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Moral Injury: Examining the Role of Meaning Making in Veterans

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MORAL INJURY: EXAMINING THE ROLE OF MEANING MAKING IN VETERANS

by

KATELYN MCCREIGHT

(Under the Direction of Dorthie Cross)

ABSTRACT

Moral injury is a transdiagnostic process that spans a collection of symptoms similar to PTSD (Litz et al., 2009). Many veterans develop PTSD symptoms following exposure to potentially morally injurious events (pMIE) occurring in the context of war (e.g., killing an enemy combatant or accidentally killing a civilian; (Currier, Holland, & Malott, 2014; Litz et al., 2009; Purcell, Koenig, Bosch & Maguen, 2016). The potential mediating and moderating variables between moral injury and PTSD may also contribute to pMIE-related PTSD symptoms being overlooked and left untreated (Litz et al., 2009). Furthermore, while extensive research has been conducted on coping and coping processes, the role of meaning making as it pertains to the relationship of moral injury and PTSD has yet to be determined. Specifically, some theories of coping describe a process of meaning-making that impacts both global beliefs (e.g., beliefs about the world) and more specific negative appraisals of a traumatic event (e.g., this event impacted my ability to have meaningful relationships). Approximately 256 veterans or active military service members were recruited using Amazon's Mechanical Turk (MTurk) to participate in an online survey. A cross-sectional and correlational design was implemented to examine the relationships among pMIE, moral injury, PTSD, global meaning, and negative situational appraisal. Results indicated that moral injury fully mediated the relationship between pMIE and PTSD symptoms. Further, results indicated that global meaning partially mediated the

relationship between pMIE and moral injury while negative situational appraisals were not a significant moderator of that mediation.

INDEX WORDS: Moral injury, Meaning making, Coping, Global meaning, Situational appraisals

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DEDICATION

I would like to dedicate this dissertation to all current and former members of the Armed Forces. I respect and appreciate the sacrifices of all service members that are both innumerable in quantity and unmeasurable in significance. Specifically, I would like to dedicate this dissertation to my Uncle Mike, who served in the Army for 13 years and died by suicide in 2018.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

STUDY RATIONALE

Among combat-exposed United States military veterans, estimates of posttraumatic stress disorder (PTSD) range from 9% to 31% (Thomas et al., 2010). In a cohort study of 261,827 troops deployed in 2008 for Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), the estimated cost of treatment for PTSD and depression two years following deployment was $925 million (Kilmer, Eibner, Ringel, & Pacula, 2011). Given the costs of combat-related PTSD and other mental health disorders, it is not surprising that there has been a significant amount of research on PTSD. As a result, our understanding of PTSD has grown in recent years, but some aspects have received less attention.

Moral injury is a transdiagnostic process that spans a collection of symptoms including symptoms of anxiety, depression, substance use, suicidality, and, most prominently, PTSD (Litz et al., 2009), but most PTSD research focuses primarily on symptoms resulting from fear-based or loss-based traumatic experiences (Lazarov et al., 2019). This approach makes sense because many veterans with combat-related PTSD, when thinking about the events that most contribute to their symptoms, identify fear-based events, such as taking enemy fire or experiencing an improvised explosive device (IED) explosion, or loss-based events, such as losing a fellow service member in combat (Wisco et al., 2017); however, many veterans also develop PTSD symptoms following exposure to other kinds of trauma, such as potentially morally injurious events (pMIE) occurring in the context of war-time service (e.g., killing an enemy combatant or accidentally killing a civilian; Currier, Holland, & Malott, 2015; Litz et al., 2009; Purcell, Koenig, Bosch, & Maguen, 2016).

In a war zone, active duty service members are often required to make moral and ethical decisions in the context of war-zone dilemmas. For example, some dilemmas may require a service member to decide whether to shoot and kill an unidentified civilian due to concern about a possible vehicle based IED or whether to stop a convoy on a dangerous road. Service members may question or be distressed about their decisions for years after an event. In a nationally representative sample of US veterans deployed to a combat zone, it was estimated that 10.8% to 25.5% were exposed to morally injurious events (Wisco et al., 2017). Moreover, morally injurious events, particularly those that involve acting in ways that violate one's moral code, are associated with increased odds of suicidal ideation and PTSD (Maguen et al., 2011, 2012), yet much less is known or understood regarding these other types of experiences despite their contribution to PTSD symptoms. This gap in understanding may also contribute to pMIE-related PTSD symptoms being overlooked and left untreated (Litz et al., 2009).

Notably, stigma in the military associated with seeking mental health care may prevent some service members with these mental health problems from seeking help. Quartana and colleagues (2014) examined two separate data sources and revealed an upward trend in utilization of mental health services and a downward trend in stigmatizing beliefs about treatment over the course of the war in Iraq and Afghanistan; however, approximately two thirds of soldiers screened positive for mental health problems but still did not seek treatment. It is possible that, despite improvements in mental health awareness and acceptance, some service members continue to not seek help due, in part, to their reluctance to discuss their role in a pMIE or providers' lack of attention to or understanding of those experiences.

It should be stated that such events do not always result in the symptoms associated with moral injury (e.g., shame, guilt, loss of meaning, etc.); therefore, the term *potentially* morally

injurious events are used (Litz et al., 2009). Similarly, not all individuals who experience traumatic events develop PTSD; therefore, it is important to gain a better understanding of the unique risk and protective factors impacting the development of both PTSD and moral injury symptoms.

