relationship with moral injury for the total score, $r = .21$, $p < .05$, with significant one-tailed results for transgressions, $r = .18$, $p < .05$ and betrayals, $r = .20$, $p < .05$. Trauma-related guilt cognitions evidenced a positive relationship with moral injury, total score, $r = .63$, $p < .001$. Attachment anxiety evidenced a positive relationship with moral injury total score, $r = .40$, $p < .001$. Attachment avoidance was unrelated to moral injury scores. Severity of PTSS re-experiencing evidenced a positive relationship with moral injury for the total score, $r = .41$, $p < .001$. Severity of PTSS avoidance evidenced a positive relationship with moral injury total score, $r = .35$, $p < .001$ with significant one-tailed results for betrayals, $r = .17$, $p < .05$. Severity of PTSS negative alterations in cognitions and mood evidenced a positive relationship with moral injury total score, $r = .46$, $p < .001$. Severity of PTSS hyper-vigilance evidenced a positive relationship with moral injury total score, $r = .43$, p

< .001. Attachment anxiety was positively related to trauma-related global guilt, $r = .23$, $p < .01$, distress, $r = .37$, $p < .001$, and guilt cognitions, $r = .18$, $p < .05$. Attachment avoidance was unrelated to trauma-related guilt. Collectively, bivariate correlations were predominantly consistent with hypotheses with the exception that include, no relationships between attachment avoidance and both moral injury and trauma related guilt were observed. Further, moral injury was hypothesized to be unrelated to hyper-vigilance, but analyses indicated a significant relationship.

Table 4

Bivariate Correlations for Hypothesis 1

	Hy 1a	Hy 1b, 1i, & 1j			Hy 1c	Hy 1d	Hy 1e	Hy 1f	Hy 1g	Hy 1h
	TOSCA: Shame-proneness	TGRI: Global Guilt	TGRI: Distress	TGRI: Guilt Cognitions	Attachment Anxiety	Attachment Avoidance	PCL: Re-experiencing	PCL: Avoidance	PCL: Alterations in Cognition & Mood	PCL: Hyper-vigilance
Moral Injury Total Score	.21*	.53***	.61***	.63***	.40***	.05	.41***	.35***	.46***	.43***
Attachment Anxiety		.23*	.37***	.18†						
Attachment Avoidance		.11	.10	.08						

Note. Pair wise deletion of missing data resulted in intercorrelation sample sizes ranging from N =106 to N = 138. Two-tailed, †p < .07. *p < .05. **p < .01. ***p < .001.

Hypothesis 2. It was hypothesized that optimal childhood family experiences and attachment anxiety and avoidance would be negatively correlated. Analyses indicated that childhood family experiences were negatively related to attachment avoidance, $r = -.24$, $p < .01$, but unrelated to attachment anxiety.

Regression Analyses

Hypothesis 3. Shame-proneness was hypothesized to predict moral injury, when controlling for combat events and childhood family experiences. Using hierarchical regression analysis, when controlling for childhood family experiences and combat experiences in Step 1, shame-proneness, included in Step 2, did not predict moral injury scores.

Table 5

Regression Analysis Shame-Proneness Predicting Moral Injury Scores (Hypothesis 3)

	Step 1			Step 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Childhood Family Experiences	-0.15	0.08	-0.18†	-0.13	0.08	-0.16
Combat Experiences	0.18	0.06	0.30**	0.17	0.06	0.28**
Shame-proneness				0.14	0.08	0.15
Adjusted R^2			0.11			0.13
ΔR^2			-			0.02
F for ΔR^2			7.61**			6.07**

Note. $N = 105$; Missing data deleted list wise from the analysis.
†$p < .07$. *$p < .05$. **$p < .01$. ***$p < .001$.

Hypothesis 4. When controlling for combat and childhood family functioning, moral injury was hypothesized to predict all PTSS clusters, excluding alterations in arousal and reactivity. Using hierarchical regression analysis, when controlling for childhood family experiences and combat experiences in Step 1, total moral injury score included in Step 2 significantly predicted all PTSS cluster scores: Re-experiencing $t(105) = 0.29$, $p < .01$, avoidance $t(129) = 0.25$, $p < .01$, negative alterations in cognition or mood $t(105) = 0.29$, $p < .01$, and hyper-vigilance $t(106) = 0.27$, $p < .01$. The inclusion of moral injury in Step 2, uniquely accounted for 7.1% of the variance (Adjusted *R*2) in PTSS re-experiencing $F(3, 101) = 13.76$, $p < .001$, 5.4% of the variance in PTSS avoidance $F(3, 102) = 7.78$, $p < .001$, 7.1% of the variance in PTSS negative alterations

in cognition or mood $F(3, 102) = 16.83$, $p < .001$, and 6.1% of the variance in PTSS hyper-vigilance $F(3, 102) = 14.55$, $p < .001$. Please refer to Table 6 - 9 for additional information. In summary, moral injury predicted all PTSS clusters; however, moral injury was expected to be unrelated to the hyper-vigilance PTSS cluster. Results for regression analyses for hypothesis 4 are consistent with the results of the bivariate correlations for hypothesis 1.

Table 6

Regression Analysis of Moral Injury in Predicting PTSS Re-experiencing Severity (Hy 4)

	Step 1			Step 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Childhood Family Experiences	-0.02	0.04	-0.05	0.003	0.03	0.01
Combat Experiences	0.13	0.03	0.46***	0.11	0.03	0.38***
Moral Injury - Total				0.13	0.04	0.29**
Adjusted R^2			0.20			0.27
ΔR^2			-			0.07
F for ΔR^2			14.31***			10.10**

Note. $N = 105$; Missing data deleted list wise from the analysis.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 7

Regression Analysis of Moral Injury in Predicting PTSS Severity, Avoidance (Hy 4)

	Step 1			Step 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Childhood Family Experiences	-0.20	0.02	-0.11	-0.01	0.02	-0.06
Combat Experiences	0.04	0.01	0.34***	0.03	0.01	0.26**
Moral Injury - Total				0.05	0.02	0.25**
Adjusted R^2			0.12			0.16
ΔR^2			-			0.05
F for ΔR^2			7.85**			6.78***

Note. $N = 106$; Missing data deleted list wise from the analysis.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 8

Regression Analyses of Moral Injury in Predicting PTSS Severity, Negative Alterations in Cognition and Mood (Hy 4)

	Step 1			Step 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Childhood Family Experiences	-0.17	0.05	-0.32***	-0.15	0.05	-0.27**
Combat Experiences	0.15	0.03	0.37***	0.11	0.03	0.28**
Moral Injury - Total				0.18	0.06	0.29**
Adjusted R^2			0.25			0.31
ΔR^2			-			0.07
F for ΔR^2			18.13***			10.79**

Note. $N = 105$; Missing data deleted list wise from the analysis.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 9

Regression Analyses of Moral Injury in Predicting PTSS Severity, Alterations in Arousal and Reactivity (Hy 4)

	Step 1			Step 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Childhood Family Experiences	-0.11	0.04	-0.22*	-0.08	0.04	-0.18*
Combat Experiences	0.14	0.03	0.41***	0.11	0.03	0.33***
Moral Injury - Total				0.15	0.05	0.27**
Adjusted R^2			0.22			0.28
ΔR^2			-			0.06
F for ΔR^2			16.15***			8.88**

Note. $N = 106$; Missing data deleted list wise from the analysis.
*$p < .05$. **$p < .01$. ***$p < .001$.

Exploratory Path Analysis

A portion of the Litz et al. model was examined in AMOS 23.0 using exploratory structural equation modeling (see Figure 3 on p. 30). The proposed model was evaluated and the data did not evidence adequate fit, chi-square X^2 (14, N = 147) = 65.37, p < .001 NFI (.70), CFI (.71) and RMSEA (.16). Therefore, a respecification of the model was

guided conjunctively by theory and the modification indexes provided by AMOS. As an overview, the following modifications were made: (a) the three PTSS clusters, re-experiencing, avoidance, and alterations in cognitions and mood, were collapsed into one score. (b) Direct paths were added from: moral injury to trauma-related guilt, attachment avoidance to PTSS, combat experiences to attachment avoidance, combat experiences to PTSS, and shame-proneness to PTSS. (c) Observed variables were removed from the model, including: childhood family experiences and attachment anxiety and avoidance. Table 10 provides an overview of the examined models, their analytic modifications, and their respective fit indexes.

Table 10

Overview: Fit Indexes for Examined Models

Analyzed Models	Fit Indexes				
	X^2	*df*	NFI	CFI	RMSEA
Original Proposed Model	290.46***	30	.32	.30	.24
Model 1: Moral injury → Trauma-related guilt PTSS collapsed into one variable	65.37***	14	.70	.71	.16
Model 2: Attachment avoidance → PTSS	56.64***	13	.74	.76	.15
Model 3: Combat experiences → Attachment avoidance	53.17***	12	.75	.77	.15
Model 4: Combat experiences → PTSS	33.85***	11	.84	.87	.12
Model 5: Shame-proneness → PTSS	17.24	10	.92	.96	.07
Model 6: Childhood family expereinces removed	11.55	6	.94	.97	.08
Model 7: Attachment variables removed	5.64	4	.96	.99	.05

Note. Fit indices were inspected for non-significant chi-square, a NFI > .90, a CFI ≥ .95 and a RMSEA ≤ .06.

Proposed Model. The hypothesized portion of the model did not reveal an adequate goodness of fit across any of the indices reviewed (see Figure 4), Chi-square X^2 (30, N = 147) = 290.46, p < .001 NFI (.32), CFI (.30) and RMSEA (.24). Therefore, alternate theoretically compatible models were explored, guided by the modification

indices provided by AMOS. Modification indices suggested adding a direct path from moral injury and trauma-related guilt, to improve goodness of fit. Further, direct paths were suggested between all PTSS clusters. The interplay between PTSS was outside of the purview of this study; therefore, to minimize error, the PTSS clusters were summed into a single cluster containing a total score for PTSS of re-experiencing, avoidance, and negative alterations in cognition or mood. Further, because the PCL is a screening measure for PTSD (Weathers et al., 2013), it is more commonly examined as a total score.

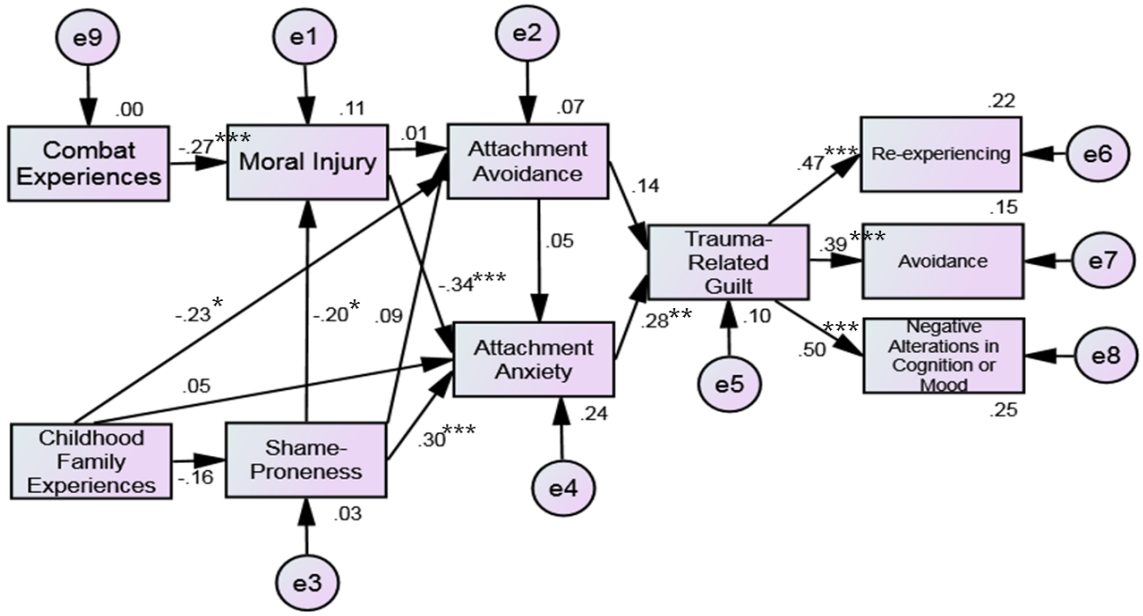

Figure 4. Path Analyses for the Original Proposed Model. **p* < .05. ***p* < .01. ****p* < .001. Chi-square X^2 (30, *N* = 147) = 290.46, *p* < .001 NFI (.32), CFI (.30) and RMSEA (.24).

Respecification of Proposed Model. A revised model was created and examined (see Figure 5, Revised Model 1). Although the fit indices evidenced an improved fit, the modified model did not reveal an adequate goodness of fit across the reviewed indices, chi-square X^2 (14, N = 147) = 65.37, p < .001 NFI (.70), CFI (.71) and RMSEA (.16).