Meaning-making may be an important factor to explore to better understand pMIE and moral injury and their relationship to PTSD. The concept of meaning is relevant to efforts to understand how people experience and make sense of stressful situations. Previous research has focused on how people re-organize these connections and experience changes to meaning following stressful events (see Park, 2010, for a review). Williams and Berenbaum (2019) examined the association between altered worldviews (i.e., changes to beliefs about self, others, and the world) and psychological problems, and they concluded that experiencing alterations to one's worldview was strongly positively associated with suicidality and symptoms of depression and PTSD. This finding is consistent with another finding that trauma survivors' appraisals of the extent to which trauma violated global meaning structures (self, others, and the world) was strongly positively related to symptoms of PTSD (Park, Mills, & Edmondson, 2012); however, they also noted that appraisals of the extent to which trauma interfered with the ability to attain personally relevant goals was strongly positively related to PTSD symptoms (Park & Gutierrez, 2013).

In addition, in a review of literature on meaning making and its effects on adjustment to stressful life events, Park (2010) emphasized the importance of differentiating global meaning (i.e., beliefs about the world) and situational appraisal (e.g., the degree to which it impacts an individual's ability to reach personally meaningful goals) because, according to the model outlined, discrepancies between the two may be an important factor in how much distress is

experienced from pMIE. For example, a service member who holds a global meaning of the self as courageous or tough may, in a specific situation, act in a way they perceive as cowardly or weak, and the discrepancy between the two can be a source of distress. Consistent with this model, Currier, Holland, Christy, and Allen (2011) found that service members who have greater difficulty reconciling the meaning of traditional combat trauma tend to have greater PTSD symptoms. Park's (2010) model goes one step further to suggest that these discrepancies in meaning are particularly maladaptive when it interferes with the individual's ability to accomplish their goals, which she describes as "situational appraisals." For example, a service member believes that the pMIE event now interferes with their ability to achieve emotional closeness with others, self-acceptance, physical health, inner peace, or other personally relevant goals.

These findings highlight the importance of attending to global meaning, as well as to the meanings an individual attribute to an event in terms of both their pre-existing beliefs and their ability to attain meaningful goals. While these previous findings regarding global meaning and situational appraisals help us understand non-pMIE traumas and PTSD, there continues to be a lack of research on global meaning and situational appraisals in the context of pMIE and moral injury.

Rural veterans account for only 19% percent of the US veteran population but have endured 27% percent of the casualties in Iraq and Afghanistan. Overall, the death rate for rural soldiers is 60% percent higher than their suburban counterparts (O'Hare & Bishop, 2006). The high death rate has been linked to increased likelihood of enlistment status which has also been associated with increased risk of experiencing a pMIE. To date, no study has compared pMIE and moral injury findings on veteran rural status.

PURPOSE

The goal of this study was to bring together variables that have previously been studied mostly separately. This study examined the relationships among combat-related pMIE, moral injury, PTSD symptoms, and explored the possible relevance of global meaning and situational appraisal to those relationships. Additionally, this study explored these questions in the context of veteran rural status.

SIGNIFICANCE

Current treatment of PTSD focuses heavily on life threatening events or danger-based situations and the interpretations of those events; however, much less research has been dedicated to the understanding of treatment interventions for morally injurious events and the interpretations of those situations. This was one of the first studies to present specific evidence of the relationships of global meanings and situational appraisals to pMIE and moral injury, and the results contributed to a more dynamic conceptualization of how pMIE might contribute to an individual's experience of moral injury, as well as PTSD symptoms. The results shed light on some current theories of moral injury and contributed to a more thorough understanding of potential treatments or interventions for individuals suffering from psychological distress of morally injurious events. Additionally, this study contributed to a much-needed research base on moral injury with regard to veteran rural status, which has not been examined in previous studies.

DEFINITION OF TERMS

Potentially Morally Injurious Event. Broadly, the term potentially morally injurious event describes the experience of a violation or transgression of acceptable human behavior (Frazier, Frankfurt, & Engdahl, 2017). Drescher, Foy, Kelly, Leshner, Shutz, and Litz (2011) proposed a

definition of pMIE to include "bearing witness to perceived immoral acts, failure to stop such acts, or perpetration of immoral acts, in particular actions that are inhumane, cruel, depraved, or violent, bringing about pain, suffering, or death of others" (p. 9). Two other often cited definitions of potentially morally injurious events are Litz et al.'s (2009) definition ("perpetrating, failing to prevent, [bearing witness to], or learning about acts that transgress deeply held moral beliefs and expectations may be deleterious in the long-term, emotionally, psychologically, behaviorally, spiritually and socially," p. 695) and Shay's (1994, 2014) definition, which complements Litz's definition and incorporates betrayal of those in leadership positions.

Moral Injury. In recent years, many different definitions of moral injury have been proposed to describe the "inner conflict" or "invisible or spiritual wound" that occurs as a byproduct of shame, guilt, regret or betrayal rather than the well-researched responses of fear associated with PTSD (Hodgson & Carey, 2017). However, an important definitional component of Litz et al.'s (2009) definition of moral injury is "...the lasting psychological, biological, spiritual, behavioral and social impact of perpetrating, failing to prevent, bearing witness to or learning about acts that transgress deeply held moral beliefs and expectations" (p. 695). Litz et al. (2009) also conceptualize moral injury symptoms as being consistent with PTSD symptoms (i.e., intrusions, avoidance, and numbing), in addition to some secondary aspects which may include self-injury, substance use, and suicidality. It should be noted that some uses of the term moral injury confound the outcome with the event and may contribute to confusion or assumptions about the impact of these events (e.g., one might assume that the event always results in these symptoms).

Posttraumatic Stress Disorder. PTSD as defined by American Psychiatric Association (American Psychiatric Association [APA], 2013) represents four clusters of symptoms that occur following a traumatic event. The clusters include avoidance, arousal, negative alterations in cognitions and mood, and intrusions. In order to meet criteria for PTSD, an individual must experience a trauma as defined by the DSM-5, which includes directly experiencing a traumatic event, witnessing a traumatic event, indirectly learning about a traumatic event involving a close family member or friend, or repeated exposure to extreme details of a traumatic event, not through media or electronic sources (APA; 2013). In addition to the traumatic event, an individual must experience impairing symptoms associated with the four symptom clusters including at least one intrusion symptom (e.g., recurrent, distressing, involuntary memories), presence of persistent avoidance to either avoid internal or external reminders of the event, at least two negative alterations in mood or cognition (e.g., "no one can be trusted," or inability to experience happiness), and at least two symptoms of alterations in arousal and reactivity associated with the traumatic event. Finally, the symptoms duration must be longer than one month in order to meet criteria for PTSD.