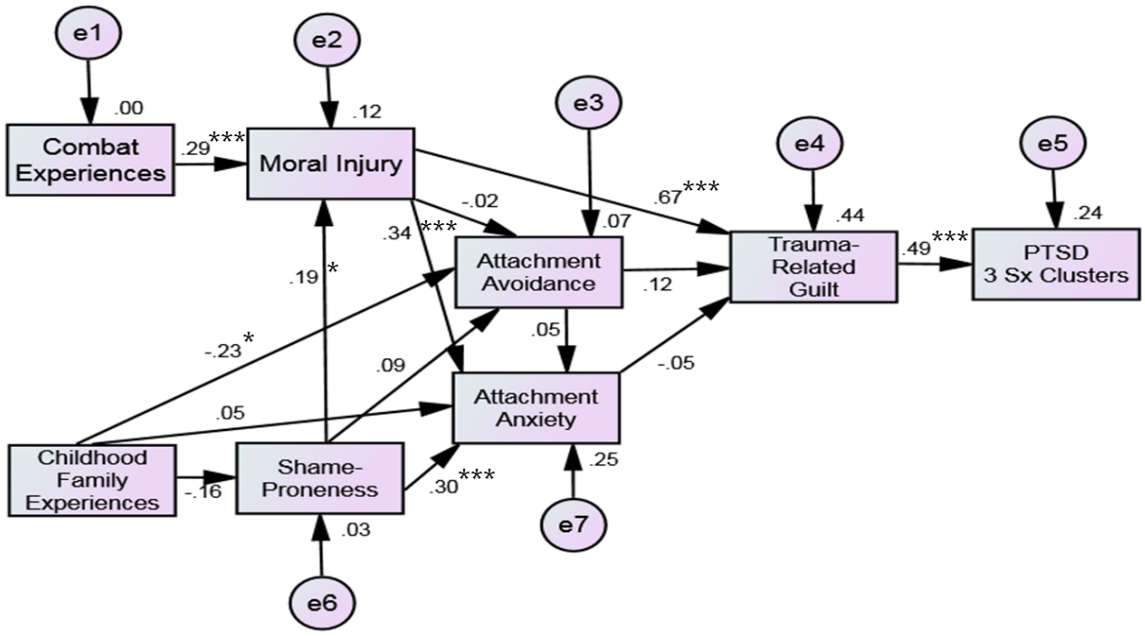

Figure 5. Path Analyses: Revised Model. **p* < .05. ***p* < .01. ****p* < .001. Changes from prior model: a) PTSS clusters collapsed into one observed variable, b) direct path added from moral injury to trauma related guilt. Chi-square X^2 (14, N = 147) = 65.37, p < .001 NFI (.70), CFI (.71) and RMSEA (.16).

For Revised Model 1, modifications indices suggested disturbance correlation between attachment avoidance and both (a) PTSS severity and (b) combat experiences. Further, disturbance correlation was recommended between PTSS severity and both (a) combat experiences and (b) shame-proneness. In order to be more precise, models were examined adding direct paths between these variables. These paths were added individually. The iterations of the models can be found in Appendix B, Figures B2-B4. Models with summative changes are included below. First, a direct path between attachment avoidance and PTSS was added (see Appendix B2, Revised Model 2), resulting in improved fit. However, the modified model did not reveal an adequate goodness of fit across the reviewed indices, chi-square X^2 (13, N = 147) = 56.64, p < .001 NFI (.74), CFI (.76) and RMSEA (.15). Next, a path was added from combat events to attachment

avoidance (see Appendix B3, Revised Model 3). The modified model again did not reveal an adequate goodness of fit across the reviewed indices, chi-square X^2 (12, N = 147) = 53.17, p < .001 NFI (.75), CFI (.77) and RMSEA (.15). Further, a path was added from combat experiences to PTSS (see Appendix B4, Revised Model 4), resulting in inadequate goodness of fit across the reviewed indices, chi-square X^2 (11, N = 147) = 33.85, p < .001 NFI (.84), CFI (.87) and RMSEA (.12). Finally, a path was added from shame-proneness to PTSS (see below, Figure 6, Revised Model 5), resulting in acceptable goodness of fit across all indices except RMSEA, chi-square X^2 (10, N = 147) = 17.24, p = .069, NFI (.92), CFI (.96) and RMSEA (.07).

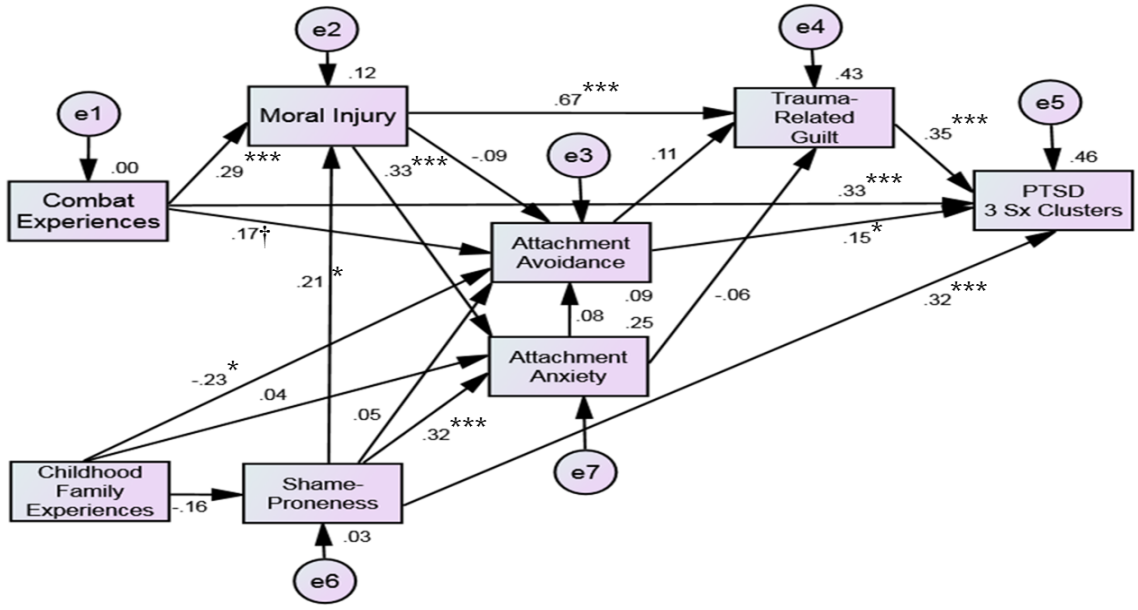

Figure 6. Path Analyses: Revised Model 5. †p < .07. *p < .05. **p < .01. ***p < .001. Changes from prior model include direct paths added from: a) combat experiences to PTSS, b) combat experiences to attachment avoidance, c) attachment avoidance to PTSS, and d) shame-proneness to PTSS. Chi-square X^2 (10, N = 147) = 17.24, p = .069, NFI (.92), CFI (.96) and RMSEA (.07).

Since childhood family experiences was not posited within the original Litz et al. model, Revised Model 6 was examined without this variable (see Figure 7, Revised

Model 6), again resulting in acceptable goodness of fit across all indices except RMSEA, chi-square X^2 (6, N = 147) = 11.55, p = .073, NFI (.94), CFI (.97) and RMSEA (.08). Finally, given the theoretical possibility that attachment was temporally misspecified within the Litz et al. model, attachment was removed from Model 7, resulting in adequate fit across indices chi-square X^2 (4, N = 147) = 5.64, p = .228, NFI (.96), CFI (.99) and RMSEA (.05). Table 10 (p. 51) provides an overview of the fit indices for the examined models.

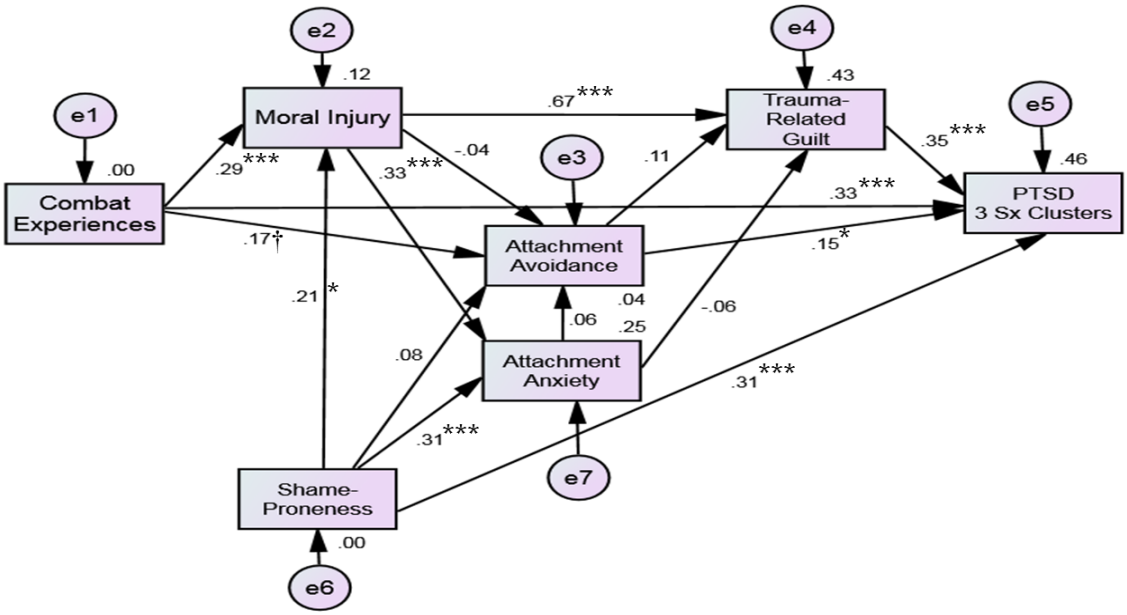

Figure 7. Path Analyses: Revised Model 6. †p < .07. *p < .05. **p < .01. ***p < .001. Changes from prior model: Childhood family experiences removed from the model. Chi-square X^2 (6, N = 147) = 11.55, p = .073, NFI (.94), CFI (.97) and RMSEA (.08).

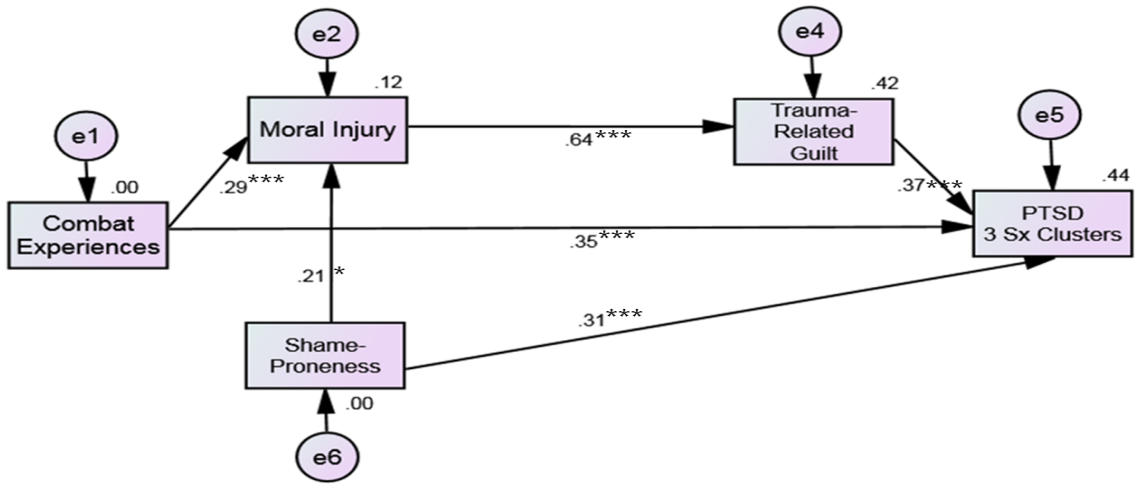

Figure 8. Path Analyses: Revised Model 7. **p* < .05. ***p* < .01. ****p* < .001. Changes from prior model: Attachment avoidance and anxiety removed from the model. Chi-square X^2 (4, N = 147) = 5.64, p = .228, NFI (.96), CFI (.99) and RMSEA (.05).

Chapter V

Discussion

The primary objective of this study was to evaluate the interrelationships of moral injury to selected constructs and to evaluate portions of predictions within the Litz et al. model. Currently, the concept of moral injury lacks quantitative analysis. Collectively, the primary results suggest that experiencing moral injury contributes to all components of PTSS severity, including hyper-vigilance, counter to theoretical postulation. Additionally, moral injury was strongly associated with trauma-related guilt and weakly associated with shame-proneness. Finally, attachment anxiety was moderately related to moral injury, whereas attachment avoidance was unrelated to moral injury.