Global Meaning. Park (2010) consolidated work from many theorists to ascertain a more thorough definition of global meaning which she described as an "orienting system" (p. 257) comprised of beliefs, goals, and feelings that provides a cognitive framework with which to interpret experiences and motivation. Furthermore, she described three different components of global meaning to include global beliefs, global goals, and a sense of meaning. First, global beliefs include general beliefs about fairness, control, and predictability. Second, global goals are internal representations of desires, outcomes, or events that an individual aspires to accomplish. Third, a sense of meaning refers to a sense that one has purpose or direction in life.

Situational Meaning. Park (2010) described situational meaning as the "meaning in the context of a particular environmental encounter" (p. 258). Therefore, situational meaning is first determined by the nature of the stressful event (e.g., potentially morally injurious events), followed by the processes or outcomes involved in making sense of the event (e.g., post traumatic cognitions). Park (2010) proposed that the model includes: ascribing meaning to the event based on personal relevance or meaning, determining the discrepancy between the global beliefs vs. the appraisal of the event, and finally, determining the extent to which the discrepancy will interfere with the individual's ability to attain personally meaningful goals (i.e., situational appraisal).

Rurality. Rurality can be measured using definitions from the US Census Bureau, US Department of Agriculture, and the US Office of Management and Budget (see Ratcliffe, Burd, Holder, & Fields, 2016). According to the US Census Bureau, rurality is defined as "what is not urban" (p.1), but determining urban areas can be complex. Generally, they described urban areas as having 50,000 or more residents or 1,000 residents per square mile, but they also include urban clusters, which range from 2,500 to 50,000 residents. Rurality is defined as any areas outside of urban areas or urban clusters. In addition, some studies measure rurality by asking participants to select their rural status by choosing among options such as rural and urban (e.g., Ford, Klibert, Tarantino, & Lamis, 2017).

CHAPTER 2: LITERATURE REVIEW

MORAL INJURY: EXAMINING THE ROLE OF MEANING MAKING IN VETERANS

EVOLVING DEFINITIONS

Moral injury is a concept that originated with Shay (1991) in the *Journal of Traumatic Stress* and later discussed in more detail in his book *Achilles in Vietnam* (1994). In those works, Shay (1991, 1994) posited that a moral injurious event, a pMIE, consists of three components: a transgression against accepted moral standards (e.g., killing of unarmed civilians) by a legitimate authority figure (e.g., a military leader) in a circumstance marked by high risk (e.g., war). Notably, those earlier conceptualizations of moral injury did not differentiate the morally injurious events or transgressive acts from the symptoms experienced as a byproduct of the event. Over the years, other definitions of pMIE have been proposed that more clearly separate pMIE from moral injury. For example, Litz et al. (2009) proposed a model in which a set of symptoms may, but not necessarily, occur as a byproduct of moral injury which is conceptually distinct from the morally injurious event. Litz et al. (2009) defined pMIE as an event which includes the participation in or witnessing of inhumane actions, failing to prevent the unethical acts of others, and other subtler experiences that may violate their moral code and, separately, defined moral injury as the emotional, psychological, behavioral, spiritual, social consequences of morally injurious events. The other primary difference between Shay's (1991, 1994) and Litz et al.'s (2009) models is the context of the violator. In Litz et al. (2009) the violator is the self; whereas, in Shay's model the violator is someone in a leadership role; however, in 2014, Shay updated his definition to include transgressions committed by a person in legitimate authority or by one's self. The separation of these definitions and other clarifications have allowed for more

precise prevalence estimates of pMIE and theory building of moral injury and pMIE-related PTSD.

PREVALENCE OF pMIE

In a study examining the pervasiveness of pMIE exposure among a representative sample of US combat veterans from different engagements, a total of 10.8% of combat veterans acknowledged committing transgressions themselves, 25.5% endorsed witnessing transgressions committed by others, and 25.5% endorsed betrayal (i.e., events when moral beliefs were violated by trusted others; Wisco et al., 2017). In a cohort of 867 highly combat exposed active duty Marines, Jordan, Eisen, Bolton, Nash & Litz (2017) examined the prevalence of perpetration-based pMIE (i.e., events when service members violated their own moral values, such as committing transgressions or failing to intervene in others' transgressions), in addition to betrayal-based pMIE, and they found that more than one third of the Marines reported experiences of perpetration or betrayal.

Not all deployed service members are exposed to pMIE, and prevalence of pMIE differs by a number of factors, including combat theater and service member demographics. One study compared four US combat infantry units (three Army and one Marine unit) deployed to Iraq or Afghanistan on reported rates of combat experiences and frequency of contact with the enemy (Hoge et al., 2004). They found that compared to service members deployed to Afghanistan, those deployed to Iraq reported more traditional combat exposure (e.g., 71-86% vs. 31% having engaged in a fire fight). Of those deployed to Iraq they reported incidents of pMIE (e.g., 77-87% having shot or directed fire at the enemy, and 14-28% being responsible for the death of a noncombatant; Hoge et al., 2004).

Regarding service member demographics, Wisco et al. (2017) found that racial-ethnic minority, non-college educated, and low socioeconomic status (SES) combat veterans had an increased likelihood compared to white, college-educated, high-SES combat veterans of experiencing pMIE. In one study on self-efficacy and meaning making in a veteran sample examining PTSD and depression, exploratory analyses revealed enlisted rank was associated with higher symptom severity (Blackburn & Owens, 2015). While the authors did not collect additional data to further evaluate the correlation, they surmised that the increased symptom severity may relate to lower control enlisted service members have over their environment or the higher level of combat exposure enlisted service members may experience.

pMIE-RELATED PTSD

One advancement in the field of PTSD was reflected in the important changes that were made to the diagnostic criteria of PTSD from the DSM-IV to DSM-5, namely, that an individual no longer had to meet criteria for A2 to meet criteria for the stressor condition. The A2 criterion required individuals exposed to traumatic events to also experience an "intense subjective reaction characterized as fear, helplessness, or horror" (p.755; American Psychiatric Association, 2000); however, the required reaction of fear, helplessness, or horror was removed from the DSM-5 when evidence of other emotional responses, such as shame, guilt, or loss of meaning were indicated in the research (Friedman, 2013). Therefore, this change in diagnostic criteria also reflects a meaningful consequence for service members impacted by experiences of pMIE in that the exposure to violence no longer necessitates a fear-based reaction to meet criteria for PTSD. Consequently, from a nosological perspective, some service members who experience pMIE may be more likely to be diagnosed with PTSD.

Jinkerson & Battles (2019) contributed to the working conceptual model of moral injury and pMIE-related PTSD by providing the first empirical examination of moral injury and its relationship to PTSD. Jinkerson's model asserted that pMIE exposure predicts moral injury symptoms, that moral injury symptoms can be divided into core symptoms (e.g., guilt/shame, loss of meaning) and secondary symptoms (e.g., symptoms of depression, anxiety, and PTSD, particularly intrusions, avoidance, numbing, and arousal), and that the relationship between pMIE and the secondary symptoms of moral injury is mediated by the core symptoms of moral injury. This model is important because it highlights the centrality of guilt and shame to pMIE-related PTSD. Some have argued that exposure therapies for PTSD are less effective for patients with high guilt or shame (Maguen & Burkman, 2013) meaning that the core symptoms of moral injury may be not only a pathway to PTSD, but also an impediment to PTSD treatment.

Moreover, pMIE and moral injury may themselves be more central features of PTSD than previously thought. For example, Jordan et al. (2017) found that perpetration- and betrayal-based pMIE accounted for PTSD symptoms above and beyond the direct and indirect effects of danger-based combat exposure. Contrary to previous models, there was no significant direct effect of combat exposure on PTSD in their model, which suggests the link may be attenuated when the impacts of perpetration and betrayal are accounted for. Conclusively, their findings suggest that for a substantial number of veterans or service members, PTSD may be attributable to morally injurious experiences of perpetration or betrayal rather than threat-based events.

Furthermore, Litz et al. (2018) investigated different trauma types based on Criteria A descriptions in a sample of 999 soldiers seeking treatment for PTSD. Their study revealed moral injury by self was associated with greater re-experiencing symptoms of PTSD, guilt, and self-blame compared to life threat to self. On the other hand, moral injury by others was associated

with greater feelings of betrayal, and aftermath of violence was associated with greater traumatic sadness. To extend this work, Presseau et al. (2019) investigated the prevalence of trauma types, prevalence of PTSD within different trauma types, and different social, emotional, and behavioral outcomes. If the participant met criteria for PTSD, then the prevalence of different trauma types were examined and resulted in the following: life threat to self (16.4%), life threat to others (16.9%), aftermath of violence (21.1%), traumatic loss (24.4%), moral injury by self (28.9%), and moral injury by others (17.2%). While some participants met criteria for PTSD, many did not, and the prevalence of trauma types without a diagnosis of PTSD were also examined and resulted in the following: life threat to self (51.1%), life threat to others (30.8%), traumatic loss (22.8%), moral injury by others (20.7%), aftermath of violence (12.0%), and moral injury by self (4.8%). Though Presseau et al. (2019) found that there were no differences in the rates of PTSD by trauma type in their sample, other contrasting epidemiological studies found that exposure to morally injurious trauma events were associated with a higher rate of PTSD (Wisco et al., 2017). Overall, different types of trauma that could potentially result in different social, emotional, and behavioral outcomes implicates other mechanisms to better explain recovery, coping, and adaptive functioning following a traumatic event.

COGNITIVE THEORIES OF MORAL INJURY

According to Litz et al. (2009), moral injury results from inner conflict or dissonance regarding the discrepancy between the transgressive act (the pMIE) and the service member's beliefs or morals, though dissonance is only possible if the individual has an intact conscience or moral belief system. That internal dissonance, along with external pressure from one's own and others' judgements of one's actions, may contribute to the experience of distress, and that distress represents the moral injury. Litz et al. (2009) identified three main judgments made

about morally injurious individuals, by themselves and others: whether the transgression is global (i.e., not context dependent), internal (i.e., seen as a character flaw), and stable (i.e., enduring). As Nash and Litz (2013) explained, cognitive dissonance is an important aspect of moral injury but does not encompass the whole concept; moral injury is also a "loss of trust in previously deeply held beliefs about one's own or others' ability to keep our *shared moral covenant*" (p. 368). The presence of these attributions result in moral emotions including shame, and ultimately untreated moral injury begins to mimic the re-experiencing, avoidance, and emotional numbing symptoms of PTSD (Litz et al., 2009).

Litz et al. (2009) theorized that the most damaging effect of pMIE is the possibility of enduring changes in beliefs about self and others that "represent over-accommodation of moral violation, culpability, or expectations of injustice" (p.701). Therefore, it is possible that meaning making is an important factor in shaping different social, emotional, and behavioral outcomes following different types of traumas. Baumeister (1991) proposed a definition of meaning as a "mental representation of possible relationships among things, events, and relationships" (p. 15), or, put another way, as a network of mental connections between things, events and relationships. This is particularly relevant in terms of how people make meaningful connections in addition to their expectations about what will occur which are also known as schemas or meanings made (Taves, Asprem, & Ihm, 2018).