A secondary objective was to evaluate a portion of the Litz et al. model derived from the seminal article on moral injury (see Figure 1 on p. 8, Figures 2 & 3). The Litz et al. (2009) model is solely grounded in theory and has not withstood empirical evaluation. Since this line of inquiry is in its infancy, the aim to examine a large portion of the model was ambitious. Although, it is crucial that the postulated model be empirically examined, the lack of quantitative examination made it unlikely that the data would evidence a good fit to the specified portion of the model. Additionally, this study was underpowered, and although grounded in both theory and modification indexes, many modifications were made in the pursuit of ascertaining an accepted model. Regardless, adequate fit indexes were found for Model 5-7 (See Figures 6-8). Model 7 demonstrated adequate fit indexes across the advanced criteria, whereas the RMSEA for Model 5 and 6 surpassed the proposed cutoff of ≤ .06 (Hu & Bentler, 1999). The RMSEA cutoff proposed for this study is conservative. Brown and Cudeck (1993) defined a RMSEA ≤ .05 as a good fit,

between .05 and .08 as an acceptable fit, and between .08 and .10 as a mediocre fit. Therefore, Model 5 is the accepted model advanced for this study, because Model 5 has an "acceptable" RMSEA and is collectively the most congruent with theory and past literature. Below, I detail the findings for the primary variables in this study, provide additional interpretation of the results of the model, discuss the strengths and limitations of this study, and provide future directions and implications of this study for this line of inquiry.

Relation of Shame to Moral Injury and PTSS Severity

Litz et al. (2009) proposed many ways in which the interplay of moral emotions influences perception of a moral injury. They proposed that shame-proneness might activate preexisting self or other schemas and thus heighten the likelihood of moral injury. Additionally, Litz et al. proposed that individuals who experience remorse about the event, experience guilt, whereas, those who blame themselves because of an inadequacy or flaw will experience shame. Results for the current study indicate a weak association between dispositionally experiencing shame and reporting more distress related to moral injury. More specifically, respondents who were more shame-prone also reported more moral transgressions in combat. When controlling for childhood family experiences and combat events, shame-proneness did not predict moral injury; however, when all variables were identified in the path model, shame-proneness predicted moral injury. Further, in the full model, shame-proneness predicted the three PTSS clusters. Trauma-related shame was not assessed within this study; however, this result indicates that it is extremely important that future studies establish the role of shame following a moral injury.

Relation of Guilt to Moral Injury and PTSS Severity

Trauma-related guilt (Kubany et al., 1996) was used as a more precise measurement of guilt in this study. All forms of trauma-related guilt captured in this study were strongly associated with moral injury. Specifically, participants who endorsed more trauma-related guilt cognitions, distress from feelings of guilt, and global guilt, also endorsed greater morally injurious transgressions and betrayals. In the full model, moral injury directly predicted trauma-related guilt cognitions, independent of the contribution of adult attachment. Further, trauma-related guilt predicted PTSS severity for the three symptom clusters. This result is consistent with previous literature suggesting that combat guilt is robustly related to PTSD severity (Henning & Frueh, 1997).

The relationship among trauma-related guilt and moral injury was consistent with my hypotheses; however, this result contradicts past literature regarding moral emotions for civilian populations (Tagney et al., 2007). Farnsworth, Dresher, Nieuwsma, Walser, and Currier (2014) noted that, although guilt is a pro-social emotion, presumed to have a positive influence on mental health, combat-related guilt is associated with worse mental health outcomes. Therefore, these investigators highlight the distinction between specific guilt versus generalized guilt. With specific guilt, a service member may violate their standards while in combat, but do not generalize their experience to their self-concept. Alternatively, those who experience generalized guilt, alter their self-concept, are chronically guilty, and are posited to experience more trauma-related mental health symptoms. They argue that the mental health symptoms associated with generalized guilt are similar to those associated with shame. In their theoretical review of moral injury, Farnsworth et al. (2014) also underscored ways in which a social functionalist

perspective may be helpful in explaining how moral emotions differ for military populations when deciphering moral emotions in the context of a warzone.

Role of Attachment in Moral Injury and PTSS

Litz et al. proposed that combat events (i.e., transgressions) that contradict an individual's moral code (i.e., moral injury) produce dissonance or inner conflict regarding the event. Further, an individual's dissonance or moral conflict is then understood in light of self and other schemas (i.e., stable, internal global attributions) and may provoke the individual to revise existing schemas. In this study, moral injury was moderately related to, and predictive of global attributions regarding self (attachment anxiety), but was not related to attributions regarding others (attachment avoidance). Participants who endorsed greater attachment anxiety reported more moral conflict related to personal transgressions and betrayals by others.

Similarly, shame-proneness predicted attachment anxiety, but not avoidance, consistent with past research findings (Gross & Hansen, 2000; Lopez et al., 1997). Further, attachment fearfulness was correlated with shame-proneness. Likewise, trauma-related guilt was associated with attachment anxiety, but was not associated with attachment avoidance. Specifically, participants who were more anxiously attached also endorsed greater trauma-related global guilt, distress, and guilt cognitions. However, in the model, both attachment anxiety and avoidance were not predictive of trauma-related guilt.

Conversely, childhood family experiences were related to and predicted attachment avoidance, but were unrelated to attachment anxiety. The measure of childhood family experiences captures degree of closeness and effective communication

within one's family of origin (Vogt et al., 2013). Thus, participants with a family of origin that was not close and supportive also demonstrated attempts at shutting down the attachment system with respect to romantic relationships. In revised model 5 and 6, combat experiences approached significance in predicting attachment avoidance and attachment avoidance predicted severity of the three PTSS clusters. It is noteworthy that for bivariate correlations, attachment avoidance was not related to the PTSS cluster of avoidance, but was related to all other PTSS clusters. Attachment avoidance was most robustly related to negative alterations in cognition and mood and hyper-vigilance.

These results indicate that attachment orientation may be influenced by combat trauma and that combat veterans who are more avoidantly attached have more severe PTSS (with exception of attachment avoidance). Findings from a longitudinal study by Solomon and colleagues (2008) are consistent with these results and with the potential dynamic role of attachment in predicting PTSD severity. These researchers found that PTSD resulting from complex trauma might, over time, influence an individual's likelihood for developing an insecure attachment orientation. Additionally, they found that the symptoms exhibited by ex-prisoners of war increased concurrently with attachment avoidance and anxiety from Time 1 (18 years following the war) to Time 2 (30 years following the war).

Relatedly, the age and stage of development when an individual encounters a potentially moral injurious situation may play an important role in meaning making. Erik Erikson's (1980) stages of human development provide a useful framework for conceptualizing moral injury and attachment. Erickson's psychosocial theory posits that humans proceed through eight discontinuous stages. During each stage, individuals

grapple with a specific social or personal task. The stages and related tasks are as follows: (1) infancy, trust versus mistrust of primary caregivers; (2) early childhood, autonomy versus shame and doubt in living up to adults' expectations; (3) play/preschool age, initiative in gaining mastery over their environment versus guilt; (4) school age, industry, often in school, versus inferiority to peers; (5) adolescence, identity or gaining a stable sense of self versus role confusion; (6) young adulthood, intimacy versus isolation; (7) adulthood, generativity in creating ideas, products, and/or children versus stagnation; and lastly (8) older adulthood, integrity in reflecting upon ones life versus despair.

Erickson's theory (1980) provides a developmental framework that could help guide future longitudinal research on attachment and moral injury. Presumptively, individuals commonly join the military in late adolescence during the identity versus role confusion stage. Subsequently, and possibly following combat exposure, they transition into intimacy versus isolation. Erikson's developmental stages unfold consistent with Litz et al. (2009) model. Specifically, they posit that if a veteran experiences moral injury and views himself or herself as a bad person (i.e., integrates the experience within their identity), he or she then experiences shame, and withdrawals from intimate social relationships (i.e., isolation). Erikson (1980) proposed that inadequate resolution of a task within a given stage will influence psychosocial functioning in later stages. The correspondence between veteran's movement through these stages and combat exposure might help to explain differences in response to moral injury and its possible impacts on adult attachment. Moral injury during the stage identity versus role confusion may make an individual more vulnerable to integrating the experience within their identity, thus more saliently influencing likelihood for isolation. Conversely, those who have already

completed this stage and developed an integrated view of self may prove more resilient during a potentially moral injurious experience. In this study, moral injury predicted attachment anxiety; however, this study did not assess the age at which participants experienced a moral injury. Future researchers should consider Erikson's psychosocial theory as a useful framework for considering the trajectory of moral injury within a developmental context. Erikson's theory highlights the importance of longitudinal designs for optimally understanding these complex, meaning making processes.

Farnsworth et al. (2014) advanced a social functionalist perspective to delineate various ways service members might make meaning of moral injury within the context of the military and social relationships. This perspective posits the adaptive function of moral emotions for compelling individuals to put the needs of a social group before their personal needs in order to increase collective chances of survival. Guilt and shame are thought to help maintain social order and increase thoughtfulness of reciprocity. Therefore, the context of a particular group dictates the morality of any given behavior.

Farnsworth et al. (2014) underscored the key differences in moral rules for service members in contrast to civilians. Moral socialization within the military involves enhancing pride towards group membership and fostering value for selflessness and suppression of threat to protect one's unit. Further, it assigns shame to abandoning comrades in the face of danger, and reserves anger for those that put the group in danger (including the combatants). Farnsworth et al. proposed a number of avenues leading to moral injury in the context of this social environment. If a unit experiences threat or loss at the hands of the enemy and condemning emotions lead to dehumanizing the enemy then it increases likelihood provoking abusive violence that is outside of the rules of

engagement leading to moral injury. Alternatively, despite humans' argued natural aversion to killing other humans, the context of war provides few alternatives when presented with a certain level of threat that might lead to retrospective moral dissonance. Further, some service members might be particularly attuned to the suffering of others, prompting identification with the enemy that then evokes self-censuring moral emotions for contributing to or not preventing the suffering of combatants. Additionally, the context of the military engenders expectations that leaders hold themselves to an advanced moral code. Therefore, if subsequently, leadership within that moral system betrays their trust, it might diminish their options for social support and decrease motivation to trust in the future. Finally, after returning home from deployment, an individual abandons attempting to reintegrate with society based the clash of the moral code within the military versus the civilian world and prompts a self-destructive cycle where self-critical thoughts (e.g., "I do not belong") reinforce negative moral emotions (e.g., shame).

In aggregate, Erickson's theory (1980) of human development and Farnsworth et al.'s (2014) assertions, underscore that attachment to one's military unit might more saliently explain development of moral injury in contrast to romantic attachment. Attachment to comrades represents a unique relationship with moral expectations that diverge from civilian relationships. The ECR - Relationship Structures Measure (Fraley, Heffernan, Vicary, & Brumbaugh, 2011) could be useful in future investigation of attachment to comrades, as it allows researchers to ask participants to rate the measure considering specific relationships. Working models of these relationships may better illuminate who develops moral injury and related psychopathology, such as PTSD.

Moral Injury and PTSS

With regard to PTSS, Litz et al. (2009) proposed that individuals who experience a moral injury would also experience greater symptoms of re-experiencing and avoidance/emotional numbing. Further, they posited that moral injury is unrelated to hyper-vigilance symptoms, because the underlying mechanisms of moral injury are not based upon a fear response. The Litz et al. model was proposed using the DSM-IV-TR diagnostic criteria, prior to the transition to the DSM 5 criteria. This study used the DSM 5 PTSD criteria. In this study, moral injury associated with personal transgressions was related to all PTSS clusters (re-experiencing, avoidance, negative alterations in cognition and mood, and alterations to arousal and reactivity). Moral injury related to betrayals was also related to all symptom clusters of PTSD, but was more robustly related to negative alterations in cognition and mood and hyper-vigilance. Although this diverges from what was hypothesized by Litz and colleagues, these results are not altogether surprising. Moral injury is posited to occur in contexts that often involve threat to self or others (Litz et al., 2009; Maguen & Litz, 2012). Therefore, moral injury is likely one type of combat trauma leading to PTSD. However, traumas of perpetration may require additional tactfulness on the part of the therapist to help place the trauma and morally injurious actions or inaction, in context.

The Model of Moral Injury

Prior to detailing these exploratory results, it is important to acknowledge that this study had limited power and executed quite a few modifications to the original model. Further, the sample is comprised of combat veterans with diverse military backgrounds. Although the modifications were made thoughtfully, guided by theory and modification

indexes, the results need to be interpreted with caution and replicated in order to conclude that the original model needs respecified. Regardless, a number of interesting results were found.

The original proposed portion of the Litz et al. model that was tested in the present study did not fit the data. However, guided by theory and the modification indexes, an acceptable model was found. Model 7 demonstrated adequate fit indexes across the advanced criteria, whereas the RMSEA for Model 5 and 6 surpassed the proposed cutoff of ≤ .06 (Hu & Bentler, 1999). However, the RMSEA cutoff proposed for this study is conservative and a RMSEA between .05 and .08 is regarded as an acceptable fit (Brown & Cudeck, 1993). Therefore, Model 5 was collectively the most congruent with theory and past literature and meets criteria for an acceptable RMSEA, Model 5 is therefore the accepted model advanced for this study. Collectively, these results resemble the Litz et al. model, but with direct relationships added, including: (a) combat experiences predicting the three PTSS cluster severity, (b) combat experiences approaching significance in predicting attachment avoidance, (c) attachment avoidance predicting PTSS severity, (d) moral injury predicting trauma-related guilt, and (e) shame-proneness predicting PTSS severity.

The majority of the relations within the model are discussed in the proceeding sections. Here I will highlight relationships that were contrary to hypotheses and warrant future investigation. Most strikingly, attachment anxiety and avoidance did not predict trauma-related guilt, although attachment anxiety was significantly correlated with trauma-related guilt. Additionally, moral injury predicted attachment anxiety, but not avoidance. These results suggest that attachment avoidance is not related to the

experience of moral injury. Although, attachment anxiety was predicted by moral injury, its respective role in subsequent moral emotions and PTSS severity remains unclear. These results may implicate trauma-related shame or may require further partitioning of global versus specific combat-related guilt. Additionally, childhood family experiences did not predict attachment anxiety. This measure was included to capture pre-military family environments that place persons at greater risk lacking resources to cope effectively with trauma. Therefore, a more explicit measure capturing childhood trauma experiences is recommended within future research.

Strengths, Limitations, and Future Directions

A predominant limitation of this study is that the data came from the general population of combat veterans and participants did not need to endorse history of moral injury to be a part of the study. Although this likely provided immense variability in the data, it also limited the ability to thoroughly examine within group differences for individuals who endorse moral injury. Future research should replicate the linear relationships in this study with a homogeneous sample endorsing moral injury.

Additionally, the current study is cross-sectional and therefore provides a limited and inherently flawed snapshot of moral injury - a process that is posited to involve reflection, possible reappraisal of global beliefs about self, others, and the world, and worsen over time (Litz et al., 2009; Maguen & Litz, 2012). In attempt to buffer this anticipated limitation, this study predominately examined moral injury for OEF/OIF/OND combat veterans. However, 15% of the sample was still active duty military and veterans within the sample discharged an average of 7.7 years (SD 1.27) prior to taking the survey. Therefore, it is hard to discern if and where participants are in

the meaning making process of moral injury. Participants could have been actively grappling with a morally injurious experience when they completed the study. Further, they could have sought treatment that ameliorated the influence of a moral injury on their functioning. The study design interfered with being able to draw conclusions regarding the process of meaning making implied in the concept of moral injury. Further, participants in this study had been deployed an average of 2 times (*SD* = 1.27) and therefore it is unclear how additional deployments following a morally injurious experience might influence outcomes. Frankfurt and Frazier (2016) argued that transgressive acts (i.e., acts that violate the rule of engagement) likely increase with the length of deployment and the degree of combat exposure; hence these variables also likely to elevate the risk of moral injury. Collectively, this line of inquiry would greatly benefit from longitudinal examination in a post-deployment cohort.

Feasibility drove many decisions regarding research design. Disregarding feasibility, researchers should use a longitudinal design to follow military recruits prior to deployment, in order to assess paths by which service members perceive moral injury, moral emotions, attachment (to parents, comrades, and romantic partners), PTSD, and other psychopathology. This approach would allow for assessment of attachment to caregivers and examine possible changes in attachment orientation as a function of combat. Further, PTSD could be assessed before deployment to control for pre-military trauma and may help to distinguish those more susceptible to moral injury. Finally, this design would allow for assessment of attachment orientation over time and with it, use of social support or withdrawal from support and relation with psychopathology. These data would allow for examination of within group differences for those who return from

combat endorsing moral injury. Considering feasibility, future research could use latent class analysis to determine various subtypes of those who experience moral injury, including pre-military experiences, specific combat or morally conflictual experiences, attachment, and relation with subtypes of mental health outcomes such as PTSD and depression.

The current study only examined a portion of the Litz et al. (2009). There are a number of variables that should be included within future research studies on moral injury. Specifically, the following variables from the full model were excluded from the examined portion of the Litz et al. model: trauma-related shame, anxiety, social withdrawal, failure to forgive self/self-condemnation, self-harm, self-handicapping, and demoralization. Moral injury is believed to lead to more extreme psychopathology than other combat experiences and to include suicidal ideation (Litz et al., 2009; Maguen & Litz, 2012). Killing in combat, a potentially morally injurious experience has been found to predict suicidal ideation, when controlling for PTSD severity (Maugen et al., 2009, 2011, & 2012). Further, killing in war has been associated with PTSD severity, functional impairment, violent behaviors, alcohol abuse, anger, and relationship problems (Fontana & Rosenheck, 1999; Maguen et al., 2009). Therefore, suicidal ideation, self-handicapping, and demoralization, should be specified as outcome variables within future path analysis of moral injury.

Additionally, many of the risk factors and protective factors posited within the Litz et al. (2009) model were excluded from the proposed portion of the model. Shame-proneness was evaluated a risk factor for perceiving moral injury and predicted both moral injury and PTSS severity. Future research should examine neuroticism as a risk

factor and belief in a just world, forgiving social supports, and self-esteem as protective factors. Further, additional measures from the Deployment Risk and Resiliency Inventory-2 (Vogt et al., 2013) might prove useful in assessing pre-military and post-combat risk and resiliency factors that influence the meaning making process of moral injury.

Further, future research should examine all PTSD symptoms as an outcome of moral injury, rather than focusing solely on re-experiencing, avoidance, and alterations in cognition and mood. The results of this study suggest that moral injury involves fear conditioning. Therefore, a fruitful line of research would be to experimentally examine differences in participant's response to situations that elicit fear only, as compared to fear and moral dilemma. The dominant theory of moral emotions (Tangney et al., 2007), elaborately describes moral emotions within day-to-day encounters. However, the nuances of moral emotions might be more complicated within the context war in a foreign country (e.g. inability to make amends for behaviors deemed as "bad"). This study indicates that PTSD is one outcome of moral injury. However, the conditioning process is likely more complex when a life-threatening situation also involves moral conflict. Understanding differences in encoding morally conflictual life threatening content, from simple fear based conditioning, would have important implications for improving treatment.

Finally, a strength of this study was the use of validity checks to ensure the data came from military veterans and not civilians posting as a veteran. Participants were asked to provide their "rank" and "MOS" and these responses were used to determine if the participant knew terms germane to military culture indicating greater likelihood that

they were not posing as a veteran. Using this strategy, 19 participants were removed from the dataset for providing responses such as “Army soldiers.” This represented a loss of 9.7% of the initial data. As this proportion of data loss poses a threat to validity of the results, it should serve as a caution to future researchers who are not collecting data through methods for which military affiliation is implied (e.g., Veteran’s Affairs or Department of Defense). Sadly, this level of data loss reasonably suggests that non-veterans will likely participate in studies for which they can receive financial or scholastic incentive. Future researchers are encouraged to deploy similar validity checks. Validity checks could also be enhanced from those used in this study. Participants were not required to provide proof of their deployment to a combat zone and this information was collected using self-report. Future research may also benefit from including a validity check (viewing military records) to ensure that participants have been deployed to a combat zone.

Trauma-Related Implications

Moral injury researchers posit that this phenomenon may not be adequately addressed using current evidence-based treatments for PTSD (Litz et al., 2009; Maguen & Litz, 2012). The mechanisms underlying distress associated with moral injury are thought to originate from moral emotions rather than a conditioned fear response. Grounded in this reasoning, moral injury was anticipated to be unrelated to PTSS, hyper-vigilance, but related to the other PTSS clusters. However, in this study, moral injury was related to all symptom clusters of PTSD, including hyper-vigilance. These results suggest that current protocols for PTSD would likely be beneficial for those who have experienced moral injury.

The two treatments with the largest evidence base for effectively treating PTSD are Cognitive Processing Therapy and Prolonged Exposure. Cognitive Processing Therapy (CPT) places an emphasis on the meaning that an individual assigns to their traumatic experience (Karlin et. al., 2010; Resick & Schnicke, 1992). The treatment is typically administered over the course of 12 sessions and involves education, processing, and challenging. First, clients learn about the symptoms of PTSD, how treatment will work, and are taught about the interaction between thoughts and feelings. They are also asked to consider how the event has impacted their outlook on the world. More specifically they are asked to examine the changes that may have occurred in their beliefs about themselves, others, and how the world operates. During processing, clients are asked to either write about or discuss the traumatic event and work to identify thinking patterns that may be hindering their recovery. In the final phase of therapy, the therapist works with the client to help them reframe their distorted beliefs about themselves, others, and the world. In doing this, clients develop a more balanced view of their environment.

Prolonged exposure (PE) therapy also draws from cognitive behavioral theories and it operates on the assumption that exposure to a feared stimulus will eventually extinguish the fear (Foa & Kozak, 1986; Foa et al., 2007). The treatment typically ranges from 8 to 15 sessions. During the first and second session, the primary focus is to provide psycho-education regarding the techniques that will be used, explain the rationale for using those techniques, and discuss the ways that people typically react to traumatic events. Subsequent sessions are dedicated to imaginal exposure and review of vivo exposures. In vivo exposure requires the client approach the feared object or situation in

person for homework for an extended window of time with the goal of habituation. In vivo experiences that are used during treatment are low risk and are often commonplace daily experiences (e.g., going to Walmart or eating at a crowded restaurant). Assigning these tasks align with the goals of treatment because individuals with PTSD will often avoid an array of low threat situations because they trigger unpleasant memories. Imaginal exposure involves the person closing their eyes and describing the events of their trauma, aloud in first person, using present tense, and as much sensory detail as possible. After repetitions of the trauma memory for 30 to 45 minutes, the therapist and client process what the client noticed. Processing provides clients with the ability reflect on the events of the trauma and potentially reorganize how they make sense of the traumatic event. Treatment is terminated when a client longer has symptoms, which inhibit them from engaging in every day activities. Although CPT more explicitly focuses on thoughts and PE more explicitly focuses on behaviors, both treatments aim to address behaviors and cognitions rooted in avoidance that changed as a function of a trauma.

CPT and PE seem well suited to address moral injury given its relation with PTSS in this study. Further, both treatments take a cognitive behavioral perspective to help clients evaluate their meaning making process following trauma and determine changes in behaviors or thoughts likely fueling PTSD symptoms. For individuals who have experienced a moral injury, their hyper-vigilance may be related to a pervasive fear of self and one's capability to either harm others or not intervene when needed. Therefore, when targeting PTSD avoidance, it might be beneficial for therapists to help veterans express and develop greater awareness for context of a moral injury (i.e., war) in making meaning of the event in relation to views of self. Further, helping veterans to consider the

context of moral injury would likely aid with cognitive flexibility and habituation to previously feared stimuli. In conflict with these arguments, Maguen and Burkman (2013) have suggested that exposure based models of treatment may exacerbate shame; however, these beliefs remain unfounded and unknown at this time.

Additionally, since moral injury predicted attachment anxiety, targeting self-schemas could be beneficial for those who endorse moral injury. This result possibly complicates the respective role of withdrawal in the Litz et al. (2009) model. Those who endorse moral injury may use hyper-activating strategies to over-recruiting reassurance from romantic partners, thus overburdening them, and serving to confirm negative self-schemas. This paints a more dynamic picture of the possible role of self and other schemas in sustaining pathology following an experience resulting in moral conflict.

Within the extant literature on moral injury, there are a handful of treatment approaches that might prove useful for treating moral injury; however, like CPT and PE, there is not yet adequate outcome data of these interventions for veterans who have experienced moral injury. Grey et al. (2012) developed a six-session intervention aimed at promoting self-forgiveness and compassion, called adaptive disclosure. Within this intervention, clients disclose the transgressive event to the therapist and are later guided through imaginal dialogue with a forgiving and compassionate authority figure regarding the details of the event. Additionally, Harris, Park, Currier, Usset, and Veocks (2015) developed an eight-session treatment for use in faith-based settings to aid with spiritual distress. Lastly, researchers have argued the potential value of self-compassion interventions to help veterans to respond compassionately to their experience of moral injury, while also taking responsibility for any harm the situation may have caused to

others (Farnsworth et al., 2014; Frankfurt & Frazier, 2016). Self-compassion has been found to be efficacious in reducing PTSD in military populations (Kearney et al., 2013), but once again has not been investigated specific to moral injury.

One final treatment approach that has not been addressed in the current literature, but explicitly provides recommendations for reducing the intensity of emotions such as guilt and shame is Dialectical Behavior Therapy (Linehan, 2015). Although this treatment approach was initially developed for chronically suicidal clients, more recently it has been deemed to be transdiagnostic approach for clients who are struggling with emotion regulation and interpersonal effectiveness, for whom a biosocial model applies (see Linehan, 2015). This treatment approach involves both individual therapy and skills based group therapy. During individual sessions, the client and therapist work together to develop a list of target behaviors the client is trying to reduce or that interfere with their life worth living, and the client is asked to track the behaviors week-to-week on a "diary card." The "diary card" helps the therapist to assess and teach skills that are pertinent to decreasing specific target behaviors. Group sessions are organized into three modules, distress tolerance, emotion regulation, and interpersonal effectiveness and always start with two weeks focusing on mindfulness training.