The meaning making model includes two levels: situational meaning (i.e., individuals' appraisals of events or the contextual meaning) and global meaning (i.e., overarching goals, beliefs, and feelings) (Park, 2010). It has become well accepted that global meaning seems to have a powerful impact on people's thoughts and emotions. Trauma or stressful events can create discrepancies between situational and global meanings by challenging an individual's beliefs

about themselves, others, or what they hope to happen (Janoff-Bulman, 2004). Thus, "meaning making" as described by Park (2010) is the process through which people reduce the discrepancy to alleviate distress by changing situational or global meaning to adjust in a more adaptive way.

While many different theories exist on meaning making, there are some overlapping tenets consistent with the meaning making model (Park & Folkman, 1997). These tenets include: (a) People utilize global meaning as an orienting system that provides cognitive frameworks to interpret different events; (b) Individuals interpret or appraise situations differently when they challenge or stress their global meaning systems; (c) Distress is based on the discrepancy between their global meaning system and their interpretation of the event; (d) The experience of this discrepancy begins the meaning making process; (e) People use meaning making processes to mitigate the impact of the discrepancy between situational appraisals and global meaning to ensure their own purpose or meaning in life; (f) When the meaning making process is successful it leads to better adjustment with stressors in life.

Current models of coping suggest that recovery from traumatic experiences is inhibited by a dissonance between reality and an individual's belief system (Park, 2010). As previously discussed, this includes both global belief systems, such as beliefs, values, and goals, in addition to situational appraisals of the event. In particular, Park (2010) noted that PTSD symptoms correspond to an individual's maladjustment to the extent that certain aspects of global meaning have been violated, specifically, changes in both intrinsic and extrinsic goal attainment.

Therefore, essential to the recovery process of moral injury is the process of integrating belief systems and goals into reality. Park (2010) highlights the importance of intrinsic and extrinsic goal attainment above and beyond the individual's appraisal of the event. As this process relates to servicemembers, PMIE might work by undermining an individual's beliefs

about their goals or their future, which motivates them to seek to restore meaning (Currier, et al., 2015). By targeting goals, individuals are able to regain a sense of purpose and direction in life. Importantly, this is one possible way that meaning and purpose could potentially be differentiated (i.e., goals are attributed more to purpose in life; whereas, cognitions or beliefs are attributed to meaning).

Specifically, regarding meaning, Currier et al. (2015) found an inverse association between the accumulation of pMIE's during deployment in Iraq and Afghanistan and veteran's ability to make meaning of possible traumas. In other words, service members with increased pMIE's were least likely to endorse meaning making in a manner that would indicate they were able to adaptively reconcile the discrepancy between their pre-existing beliefs and appraisals of the event. The authors described this process as "a loss of meaning." Further, Schok, Kleber, Elands, and Weerts (2008) found a significant indirect association between pMIE and mental health outcomes to the extent by which service members had adaptively made meaning of their possible traumas. Additionally, Schok et al. (2008) concluded that exposure to pMIE was associated with less meaning made and ultimately poorer mental health status at the time of their study; however, meaning making may not be the only factor contributing to mental health. For example, previous literature also emphasizes factors like guilt, shame, forgiveness, or spiritual struggles (Currier et al., 2015).

COPING

For better or worse, coping plays an integral role in the process following traumatic events. Broadly, the process individuals experience in response to stress has been categorized in different ways, which can make it difficult to measure. In the short term, some ways of coping can resolve some of the distress associated with trauma, such as avoidance, denial, and problem

solving, but in the long term, the different ways of coping can result in various degrees of risk or resilience. Skinner, Edge, Altman, and Sherwood (2003) conducted a study to assess coping and constructed a categorical system and proposed lower order and higher order processes of coping. The comprehensive list of lower order coping categories included hundreds of possible coping responses including problem solving, avoidance, seeking support, distraction, aggression, self-blame, escape, social isolation, seeking spiritual support, acceptance, and hundreds of other coping behaviors. Researchers have made numerous attempts to further classify and organize ways of coping into hierarchical models including: approach vs. avoidance (Roth & Cohen, 1986), effortful/voluntary vs. automatic/involuntary (Compas, 2006), emotion-focused vs. problem-focused (Lazarus & Folkman, 1984), accommodation vs. assimilation (Brandtstadter & Renner, 1990), and many others.

Coping Process. According to Compas (2006), two separate processes are involved in self-regulation in response to stress. First, he proposed a set of automatic processes that are triggered by the activation of the amygdala which include "physiological or emotional arousal, intrusive thoughts, impulsive actions, emotional numbing, and some forms of escape behavior" (p. 230). Second, he proposed a similar but distinct set of processes that are intentional, including the concept of coping. While Compas (2006) made an argument for theoretically restricting ways of coping to only include intentional responses to traumatic experiences, Skinner and colleagues (2003) explained that coping responses are more nuanced in the various levels of awareness or intentionality. Further, they surmised that some voluntary coping strategies may become automatic to some degree with practice; conversely, some automatic responses may become intentional. Despite the majority of stress responses being automatic to some degree, the context of the situation can determine the degree to which responses are automatic or deliberate.

Therefore, often trauma recovery has been conceptualized as having both automatic and deliberate processes.

Meaning Making Process. Similarly, meaning-making has been described as both automatic processes and as effortful coping. Specifically, Calhoun and Tedeschi (2006) described two different kinds of ruminative responses following a traumatic event: automatic intrusive thoughts about the event and deliberate rumination about the meaning of the event. It has been suggested that these processes are driven by what is known as the completion tendency, or an attempt to reconcile one's own beliefs or mental schemas with trauma-related information (Horowitz, 1983). For example, one of the most well-known examples is the "just world belief" (Lerner, 1980), or the belief that the world is a just place where people get what they deserve. After experiencing trauma, an individual begins processing whether they deserved the trauma that occured (i.e., assimilation) or their belief in a just world requires adjustment (i.e., accommodation). Assimilation has been termed to describe meaning making that involves changing situational appraised meaning to be more consistent with existing global beliefs, and the process of changing a global belief or goal system has been termed accommodation (Joeseph & Linley, 2005).