Although there are multiple aspects of this treatment approach that seem pertinent to moral injury, the emotion regulation skill "opposite action" provides specific guidance regarding guilt and shame (Linehan, 2015). First, the client is told to consider the prompting event that evoked their emotion and examine whether if their appraisal of what occurred represents a balanced view of the event prompting. Additionally, they are asked to consider whether at that time, the duration and intensity of the emotion is justified and

effective. If the emotion is not justified or is not effective anymore (e.g. generalized guilt), they are encouraged to act opposite and engage in behaviors counter to their urges. This intervention might be most helpful for those experiencing generalized guilt or pervasive shame in identifying justification for an emotion in their lives present day, rather than globalizing the moral injury experience to their self-concept. Although there are a number of fruitful possible avenues for treating those with moral injury, evaluating these treatments for clients who have experienced a moral injury is an essential step before clinicians proceed with confidence with any given treatment approach.

References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hillsdale, NJ: Erlbaum.

Allen, J. G. (2001). *Traumatic relationships and serious mental disorders.* Chichester, England: Wiley.

American Psychiatric Association. (2000). *Diagnostic criteria from DSM-IV-TR*. Washington, DC: American Psychiatric Publishing.

American Psychiatric Association. (2013). *Diagnostic criteria from DSM 5*. Washington, DC: American Psychiatric Publishing.

Bannister, J. A. (2013). *Gender, trauma, and adult attachment orientations as predictors of posttraumatic stress disorder severity in a veteran sample* (Unpublished master's thesis). University of Houston, Houston, TX.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226–244. doi:10.1037/0022-3514.61.2.226

Beckham, J. C., Feldman, M. E., & Kirby, A. C. (1998). Atrocities exposure in Vietnam combat veterans with chronic posttraumatic stress disorder: Relationship to combat exposure, symptom severity, guilt, and interpersonal violence. *Journal of Traumatic Stress, 11*, 777−785. doi:10.1023/A:1024453618638

Besser, A., Neria, Y., & Haynes, M. (2009). Adult attachment, perceived stress, and PTSD among civilians exposed to ongoing terrorist attacks in Southern Israel. *Personality and Individual Differences, 47*, 851-857. doi:10.1016/j.paid.2009.07.003

Benoit, M., Bouthillier, D., Moss, E., Rousseau, C., & Brunet, A. (2010). Emotion regulation strategies as mediators of the association between level of attachment security and PTSD symptoms following trauma in adulthood. *Anxiety, Stress, and Coping, 23*(1), 101-118. doi:10.1080/10615800802638279

Boomsma, A. (2000). Reporting analyses of covariance structures. *Structural equation modeling*, *7*(3), 461-483. doi: 10.1207/S15328007SEM0703_6

Bowlby, J. (1969/1982). *Attachment and Loss, Vol. 1: Attachment.* New York, NY: Basic Books.

Bowlby, J. (1973) *Attachment and loss: Volume 2. Separation: Anxiety and anger,* New York, NY: Basic Books.

Bowlby, J. (1988). *A secure base.* New York, NY: Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York, NY: Guilford Press.

Brewin, C. R., Andrews, A., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*(5), 748-766. doi:10.1037/0022-006X.68.5.748

Brown, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Bryan, C. J., Morrow, C. E., Etienne, N., & Ray-Sannerud, B. (2013). Guilt, shame, and suicidal ideation in a military outpatient clinical sample. *Depression and Anxiety*, *30*(1), 55-60. doi: 10.1002/da.22002

Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology, 59*, 301-328. doi:10.1146/annurev.psych.58.110405.085650

Clark, A. A., & Owens, G. P. (2012). Attachment, personality characteristics, and posttraumatic stress disorder in veterans of Iraq and Afghanistan. *Journal of Traumatic Stress*, *25*, 1-8. doi:10.1002/jts.21760

Currier, J. M., Holland, J. M., & Allen, D. (2012). Attachment and mental health symptoms among U.S. Afghanistan and Iraq veterans seeking health care services. Journal of Traumatic Stress, 25, 633-640. doi: 10.1002/jts.21752

Currier, J. M., Holland, J. M., Dresher, K., & Foy, D. (2013). Initial psychometric evaluation of the moral injury questionnaire-military version. *Clinical Psychology and Psychotherapy.* doi:10.1002/cpp.1866

Dekel, R., Solomon, Z., Ginzburg, K., & Neria, Y. (2004). Long-term adjustment among Israeli war veterans: the role of attachment style. *Anxiety, Stress & Coping, 17*(2), 141-154. doi:10.1080/10615800410001721184

Dieperink, M., Leskela, J., Thuras, P. & Engdahl, B. (2001). Attachment style classification and posttraumatic stress disorder in former prisoners of war. *American Journal of Orthopsychiatry, 71*(3), 374-378. doi:10.1037/0002-9432.71.3.374

Drescher, K. D., Foy, D. W., Kelly, C., Leshner, A., Schutz, K., & Litz, B. (2011). An exploration of the viability and usefulness of the construct of moral injury in war veterans. *Traumatology, 17*, 8-13. doi: 10.1177/1534765610395615

Erikson, E (1980). *Identity and the life cycle*. New York, NY: W. W. Norton & Company.

Elwood, L. S., Hahn, K .S., Olatunji, B. O., & Williams, N. L. (2009). Cognitive vulnerabilities to the development of PTSD: A review of four vulnerabilities and the proposal of an integrative vulnerability model. *Clinical Psychology Review, 29*(1), 87-100. doi:10.1016/j.cpr.2008.10.002

Escolas, S. M., Arata-Maiers, R., Hildebrandt, E. J., Maiers, A. J., Mason, S. T., & Baker, M. T. (2012). The impact of attachment style on posttraumatic stress disorder symptoms in post-deployed military members. *U.S. Army Medical Department Journal,* 54-61. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22815166

Farnsworth, J., Drescher, K., Nieuwsma, J., Walser, R., & Currier, J. (2014). The role of moral emotions in military trauma: Implications for the study and treatment of moral injury. *Review of General Psychology, 18,* 249–262. doi:http://dx.doi.org/10.1037/gpr0000018

Ferguson, T. J., Brugman, D., White, J., Eyre, H. L. (2007). Shame and guilt as morally warranted experiences. In J. L. Tracey, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious* emotions (pp. 330-348). New York, NY: The Guilford Press.

Foa, E. B.; Hembree, E. A. & Rothbaum, B. O. (2007). *Prolonged Exposure therapy for PTSD: Emotional processing of traumatic experiences*. New York, NY: Oxford University Press.

Foa, E. B. & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*, 20–35. doi:http://dx.doi.org/10.1037/0033-2909.99.1.20

Foa, E. B., & Rothbaum, B. O. (2001). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD.* New York, NY: Guilford Publications, Inc.

Fontana, A., Rosenheck, R., & Brett, E. (1992). War zone traumas and posttraumatic stress disorder symptomatology. *The Journal of Nervous and Mental Disease, 180*, 748-755. doi:10.1037/0882-7974.9.1.27

Fontana, A., & Rosenheck, R. (1999). A model of war zone stressors and posttraumatic stress disorder. *Journal of Traumatic Stress, 12*, 111-126. doi:10.1023/A:1024750417154

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in Close Relationships-Relationship Structures questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment, 23*, 615-625.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*, 350-365. doi:10.1037//0022-3514.78.2.350

Frankfurt, S., & Frazier, P. (2016). A review of research on moral injury in combat veterans. *Military Psychology, 28*(4), 1-13. doi:http://dx.doi.org/10.1037/mil0000132

Gray, M. J., Schorr, Y., Nash, W., Lebowitz, L., Amidon, A., Lansing, A., . . . Litz, B. T. (2012). Adaptive disclosure: An open trial of a novel exposure-based intervention for service members with combat-related psychological stress injuries. Behavior Therapy, 43, 407– 415. doi:http://dx.doi.org/ 10.1016/j.beth.2011.09.001

Gross, C. A., & Hansen, N. E. (2000). Clarifying the experience of shame: The role of attachment style, gender, and investment in relatedness. *Personality and Individual Differences*, *28*(5), 897-907. doi:10.1016/S0191-8869(99)00148-8

George, C., & Solomon, J. (1999). Attachment and care giving: The care giving behavioral system. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 649-670). New York, NY: Guilford Press.

Harris, J. I., Park, C. L., Currier, J. M., Usset, T. J., & Voecks, C. D. (2015). Moral injury and psycho- spiritual development: Considering the develop- mental context. Spirituality in Clinical Practice, 2, 256–266. doi:http://dx.doi.org/10.1037/scp0000045

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511-524. doi:10.1037/0022-3514.52.3.511

Henning, K. R., & Frueh, B. C. (1997). Combat guilt and its relationship to PTSD symptoms. *Journal of Clinical Psychology, 53*, 801-808. doi:10.1002/(SICI)1097-4679(199712)53:8<801::AID-JCLP3>3.0.CO;2-I

Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress, 5*, 377-391. doi:10.1002/jts.2490050305

Hibbard, S. (1992). Narcissism, shame, masochism, and object relations: An exploratory correlational study. *Psychoanalytic Psychology, 9*, 489-508. doi:10.1037/h0079392

Hibbard, S. (1994). An empirical study of the differential roles of libidinous and aggressive shame components in normality and pathology. *Psychoanalytic Psychology, 11*, 449-474. doi:10.1037/h0079576

Himmelfarb, N., Yaeger, D., & Mintz, J. (2006). Posttraumatic stress disorder in female veterans with military and civilian sexual trauma. *Journal of Traumatic Stress, 19*(6), 837-846. doi:10.1002/jts.20163

Hoge, C. W., Riviere, L. A., Wilk, J. E., Herrell, R. K. & Weathers, F. W. (2014). The prevalence of post-traumatic stress disorder in US combat soldiers: A head-to-head comparison of DSM-5 versus DSM-IV-TR symptom criteria with the PTSD checklist. *Lancet Psychiatry, 1*, 269-277. doi:http://dx.doi.org/10.1016/ S2215-0366(14)70235-4

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi:10.1080/10705519909540118

Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York, NY: Free Press.

Karlin, B. E., Ruzek, J. I., Chard, K. M., Eftekhari, A., Monson, C. M., Hembree, E. A., Resick, P. A., & Foa, E. B. (2010). Dissemination of evidence-based psychological treatments for posttraumatic stress disorder in the Veterans Health Administration. *Journal of Traumatic Stress, 23*, 663–673. doi:10.1002/jts.20588

Kearney, D. J., Malte, C. A., McManus, C., Martinez, M. E., Felleman, B., & Simpson T. L. (2013). Loving-kindness meditation for posttraumatic stress disorder: a pilot study. *Journal of Traumatic Stress*, 26, 426-434. doi: 10.1002/jts.21832.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 593-602. doi:10.1001/archpsyc.62.6.593

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry, 52*(12), 1048-1060. doi:10.1001/archpsyc.1995.03950240066012

Kessler, R. C., Sonnega, A., Bromet, E., Hughes. M., Nelson, C. B., & Breslau, N. (1999). Epidemiological risk factors for trauma and PTSD. In R. Yehuda (Ed.), *Risk factors for Posttraumatic Stress Disorder* (pp. 23-60). Washington, DC: American Psychiatric Press.

King, D. W., King, L. A., Foy, D. W., Keane, T. M., & Fairbank, J. A. (1999). Posttraumatic stress disorder in a national sample of female and male Vietnam veterans: Risk factors, war-zone stressors, and resilience-recovery variables. *Journal of Abnormal Psychology*, 108, 164–170. doi: 10.1037/0021-843X.108.1.164

King, L., King, D., Vogt, D., Knight, J., & Samper, R. (2006). Deployment Risk and Resilience Inventory: A collection of measures for studying deployment related experiences of military personnel and veterans. *Military Psychology*, 18, 89-120. doi:10.1207/s15327876mp1802_1

Kline, R. B. (2011) *Principles and practice of structural equation modeling*, New York, NY: Guilford Press.

Kubany, E. S., Haynes, S. N., Abueg, F. R., Manke, F. P., Brennan, J. M., & Stahura, C. (1996). Development and validation of the Trauma-Related Guilt Inventory (TRGI). *Psychological Assessment*, *8*(4), 428-444. doi:10.1037/1040-3590.8.4.428

Lagattuta, K. H., & Thompson, R. A. (2007). The development of self-conscious emotions: Cognitive processes and social influences. In J. L. Tracey, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions* (pp. 91-113). New York, NY: The Guilford Press.

Laufer, R. S., Brett, E., & Gallops, M. S. (1985). Symptom patterns associated with posttraumatic stress disorder among Vietnam veterans exposed to war trauma. *The American Journal of Psychiatry, 142*, 1304−1311. Retrieved from http://ajp.psychiatryonline.org/article.aspx?articleid=162768

Laufer, R. S., Yager, T., Frey-Wouters, E., & Donnellan, J. (1981) Legacies of Vietnam, post-war trauma: Social and psychological problems of Vietnam veterans and their peers. Washington, DC: U.S. Government Printing Office.

Lewis, M. (1992) *Shame: The exposed self*. New York, NY: Free Press.

Lewis, M. (2007). Self-conscious emotional development. In J. L. Tracey, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions* (pp. 134-149). New York, NY: The Guilford Press.

Linehan, M. (2015). *DBT skills training manual*. New York, NY: The Guilford Press.

Litz, B., & Orsillo, S. M. (2004). The returning veteran of the Iraq war: background issues and assessment guidelines. In National Center for PTSD (Eds.), *The Iraq War Clinician Guide*, (pp. 21–32). White River Junction, VT. Retrieved from http://www.ncptsd.va.gov/war/ guide/index.html

Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W. P., & Silva, C., (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clinical Psychology Review, 29*, 695-706. doi:10.1016/j.cpr.2009.07.003.

Lopez, F. G. (2003). The assessment of adult attachment security. In S. J. Lopez & C.R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 285-299). Washington, DC: APA Press.

Lopez, F. G. (2009). Clinical correlates of adult attachment organization. In J.H. Obegi & E. Berant (Eds.). *Attachment theory and research in clinical work with adults* (pp. 94-117). New York, NY: Guilford.

Lopez, F. G., Gover, M. R., Leskela, J., Sauer, E. M., Schirmer, L., & Wyssmann, J. (1997). Attachment styles, shame, guilt, and collaborative problem-solving orientations. *Personal Relationships*, *4*(2), 187-199. doi:10.1111/j.1475-6811.1997.tb00138.x

Maguen, S., & Burkman, K. (2013). Combat-related killing: Expanding evidence-based treatments for PTSD. Cognitive and Behavioral Practice, 20, 476–479. doi:http://dx.doi.org/10.1016/j.cbpra.2013 .05.003

Maguen, S., & Litz, B. (2012). Moral injury in veterans of war. PTSD Research Quarterly, 23, 1–6. Retrieved from: http://www.ptsd.va.gov/professional/newsletters/research-quarterly/v23n1.pdf

Maguen, S., Lucenko, B. A., Reger, M. A., Gahm, G. A., Litz, B. T., Seal, K. H., et al. (2010). The impact of reported direct and indirect killing on mental health symptoms in Iraq War veterans. *Journal of Traumatic Stress, 23*, 86-90. doi:10.1002/jts.20434.

Maguen, S., Luxton, D. D., Skopp, N. A., Gahm, G. A., Reger, M. A., Metzler, T. J., & Marmar, C. R. (2011). Killing in combat, mental health symptoms, and suicidal ideation in Iraq War Veterans. *Journal of Anxiety Disorders, 25*, 563-567. doi:10.1016/j.janxdis.2011.01.003

Maguen, S., Metzler, T. J., Bosch, J., Marmar, C. R., Knight, S. J., & Neylan, T. C. (2012) Killing in combat may be independently associated with suicidal ideation. *Depression and Anxiety, 29*(11), 918-923. doi:10.1002/da.21954

Maguen, S., Metzler, T. J., Litz, B. T., Seal, K. H., Knight, S. J., & Marmar, C. R. (2009). The impact of killing in war on mental health symptoms and related functioning. *Journal of Traumatic Stress, 22*, 435-443. doi:10.1002/jts.20451.

Matos, M., Pinto-Gouveia, J., & Costa, V. (2013). Understanding the importance of attachment in shame traumatic memory relation to depression: The impact of emotion regulation processes. *Clinical Psychology & Psychotherapy, 20*, 149-165. doi:10.1002/cpp.786

McDonald, R. P., & Ho, M-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7*, 64 – 82. doi: 10.1037/1082-989X.7.1.64

Mental Health Advisory Team (MHAT) VI. (2009). *Operation Iraqi Freedom 07-09*. Retrieved from http://armymedicine.mil/Pages/Mental-Health-Advisory-Team-VI-Information.aspx

Mental Health Advisory Team 9 (MHAT 9). (2013). *Operation Enduring Freedom 2013*. Retrieved from http://armymedicine.mil/Documents/MHAT_9_OEF_Report.pdf

Mikulincer, M., & Erev, I. (1991). Attachment style and the structure of romantic love. *British Journal of Social Psychology, 30*, 273-291. doi:10.1111/j.2044-8309.1991.tb00946.x

Mikulincer, M., Florian, V., & Tolmacz, R. (1990). Attachment styles and fear of personal death: A case study of affect regulation. *Journal of Personality and Social Psychology, 58*(2), 273-280. doi:10.1037/0022-3514.58.2.273

Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: activation, psychodynamics and interpersonal process. *Advances in Experimental Social Psychology, 35*, 53-152. doi:10.1016/S0065-2601(03)01002-5

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford Press.

Mikulincer, M., Shaver, P. R., & Horesh, N. (2006). Attachment bases of emotion regulation and posttraumatic adjustment. In D. K. Snyder, J. A. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in families: Pathways to dysfunction and health* (pp. 77-99). Washington, DC: American Psychological Association.

Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, *27*, 77-102. doi:10.1023/A:1024515519160

Muller, R. T., Sicoli, L. A., & Lemieux, K. E. (2000), Relationship between attachment style and posttraumatic stress symptomatology among adults who report the experience of childhood abuse. *Journal of Traumatic Stress, 13*, 321-332. doi:10.1023/A:1007752719557

Nash, W. P., Marino Carper, T. L., Mills, M. A., Au, T., Goldsmith, A., & Litz, B. T. (2013). Psychometric evaluation of the moral injury events scale. *Military Medicine, 178*, 646-652. doi:10.7205/MILMED-D-I3-00017

Nye, E. C., Katzman, J., Bell, J. B., Kilpatrick, J., Brainard, M., & Haaland, K. Y. (2008). Attachment organization in Vietnam veterans with posttraumatic stress disorder. *Attachment & Human Development, 10*(1), 41-57. doi:10.1080/14616730701868613.

Owens, G. P., Held, P., Blackburn, L., Auerbach, J. S., Clark, A. A., Herrera, C. J., Cook, J., G, Stuart, G. L. (2014). Differences in relationship conflict, attachment, and depression in treatment-seeking veterans with hazardous substance use, PTSD, or PTSD and hazardous substance use. *Journal of Interpersonal Violence, 29*, 1318–1337. doi:10.1177/0886260513506274

Renaud, E. F. (2008). The attachment characteristics of combat veterans with PTSD. *Traumatology*, *14*, 1-12. doi:10.1177/1534765608319085

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:http://dx.doi.org/10.1037/0022-006X.60.5.748

Rosen, L. N., & Martin, L. (1996). The measurement of childhood trauma among male and female soldiers in the U.S. Army. *Military Medicine, 157*, 645-648. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8700329

Seifert, A. E., Polusny, M. A., & Murdoch, M. (2011). The association between childhood physical and sexual abuse and functioning and psychiatric symptoms in a sample of U.S. Army soldiers. *Military Medicine, 176*(2), 176-181. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21366080

Selby, E. A., Anestis, M. D., Bender, T. W., Ribeiro, J. D., Nock, M. K., Rudd, M. D., & Joiner, T. E. (2010). Overcoming the fear of lethal injury: Evaluating suicidal behavior in the military through the lens of the Interpersonal-Psychological Theory of Suicide**.** *Clinical Psychology Review, 30*, 298-307. doi:10.1016/j.cpr.2009.12.004

Singer, M. (2004). Shame, guilt, self-hatred, and remorse in the psychotherapy of Vietnam combat veterans who committed atrocities. *American Journal of Psychotherapy, 58*, 377−385. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/15807083

Smith, E. R., Duax, J. M., & Rauch, S. A. M. (2013). Perceived perpetration during traumatic events: Clinical suggestions from experts in prolonged exposure therapy. *Cognitive and Behavioral Practice, 20*, 461–470. doi:10.1016/j.cbpra.2012.12.002

Solomon, Z., Dekel, R., & Mikulincer, M. (2008). Complex trauma of war captivity: A prospective study of attachment and post-traumatic stress disorder. *Psychological Medicine, 38*, 1427-1434. doi:10.1017/S0033291708002808

Steenkamp, M. M., Nash, W. N., Lebowitz, L., & Litz, B. T. (2013) How best to treat deployment-related guilt and shame: Commentary on Smith, Duax, and Rauch. *Cognitive and Behavioral Practice, 20*, 471-475. doi:1077-7229/13/471–475$1.00/0

Stretch, R. H., Durand, D., & Knudson, K. H. (1998). Psychological health and trauma in male and female soldiers. *Military Medicine*, 163, 363-367. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9640030

Sundin, J., Fear, N. T., Iversen, A., Rona, R. J., & Wessely, S. (2009). PTSD after deployment to Iraq: Conflicting rates, conflicting claims. *Psychological Medicine, 40*(3), 367-382. doi:10.1017/S0033291709990791

Tangney, J. P. (1996). Conceptual and methodological issues in the assessment of shame and guilt. *Behavioral Research Theory, 34*, 741-54. doi: 0005-7967/9

Tangney, J. P., & Dearing, R. (2002). *Shame and guilt.* New York, NY: Guilford.

Tangney, J. P., Dearing, R. L., Wagner, P. E., & Gramzow, R. (2000). *The Test of Self-Conscious Affect-3 (TOSCA-3).* Fairfax, VA: George Mason University.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58*, 345-372 doi:10.1146/annurev.psych.56.091103.070145

Tangney, J. P., Wagner, P., Gramzow, R. (1989). *The Test of Self-Conscious Affect*. Fairfax, VA: George Mason University.

Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin, 132*(6), 959-992. doi:10.1037/0033-2909.132.6.959

Vogt, D., Smith, B. N., King, D. W., & King, L. A. (2012). *Manual for the Deployment Risk and Resilience Inventory-2 (DRRI-2): A Collection of Measures for Studying Deployment-Related Experiences of Military Veterans*. Boston, MA: National Center for PTSD.

Vogt, D., Smith, B. N., King, L. A., King, D. W., Knight, J., & Vasterling, J. J. (2013). Deployment Risk and Resilience Inventory-2 (DRRI-2): An updated tool for assessing psychosocial risk and resilience factors among service members and veterans. *Journal of Traumatic Stress, 26*, 710-717. doi:10.1002/jts.21868

Vogt, D. S., & Tanner, L. R. (2007). Risk and resilience factors for posttraumatic stress symptomatology in Gulf War I veterans, *Journal of Traumatic Stress, 20*, 27–38. doi: 10.1002/jts.20187

Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013). The PTSD Checklist for DSM-5 (PCL-5). Scale available from the National Center for PTSD at www.ptsd.va.gov.

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationships Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, *88*, 187-204. doi:10.1080/00223890701268041

Wei, M., Shaffer, P. A., Young, S. K., & Zakalik, R. A. (2005). Adult attachment, shame, depression, and loneliness: The mediation role of basic psychological needs satisfaction. *Journal of Counseling Psychology*, *52*(4), 591. doi: 10.1037/0022-0167.52.4.591

White House (2012). President Obama's plan to put veterans back to work. Retrieved from http://www.whitehouse.gov/the-press-office/2012/02/03/president-obama-s-plan-put-veterans-back-work

Wolfe, J., Turner, K., Caulfield, M., Newton, T. L., Melia, K., Martin, J., & Goldstein, J. (2005). Gender and trauma as predictors of military attrition: A study of marine corps recruits. *Military Medicine, 170*(12), 1037-1043. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16491944

Worthington, E. L., & Langberg, D. (2012). Religious considerations and self-forgiveness in treating complex trauma and moral injury in present and former soldiers. *Journal of Psychology and Theology, 40*(4), 274-288. doi:0091-6471/84442312

Yaeger, D. E., 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*, S65–S69. doi:10.1177/1524838008324419

Yehuda, R., Southwick, S. M., & Giller, E. L., Jr. (1992). Exposure to atrocities and severity of chronic posttraumatic stress disorder in Vietnam combat veterans. *The American Journal of Psychiatry, 149*, 333−336. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1536270

Appendix A

Measures

Measure 1

CHILDHOOD FAMILY EXPERIENCES - The sentences below refer to your relationship with your family WHEN YOU WERE GROWING UP. Please describe how much you agree or disagree with each statement by marking the response that best fits your choice. If you spent time in more than one family setting, please answer these questions about the family in which you spent the greatest part of your childhood.

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
1. I got along well with my family members.	1	2	3	4	5
2. I felt like I fit in with my family.	1	2	3	4	5
3. Family members knew what I thought and how I felt about things.	1	2	3	4	5
4. I felt like my contributions to my family were appreciated.	1	2	3	4	5
5. I shared many common interested and activities with my family members.	1	2	3	4	5
6. My opinions were valued by other family members.	1	2	3	4	5
7. I was affectionate with my family members.	1	2	3	4	5
8. I played an important role in my family.	1	2	3	4	5
9. I spent as much of my free time with my family members as possible.	1	2	3	4	5
10. Family members told me when they were having a problem.	1	2	3	4	5
11. I could be myself around family members.	1	2	3	4	5
12. My input was sought on important family decisions.	1	2	3	4	5

Vogt, D, Smith, B. N., King, L. A., King, D. W., Knight, J., & Vasterling, J. J. (2013). DRRI-2: An updated tool for assessing psychosocial risk and resilience factors among service members and veterans. *Journal of Traumatic Stress, 26*, 710-717. doi:10.1002/jts.21868

Measure 2

COMBAT EXPERIENCES - The statements below are about your combat experiences during your most recent deployment. As used in these statements, the term "unit" refers to those you lived and worked with on a daily basis during deployment. Please mark how often you experienced each circumstance.