Emotional Processing Model. While those processes are more cognitive in nature, Rachman (1980) proposed an emotional processing model which emphasized the importance of experiencing and gaining insight to emotions. Specifically, emotional processing was defined as "a process whereby emotional disturbances are absorbed and decline to the extent that other experiences and behavior can proceed without disruption" (Rachman, 2001, p.165). Further, Foa and Kozak (1986) proposed underlying mechanisms of emotional processing in its relation to fear reduction and exposure to feared situations as a form of treatment for PTSD. Comparatively,

both the cognitive and emotional processing theories emphasize the posttraumatic stress symptoms are signs of incomplete processing. While emotional processing theory posits that emotionally processing a trauma decreases the aversive emotional reactions to cues or triggers, cognitive or information processing theories posit the need for accommodation or assimilation of information to resolve symptoms. Therefore, experiences of automatic, intrusive, aversive thoughts and memories continue to plague an individual until they have emotionally processed or reconciled their traumatic experience with their own internal mental schemas or beliefs about themselves, others, or the world. Complementing Horowitz' work, Janoff-Bulman (1992) further proposed that survivors of trauma are intrinsically motivated to make sense of and find meaning in their experience.

Coping Outcomes. Lazurus and Folkman (1984) first described the importance of separating the different ways of coping from the coping outcomes. That is, processes of coping (e.g., avoidance, information-seeking, support-seeking, etc.) are distinct from the outcomes of coping (e.g., meanings made, changes in beliefs or goals, etc.). Further, they explained the idea that the coping processes are not inherently "good" or "bad." Folkman and Moskowitz (2004) described the ongoing difficulty in coping research to determine coping adaptiveness or maladaptiveness. This propelled the development of contextual approaches to coping theories. Insofar as, depending on the context, one way of coping may be adaptive in a situation and maladaptive in another. For example, avoidance may be adaptive if an individual has no control over the situation, but avoidance may be maladaptive in a situation they need to confront a problem. The contextual model of coping requires the consideration of two separate components. First, the coping outcome must be identified based on an individual's goals or something

personally meaningful to them. Two, attention must be paid to the fit between coping response and the demands of the situation (Folkman & Moskowitz, 2004).

RURAL VETERANS

Smalley and Warren (2012) cited a 2010 US census, concluding that rural Americans comprise and estimated 20% of the US population. Additionally, they described two consistent characteristics among rural areas: poverty and inability to access affordable mental health care, which provides unique challenges for rural Americans to receive treatment. Jameson and Curtin (2012) explained that rural residents are overrepresented in the military service as evidenced by the large number of veterans currently residing in rural areas. Unique characteristics of rural veterans, including less access to mental health care, increased substance use risk, and increased prevalence of religiosity, may differentially impact the variables in this study. Veterans are overrepresented in rural populations; additionally, people living in rural areas may be less likely to be college-educated and more likely to experience poverty, both of which are risk factors for experiencing pMIE (Holder, 2016). Furthermore, compared to non-rural veterans, rural veterans account for a disproportionate share of OEF and OIF casualties, including death (O'Hare & Bishop, 2006).

CURRENT STUDY

Goals. The current study investigated four areas of interest. First, this study examined the direct relationships among pMIE, moral injury, PTSD symptoms, global meaning, and situational appraisals. Second, this study successfully replicated Jinkerson's (2019) finding that moral injury mediates the relationship between pMIE and PTSD symptoms. Third, this study integrated Park's (2010) model of meaning-making, previously only applied to PTSD and not to moral injury, by investigating the mediating and moderating effects of global meaning and

situational appraisals on the relationship between pMIE and moral injury. Finally, this study examined variables in relation to rurality in order to determine if rural veterans differed significantly from non-rural veterans on study variables.

Therefore, the goals of the current study were 1) examine the relationships among pMIE, moral injury, PTSD, global meaning, and situational appraisal, 2) examine the potential mediating role of moral injury between pMIE and PTSD, 3) examine the potential moderated mediation of situational appraisals on global meaning between pMIE and moral injury, and 4) compare rural and non-rural veterans on different study variables including pMIE, moral injury, PTSD, global meaning, and situational appraisal.

Hypotheses.

I tested three primary hypotheses and one exploratory hypothesis.

1. Based on previous studies on moral injury, I hypothesized that pMIE, moral injury, PTSD, negative global meaning, and negative situational appraisals (i.e., perception of an inability to achieve personally meaningful intrinsic and extrinsic goals) would be positively associated with each other using Pearson correlations (Currier, Holland, & Malott, 2014; Litz et al., 2009; Purcell et al., 2016).

2. Consistent with the existing theoretical model and empirical findings, I hypothesized that moral injury would mediate the relationship between pMIE and PTSD (Jinkerson & Battles, 2019; Jordan et al., 2017).

3. Based on research of global meanings and negative situational appraisals (Park, 2010), I hypothesized (a) that global meaning violation (PTCI) would mediate the relationship between pMIE and moral injury and (b) that negative situational

appraisal, as measured by the Intrinsic Goal Violations subscale of the GMVS, would

moderate that mediation.

4. Additionally, I compared rural and non-rural veterans on pMIE, moral injury, PTSD,

    global meaning violation and negative situational appraisal. Though some research

    might support specific hypotheses (e.g., higher pMIE, moral injury, and PTSD in

    rural veterans compared to non-rural veterans; Holder, 2016; O'Hare & Bishop,

    2006), existing findings are still too limited. Thus, my analyses were exploratory

    hypotheses only.

CHAPTER 3: METHODS

PARTICIPANTS

The sample consisted of current and former US military service members recruited via

Amazon's Mechanical Turk (MTurk), an online platform that can be used for recruiting research

participants in exchange for monetary compensation. To enroll in the current study, a participant

had to be at least 18 years of age, have an MTurk worker account, and meet two additional

MTurk qualifications: (1) US location and (2) military experience. In an effort to improve

recruitment, procedures were adapted mid-study so that the first 132 recruited had to have an

MTurk HIT approval rate of at least 90%, but everyone recruited later ($n = 124$) did not have that

requirement.

A total of 256 MTurk workers were enrolled in the study, but 125 were removed because

of data quality concerns. The remaining sample consisted of 131 participants ranging in age from

23 to 74 years ($M = 46.01$, $SD = 12.24$). In terms of gender, 97 (74.05%) identified as men, 33

(25.19%) identified as women, and 1 (.76%) preferred not to say. Regarding race and ethnicity,

most participants identified as white ($n = 95$, 72.52%), and others identified as Black or African

American ($n = 16$, 12.21%), multi-racial/ethnic ($n = 10$; 7.63%), as Hispanic/Latino or Latin

origin ($n = 4$; 3.05%), and American Indian or Alaskan Native (n = 3; 2.29%). Two (1.53%)

participants selected 'other' and one (.76%) chose not to say. Based on an independent T-test and

Pearson χ^2 analyses, there were no statistically significant differences between excluded

participants and included participants regarding age, gender, or race and ethnicity.

Regarding military service, participants were current ($n = 15$; 11.45%) or former ($n = 116$; 88.55%) service members of the Army ($n = 58$; 44.27%), Air Force ($n = 34$; 25.95%), Navy ($n = 28$; 21.37%), and Marines ($n = 11$; 8.40%). As for rurality, 26 (19.85%) participants reported living in rural areas, while 70 (53.44%) reported living in suburban areas, and 35 (26.72%) reported living in urban areas.

MATERIALS

Transgressive Acts Scale (TAS; Frankfurt & Frazier, 2016). The TAS is a scale developed to assess for different combat experiences that might lead to moral injury. After a review of the literature related to moral injury and military trauma, the scale was developed following a recommendation to specifically measure exposure to transgressive acts separately from the moral appraisal of the event (Frankfurt & Frazier, 2016). Participants were asked to indicate whether they have experienced any of the seven events in their most recent deployment including: treated civilians more harshly than was necessary, involved in violence that was out of proportion to the event, involved in the death(s) of an innocent/civilian, action that directly resulted in injury to an enemy combatant, made a mistake in a warzone that led to injury or death, involved in "friendly fire" incident, unsuccessfully tried to save civilians from harm. Additionally, the following open-ended item was also included, "I saw/was involved in the violations of rules of engagement that are not covered by the other items. If so, please briefly describe…" For the total score, the number of "yes" responses were added together. Participants were then asked to keep these events in mind as they responded to the *Moral Injury Event Scale* and the *PTSD Checklist for the DSM-5*. Internal consistency (KR-20) in the current sample was .77; however, because TAS items would be considered causal contributors to stress or moral

injury, rather than interrelated manifestations of a distinct construct, internal consistency of the items is uninformative (see Smith & McCarthy, 1995).

Moral Injury Event Scale (MIES; Nash, Marino-Carper, Mills, Au, Goldsmith, & Litz, 2013). The MIES is a 9-item self-report scale which includes nine statements about exposure to perceived transgressions committed by the respondent and/or others, and perceived betrayals of other military and nonmilitary individuals. Items are rated on a 6-point Likert-type scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*), with higher scores representing greater moral injury. The scale provided an overall moral injury events score in addition to three subscale scores corresponding with perceived transgressions committed by self and others and perceived betrayals. In the current study, only a continuous total score was included in the analyses. In a previous study of two military samples (a clinical sample of Air Force personnel and a nonclinical sample of Army National Guard personnel), internal consistency for the three subscales was good across samples, (*Transgressions-Others*, $\alpha = .79$ and $\alpha = .79$; *Transgressions-Self*, $\alpha = .96$ and $\alpha = .94$; and *Betrayal*, $\alpha = .83$ and $\alpha = .89$; Bryan et al., 2016). In a different study of Marines, the MIES total score demonstrated excellent internal consistency, $\alpha = .90$. Additionally, temporal stability was evaluated using paired *t*-tests over one week to three months, which revealed that changes in the MIES total and subscales were not statistically significant, representing good temporal stability (Nash et al., 2013). For the current study, internal consistency for total score for this measure was excellent ($\alpha = .90$).

Traumatic Life Events Questionnaire-2 (TLEQ-2; Kubany et al., 2000). The TLEQ-2 is a 16-item inventory of potentially traumatic life events (e.g., natural disasters, motor vehicle accidents, sudden death of a close friend, etc.). The participants were asked to estimate how

many times they experienced each event (*never*, *once*, *twice*, or *more than twice*), yielding a continuous total score. Across test-retest studies, temporal stability was the strongest for items assessing childhood physical abuse (kappa = .63 to .91), witnessing family violence (.60 to .79), childhood sexual abuse by someone more than 5 years older (.70 to .90), and stalking (.50 to .84) (Kubany et al., 2000). The items with the poorest temporal consistency were items accidents other than motor vehicle accidents and the kappa coefficient was less than .40 (Kubany et al., 2000). Furthermore, this inventory showed good convergent validity with a structured-interview assessment of trauma exposure (Kubany et al., 2000). This study used only the continuous total score of traumatic life events for analyses. Although internal consistency for the current study was high (α = .81), TLEQ-2 items, like those on the TAS, would be considered causal contributors and their intercorrelation uninformative in terms of TLEQ-2 psychometric strength.