		Never	Once or twice	Several times over entire deployment	A few times each month	A few times each week	Daily or almost daily
1.	… I went on combat patrols or missions.	1	2	3	4	5	6
2.	… I took part in an assault on entrenched or fortified positions that involved naval and/or land forces	1	2	3	4	5	6
3.	… I personally witnessed someone from my unit or an ally unit being seriously wounded or killed.	1	2	3	4	5	6
4.	… I encountered land or water mines, booby traps, or roadside bombs (for example, IEDs).	1	2	3	4	5	6
5.	… I was exposed to hostile incoming fire.	1	2	3	4	5	6
6.	… I was exposed to "friendly" incoming fire.	1	2	3	4	5	6
7.	… I was in a vehicle (for example, a "Humvee", helicopter, or boat) or part of a convoy that was attacked.	1	2	3	4	5	6
8.	… I was part of a land or naval artillery unit that fired on enemy combatants.	1	2	3	4	5	6
9.	… I personally witnessed enemy combatants being seriously wounded or killed.	1	2	3	4	5	6
10	… I personally witnessed civilians (for example, women and children) being seriously wounded or killed.	1	2	3	4	5	6
11	… I was injured in a combat-related incident.	1	2	3	4	5	6
12	… I fired my weapon at enemy combatants.	1	2	3	4	5	6
13	… I think I wounded or killed someone during combat operations.	1	2	3	4	5	6
14	… I was involved in locating or disarming explosive devices.	1	2	3	4	5	6
15	… I was involved in searching or clearing homes, buildings, or other locations.	1	2	3	4	5	6
16	…I participated in hand-to-hand combat.	1	2	3	4	5	6
17	… I was involved in searching and/or disarming potential enemy combatants.	1	2	3	4	5	6

Vogt, D, Smith, B. N., King, L. A., King, D. W., Knight, J., & Vasterling, J. J. (2013). DRRI-2: An updated tool for assessing psychosocial risk and resilience factors among service members and veterans. *Journal of Traumatic Stress, 26*, 710-717. doi:10.1002/jts.21868

Measure 3

Please circle the appropriate number to indicate how much you agree or disagree with each of the following statements regarding your experiences at any time since joining the military.

		Strongly Agree	Moderately Agree	Slightly Agree	Slightly Disagree	Moderately Disagree	Strongly Disagree
1.	I saw things that were morally wrong	1	2	3	4	5	6
2.	I am troubled by having witnessed others' immoral acts	1	2	3	4	5	6
3.	I acted in ways that violated my own moral code or values	1	2	3	4	5	6
4.	I am troubled by having acted in ways that violated my own morals or values	1	2	3	4	5	6
5.	I violated my own morals by failing to do something that I felt I should have done	1	2	3	4	5	6
6.	I am troubled because I violated my morals by failing to do something that 1 felt I should have done	1	2	3	4	5	6
7.	I feel betrayed by leaders who I once trusted	1	2	3	4	5	6
8.	I feel betrayed by fellow service members who I once trusted	1	2	3	4	5	6
9.	I feel betrayed by others outside the U.S. military who I once trusted	1	2	3	4	5	6

Nash, W. P., Marino Carper, T. L., Mills, M. A., Au, T., Goldsmith, A., & Litz, B. T. (2013). Psychometric evaluation of the moral injury events scale. *Military Medicine, 178*, 646-652. doi:10.7205/MILMED-D-I3-00017

Measure 4
TOSCA-3

Below are situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations.

As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described. We ask you to rate all responses because people may feel or react more than one way to the same situation, or they may react different ways at different times.

For example:

A. You wake up early one Saturday morning. It is cold and rainy outside.

a) You would telephone a friend to catch up on news. 1---2---3---4---5
not likely very likely

b) You would take the extra time to read the paper. 1---2---3---4---5
not likely very likely

c) You would feel disappointed that it's raining. 1---2---3---4---5
not likely very likely

d) You would wonder why you woke up so early. 1---2---3---4---5
not likely very likely

In the above example, I've rated ALL of the answers by circling a number. I circled a "1" for answer (a) because I wouldn't want to wake up a friend very early on a Saturday morning -- so it's not at all likely that I would do that. I circled a "5" for answer (b) because I almost always read the paper if I have time in the morning (very likely). I circled a "3" for answer (c) because for me it's about half and half. Sometimes I would be disappointed about the rain and sometimes I wouldn't -- it would depend on what I had planned. And I circled a "4" for answer (d) because I would probably wonder why I had awakened so early.

Please do not skip any items -- rate all responses.

1. You make plans to meet a friend for lunch. At 5 o'clock, you realize you stood him up.

a) You would think: "I'm inconsiderate." 1---2---3---4---5
not likely very likely

b) You would think: "Well, they'll understand." 1---2---3---4---5
not likely very likely

c) You'd think you should make it up to him as soon as possible. 1---2---3---4---5
not likely very likely

d) You would think: "My boss distracted me just before lunch." 1---2---3---4---5
not likely very likely

2. You break something at work and then hide it.

a) You would think: "This is making me anxious. I need to either fix it or get someone else to." 1---2---3---4---5
not likely very likely

b) You would think about quitting. 1---2---3---4---5
not likely very likely

c) You would think: "A lot of things aren't made very well these days." 1---2---3---4---5
not likely very likely

d) You would think: "It was only an accident." 1---2---3---4---5
not likely very likely

3. You are out with friends one evening, and you're feeling especially witty and attractive. Your best friend's spouse seems to particularly enjoy your company.

a) You would think: "I should have been aware of what my best friend is feeling. 1---2---3---4---5
not likely very likely

b) You would feel happy with your appearance and personality. 1---2---3---4---5
not likely very likely

c) You would feel pleased to have made such a good impression 1---2---3---4---5
not likely very likely

d) You would think your best friend should pay attention to his/her spouse. 1---2---3---4---5
not likely very likely

e) You would probably avoid eye-contact for a long time. 1---2---3---4---5
not likely very likely

4. At work, you wait until the last minute to plan a project, and it turns out badly.

a) You would feel incompetent. 1---2---3---4---5
not likely very likely

b) You would think: "There are never enough hours in the day." 1---2---3---4---5
not likely very likely

c) You would feel: "I deserve to be reprimanded for mismanaging the project." 1---2---3---4---5
not likely very likely

d) You would think: "What's done is done." 1---2---3---4---5
not likely very likely

5. You make a mistake at work and find out a co-worker is blamed for the error.

a) You would think the company did not like the co-worker. 1---2---3---4---5
not likely very likely

b) You would think: "Life is not fair." 1---2---3---4---5
not likely very likely

c) You would keep quiet and avoid the co-worker. 1---2---3---4---5
not likely very likely

d) You would feel unhappy and eager to correct the situation. 1---2---3---4---5
not likely very likely

6. For several days you put off making a difficult phone call. At the last minute you make the call and are able to manipulate the conversation so that all goes well.

a) You would think: "I guess I'm more persuasive than I thought." 1---2---3---4---5
not likely very likely

b) You would regret that you put it off. 1---2---3---4---5
not likely very likely

c) You would feel like a coward. 1---2---3---4---5
not likely very likely

d) You would think: "I did a good job." 1---2---3---4---5
not likely very likely

e) You would think you shouldn't have to make calls you feel pressured into. 1---2---3---4---5
not likely very likely

7. While playing around, you throw a ball and it hits your friend in the face.

a) You would feel inadequate that you can't even throw a ball. 1---2---3---4---5 not likely very likely

b) You would think maybe your friend needs more practice at catching. 1---2---3---4---5 not likely very likely

c) You would think: "It was just an accident." 1---2---3---4---5 not likely very likely

d) You would apologize and make sure your friend feels better. 1---2---3---4---5 not likely very likely

8. You have recently moved away from your family, and everyone has been very helpful. A few times you needed to borrow money, but you paid it back as soon as you could.

a) You would feel immature. 1---2---3---4---5 not likely very likely

b) You would think: "I sure ran into some bad luck." 1---2---3---4---5 not likely very likely

c) You would return the favor as quickly as you could. 1---2---3---4---5 not likely very likely

d) You would think: "I am a trustworthy person." 1---2---3---4---5 not likely very likely

e) You would be proud that you repaid your debts. 1---2---3---4---5 not likely very likely

9. You are driving down the road, and you hit a small animal.

a) You would think the animal shouldn't have been on the road. 1---2---3---4---5 not likely very likely

b) You would think: "I'm terrible." 1---2---3---4---5 not likely very likely

c) You would feel: "Well, it was an accident." 1---2---3---4---5 not likely very likely

d) You'd feel bad you hadn't been more alert driving down the road. 1---2---3---4---5 not likely very likely

10. You walk out of an exam thinking you did extremely well. Then you find out you did poorly.

a) You would think: "Well, it's just a test." 1---2---3---4---5
not likely very likely

b) You would think: "The instructor doesn't like me." 1---2---3---4---5
not likely very likely

c) You would think: "I should have studied harder." 1---2---3---4---5
not likely very likely

d) You would feel stupid. 1---2---3---4---5
not likely very likely

11. You and a group of co-workers worked very hard on a project. Your boss singles you out for a bonus because the project was such a success.

a) You would feel the boss is rather short-sighted. 1---2---3---4---5
not likely very likely

b) You would feel alone and apart from your colleagues. 1---2---3---4---5
not likely very likely

c) You would feel your hard work had paid off. 1---2---3---4---5
not likely very likely

d) You would feel competent and proud of yourself. 1---2---3---4---5
not likely very likely

e) You would feel you should not accept it. 1---2---3---4---5
not likely very likely

12. While out with a group of friends, you make fun of a friend who's not there.

a) You would think: "It was all in fun; it's harmless." 1---2---3---4---5
not likely very likely

b) You would feel small...like a rat. 1---2---3---4---5
not likely very likely

c) You would think that perhaps that friend should have been there to defend himself/herself. 1---2---3---4---5
not likely very likely

d) You would apologize and talk about that person's good points. 1---2---3---4---5
not likely very likely

13. You make a big mistake on an important project at work. People were depending on you, and your boss criticizes you.

a) You would think your boss should have been more clear about what was expected of you. 1---2---3---4---5 not likely very likely

b) You would feel like you wanted to hide. 1---2---3---4---5 not likely very likely

c) You would think: "I should have recognized the problem and done a better job." 1---2---3---4---5 not likely very likely

d) You would think: "Well, nobody's perfect." 1---2---3---4---5

14. You volunteer to help with the local Special Olympics for handicapped children. It turns out to be frustrating and time-consuming work. You think seriously about quitting, but then you see how happy the kids are.

a) You would feel selfish and you'd think you are basically lazy. 1---2---3---4---5 not likely very likely

b) You would feel you were forced into doing something you did not want to do. 1---2---3---4---5 not likely very likely

c) You would think: "I should be more concerned about people who are less fortunate." 1---2---3---4---5 not likely very likely

d) You would feel great that you had helped others. 1---2---3---4---5 not likely very likely

e) You would feel very satisfied with yourself. 1---2---3---4---5 not likely very likely

15. You are taking care of your friend's dog while they are on vacation and the dog runs away.

a) You would think, "I am irresponsible and incompetent." 1---2---3---4---5 not likely very likely

b) You would think your friend must not take very good care of their dog or it wouldn't have run away. 1---2---3---4---5 not likely very likely

c) You would vow to be more careful next time. 1---2---3---4---5 not likely very likely

d) You would think your friend could just get a new dog. 1---2---3---4---5 not likely very likely

16. You attend your co-worker's housewarming party and you spill red wine on their new cream-colored carpet, but you think no one notices.

a) You think your co-worker should have expected some accidents at such a big party.	1---2---3---4---5 not likely very likely
b) You would stay late to help clean up the stain after the party.	1---2---3---4---5 not likely very likely
c) You would wish you were anywhere but at the party.	1---2---3---4---5 not likely very likely
d) You would wonder why your co-worker chose to serve red wine with the new light carpet.	1---2---3---4---5 not likely very likely

Measure 5

The following statements concern how you feel in close relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Mark the number in the bullet provided, using the rating scale

		Disagree Strongly			Neutral Mixed			Agree Strongly
1.	I want to get close to my partner, but I keep pulling back.	1	2	3	4	5	6	7
2.	I am nervous when partners get too close to me.	1	2	3	4	5	6	7
3.	I try to avoid getting too close to my partner.	1	2	3	4	5	6	7
4.	I usually discuss my problems and concerns with my partner.	1	2	3	4	5	6	7
5.	It helps to turn to my romantic partner in times of need.	1	2	3	4	5	6	7
6.	I turn to my partner for many things, including comfort and reassurance.	1	2	3	4	5	6	7
7.	I worry that romantic partners won't care about me as much as I care about them.	1	2	3	4	5	6	7
8.	My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
9.	I need a lot of reassurance that I am loved by my partner.	1	2	3	4	5	6	7
10	I do not often worry about being abandoned.	1	2	3	4	5	6	7
11	I find that my partner(s) don't want to get as close as I would like.	1	2	3	4	5	6	7
12	I get frustrated if romantic partners are not available when I need them.	1	2	3	4	5	6	7

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationships Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, *88*, 187-204. doi:10.1080/00223890701268041

Appendix A: Measure 6

Individuals who have experienced traumatic events in combat vary considerably in their response to these events. Some people do not have any misgivings about what they did during these events, whereas other people do. They may have misgivings about something they did (or did not do), about beliefs or thoughts they had, or for having had certain feelings (or lack of feelings). The purpose of this questionnaire is to evaluate your response to a traumatic experience.

Briefly describe what happened:

Please take a few moments to think about what happened. All the items below refer to events related to this experience. Circle the answer that best describes how you feel about each statement.

1.	I could have prevented what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
2.	I am still distressed about what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
3.	I had some feelings that I should not have had.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
4.	What I did was completely justified.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
5.	I was responsible for causing what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
6.	What happened causes me emotional pain.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
7.	I did something that went against my values.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
8.	What I did made sense.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
9.	I knew better than to do what I did.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
10.	I feel sorrow or grief about the outcome.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
11.	What I did was inconsistent with my beliefs	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
12.	If I knew today-only what 1knew when the event(s) occurred-I would do exactly the same thing.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
13.	I experience intense guilt that relates to what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
14.	I should have known better.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true

15.	I experience severe emotional distress when I think about what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
16.	I had some thoughts or beliefs that I should not have had.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
17.	I had good reasons for doing what I did.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
18.	Indicate how frequently you experience guilt that relates to what happened.	Never	Seldom	Occasionall y	Often	Always
19.	I blame myself for what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
20.	What happened causes a lot of pain and suffering.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
21.	1 should have had certain feelings that I did not have.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
22.	Indicate the intensity or severity of guilt that you typically experience about the event(s).	None	Slight	Moderate	Considera ble	Extreme
23.	I blame myself for something I did, thought, or felt.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
24.	When I am reminded of the event(s), I have strong physical reactions such as sweating, tense muscles, dry mouth, etc.	Never true	Rarely true	Sometime s true	Frequent ly true	Always true
25.	Overall, how guilty do you feel about the event(s)?	Not guilty at all	Slightly Guilty	Moderatel y guilty	Very guilty	Extremely guilty
26.	1hold myself responsible for what happened.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
27.	What I did was not justified in any way.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
28.	I violated personal standards of right and wrong.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
29.	I did something that I should not have done.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
30.	I should have done something that I did not do.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
31.	What I did was unforgivable.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true
32.	I didn't do anything wrong.	Not at all true	Slightly true	Somewh at true	Very true	Extremely true

Kubany, E. S., Haynes, S. N., Abueg, F. R., Manke, F. P., Brennan, J. M., & Stahura, C. (1996). Development and validation of the Trauma-Related Guilt Inventory (TRGI). *Psychological Assessment*, *8*(4), 428-444. doi:10.1037/1040-3590.8.4.428

Measure 7

Below is a list of problems that people sometimes have in response to a very stressful experience. Keeping your worst event in mind, please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience *(for example, heart pounding, trouble breathing, sweating)*?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience *(for example, people, places, conversations, activities, objects, or situations)?*	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world *(for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)*?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings *(for example, being unable to feel happiness or have loving feelings for people close to you)*?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

PCL-5 (2013) Weathers, Litz, Keane, Palmieri, Marx, & Schnurr - National Center for PTSD

Appendix B

Extended Tables and Figures

Table B1

*Pearson Correlations for Primary Study Variables*Figure B1.

	Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	Moral Injury: Total Score	--															
2.	Combat Experiences	.30***	--														
3.	Moral Injury: Transgression	.94***	.33***	--													
4.	Moral Injury: Betrayal	.72***	.13	.44***	--												
5.	Attachment Avoidance	.05	.17*	.02	.09	--											
6.	Attachment Anxiety	.40***	.06	.36***	.32***	.09	--										
7.	Attachment Fearfulness	.29**	.13	.24**	.28**	.63***	.79***	--									
8.	PTSD Total	.48***	.43***	.45***	.33***	.33***	.36***	.45***	--								
9.	PTSD Re-experiencing	.41***	.42***	.43***	.20*	.17*	.24**	.28**	.87***	--							
10.	PTSD Avoidance	.35***	.30**	.37***	.17†	.13	.26**	.27**	.76***	.70***	--						
11.	PTSD Negative Alterations	.46***	.37**	.42***	.34***	.37***	.41***	.52***	.93***	.72***	.60***	--					
12.	PTSD Hyper-vigilance	.43***	.40***	.37***	.37***	.36***	.30**	.41***	.92***	.70***	.60***	.81***	--				
13.	TR Guilt: Global	.53***	.32***	.54***	.28**	.11	.23*	.20*	.58***	.56***	.45***	.53***	.50***	--			
14.	TR Guilt: Distress	.61***	.43***	.60***	.36***	.10	.37***	.31**	.72***	.67***	.62***	.64***	.65***	.89***	--		
15.	TR Guilt: Cognitions	.63***	.14	.63***	.36***	.08	.18†	.16	.43***	.40***	.33***	.44***	.34***	.71***	.63***	--	
16.	Shame proneness	.21*	-.13	.18†	.20*	.10	.36***	.27**	.41***	.33**	.27**	.43***	.35***	.25*	.32**	.19†	--
17.	Childhood Family Experiences	-.21*	-.11	-.17	-.22*	-.24*	-.07	-.18	-.28**	-.12	-.14	-.36***	-.27**	-.08	-.18	-.21*	.15

Note. Pair wise deletion of missing data resulted in intercorrelation sample sizes ranging from N =106 to N = 138.
Two-tailed, †p < .07. *p < .05. **p < .01. ***p < .001.

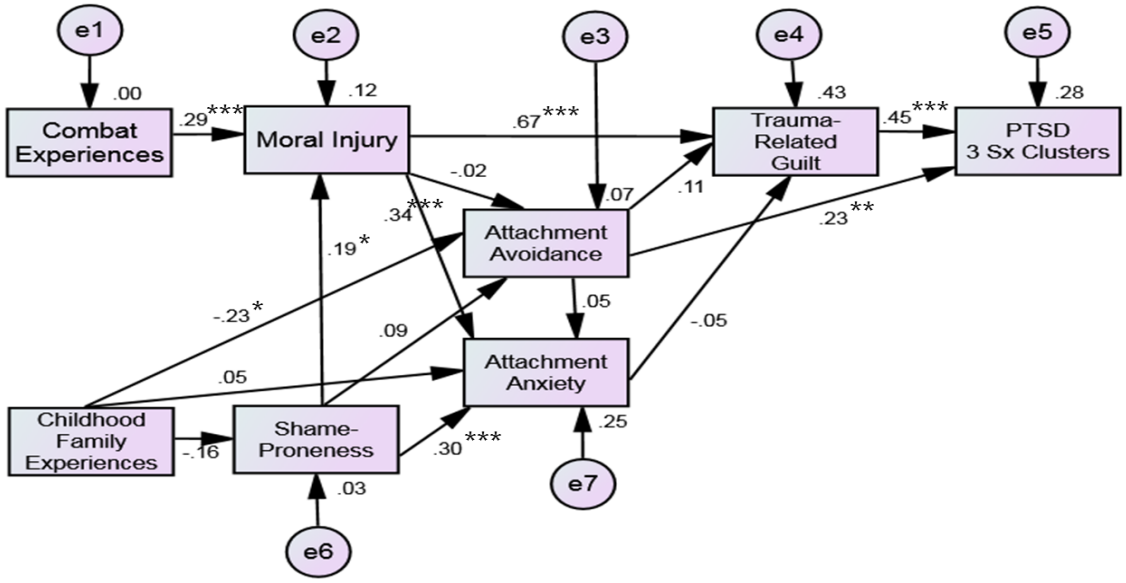

Figure B2. Path Analyses: Revised Model 2. **p* < .05. ***p* < .01. ****p* < .001. Chi-square X^2 (13, N = 147) = 56.64, p < .001 NFI (.74), CFI (.76) and RMSEA (.15)

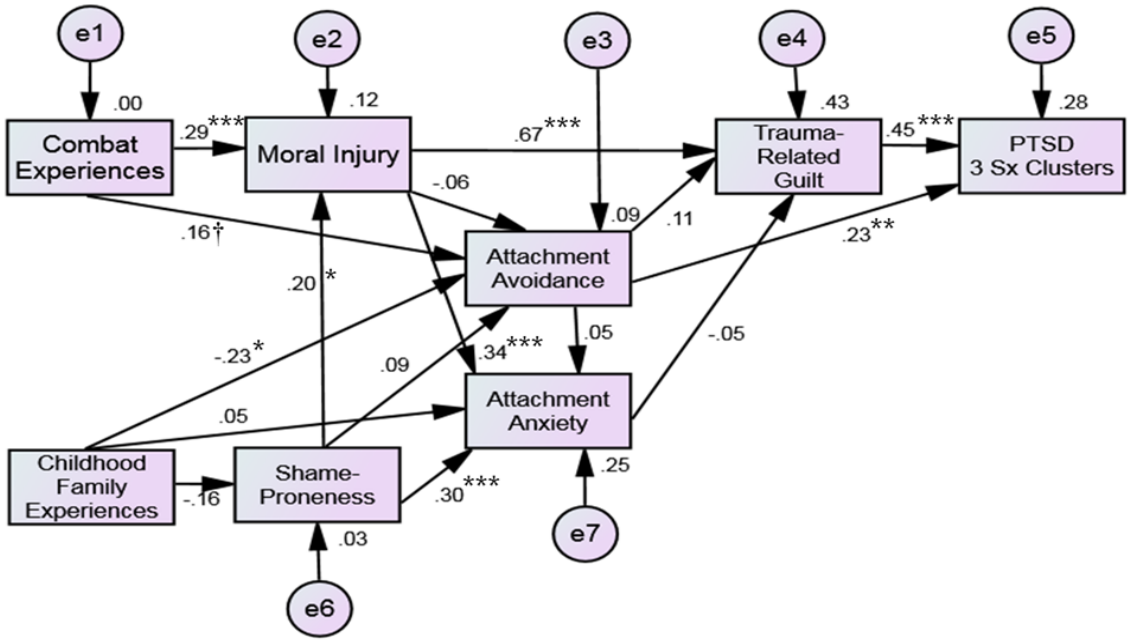

Figure B3. Path Analyses: Revised Model 3. †*p* < .07. **p* < .05. ***p* < .01. ****p* < .001. Chi-square X^2 (12, N = 147) = 53.17, p < .001 NFI (.75), CFI (.77) and RMSEA (.15)

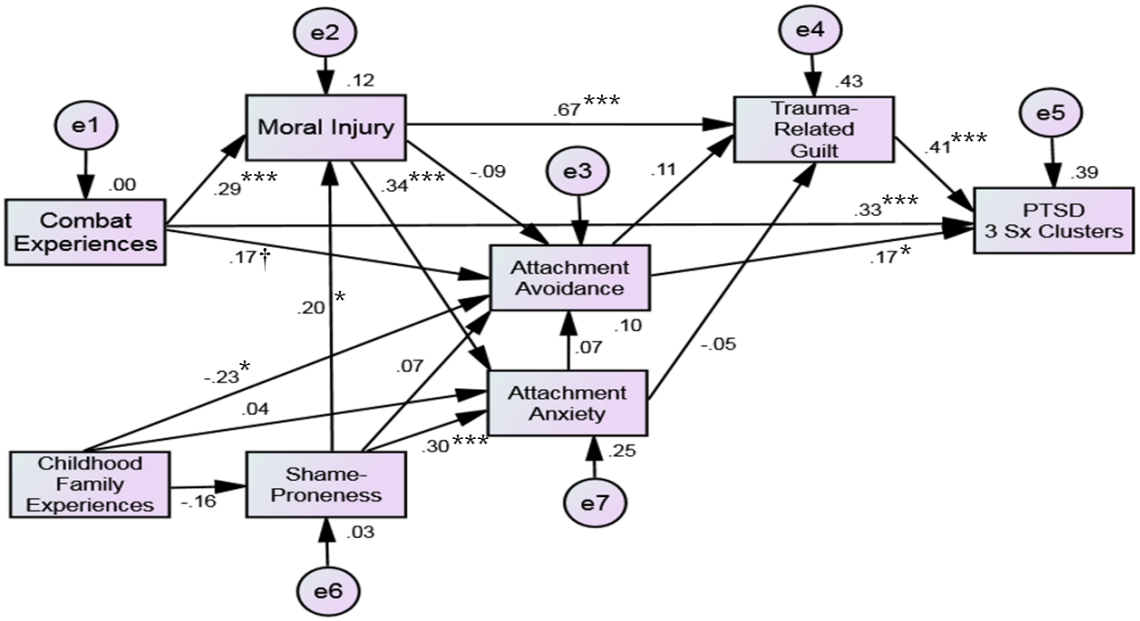

Figure B4. Path Analyses: Revised Model 4. †$p < .07$. *$p < .05$. **$p < .01$. ***$p < .001$. Chi-square X^2 (11, $N = 147$) = 33.85, $p < .001$ NFI (.84), CFI (.87) and RMSEA (.12)