Global Meaning Violations Scale (GVMS; Park et al., 2016). The GVMS is a 13-item self-report questionnaire measuring the discrepancies between situational appraisals of an event and an individual's global meanings. The measure is intended to capture both the violations to someone's internal beliefs and their perceptions about their ability to accomplish meaningful external or internal goals. Items in the measure were rated on a 5-point Likert-type scale, ranging from 1 (*not at all*) to 5 (*very much*). The measure consists of three subscales including a violation to beliefs, intrinsic goals, and extrinsic goals. The scale provided an overall measure of meaning violations in addition to a separate score representing violations in perceptions of intrinsic and extrinsic goal attainment. In a previous study of college students, Park et al. (2016) found that internal consistency across the three subscales was good (*Belief Violations*, α = .85; *Intrinsic Goal Violations*, α = .85; and *Extrinsic Goal Violation*, α = .80). Test-retest reliability of the

Intrinsic Goal Violations subscale (.83) was also good, followed by the *Extrinsic Goal Violations* subscale (.72) and *Belief Violations* subscale (.65). For the current study, internal consistency was excellent for the GMVS total score (α = .95), the *Belief Violations* subscale (α =.88), the *Intrinsic Goal Violations* subscale (α =.91), and the *Extrinsic Goal Violations* subscale (α =.93). The current study used only the score representing violations in perceptions of intrinsic goal attainment.

PTSD Checklist for the DSM-5 (PCL-5; Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013). The PCL-5 is a 20 item self-report questionnaire measuring DSM-5 symptoms of PTSD in the last month. Items are rated on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*extremely*). Scores range from zero to eighty with higher scores indicating increased symptoms severity. The PCL-5 reflects symptomatology of the current diagnosis of PTSD in the DSM-5 (APA, 2013). In a previous study of veterans, the PCL-5 demonstrated good internal consistency (α = .96), as well as test-retest reliability (*r* = .84) when given an average of about a month between tests (Bovin et al., 2016). The PCL-5 also showed strong convergent validity (e.g., with measures of anxiety and depression) and discriminant validity (e.g., with measures of alcohol use and psychopathy). Furthermore, Bovin and colleagues (2016) suggested a PCL-5 cutoff score of 31 to 33 for PTSD screening or preliminary diagnosis. Overall, the PCL-5 appears to be a psychometrically sound instrument for assessment of PTSD symptoms in a veteran sample. The current study used a continuous total score. Internal consistency for the PCL-5 total score in the current study was excellent (α = .96).

Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). The PTCI is a 36-item self-report questionnaire measuring trauma-related thoughts and beliefs.

Items are rated on a 7-point Likert-type scale, ranging from 1 (*totally disagree*) to 7 (*totally agree*). Therefore, higher scores suggest stronger endorsement of negative cognitions. The measure also yields three subscales: *Negative Cognitions about Self*, *Negative Cognitions about the World*, and *Self-Blame*. The current study used a continuous total score for the analyses. In a previous study of 601 adult volunteer participants, internal consistency for the three subscales was good, (total score $\alpha = .97$, *Negative Cognitions about Self*, $\alpha = .97$; *Negative Cognitions about the World*, $\alpha = .88$; *Self-Blame*, $\alpha = .86$), score were positively correlated with other measures of negative cognitions (Foa et al.,1999). In the current study, internal consistency of the total score was excellent ($\alpha = .96$).

Demographics Form. The demographics form was developed for the current study to capture important demographic information about the sample population including age, gender, race/ethnicity, current rural residence status (rural, suburban, urban), military service status (current, retired/discharged, no service) and branch of service, among other study variables.

Data Quality Measures. Based on recommendations from Aust et al. (2013) and Sheehan (2018) that data collected online include methods of screening for low quality data, military status screener questions and a self-reported data quality question were included to mitigate both of these potential issues.

Military Validity Screen (MVS; Lynn, 2014). The MVS is a 5-item questionnaire to screen out participants who may falsely report military status in online studies. The items are related to general knowledge typical service members would be expected to have (e.g., common military acronyms, insignia); however, based on initial studies by Lynn (2014), there are several reasons service members might miss these questions (e.g., the type of basic training they

received, enlisted vs. officer rank, etc.). Therefore, based on recommendations from Lynn (2014), if participants in the current study missed two or more out of the five MVS items, their data were removed.

Seriousness Check (Aust et al., 2013). A single item was added at the very end of the study and asked participants to indicate whether they took the study seriously or whether they just clicked through and their data should be removed.

PROCEDURE

Eligible MTurk workers who were interested in participating in the study were given a link that took them to the Qualtrics site where they were prompted to review an informed consent and indicate their willingness to participate. Upon completion of informed consent, participants were presented the study measures in the following order: TAS, MIES, GVMS, TLEQ-2, PCL-5, PTCI, Demographics Form, Military Validity Screen, and Seriousness Check. Study measures were not presented in random order due to specific directions in the measures that required them to be presented in a certain order. For example, the MIES specifically asked participants to think about events reported on the TAS while they responded. In addition, the GVMS was administered immediately followed the TAS and MIES so that participants responded with those events in mind, rather than other experiences reported on the TLEQ-2.

At the end of the survey, participants were debriefed and given a code to claim their compensation for participating. Mean study duration was 2690.71 seconds ($SD = 2041.96$), or about 45 minutes. Duration ranged from just 3 seconds to 523296.00 seconds (a participant who took six days to complete the survey).

As previously discussed, to improve recruitment, procedures were adapted mid-study to remove the MTurk HIT 90% approval rate requirement. At the same time, compensation was increased from 1 USD to 2 USD. Unintentionally, the change to study procedure fully

overlapped with pre-shutdown (February to March 2020) and post-shutdown (April 2020)

measures in the US in response to COVID-19. To see if study data might be impacted by these

changes, participants recruited before and after the changes were compared in terms of

demographics, questionnaire scores, data quality checks (completion, duration, self-reported

military status, military validity screen, and validity check), and whether they were ultimately

included or excluded. There were no significant differences.

All study procedures and all amendments to study procedures were approved by Georgia

Southern University's Institutional Review Board (IRB).

DATA QUALITY

Participants' data were excluded from study analyses if they provided incomplete data,

did not pass a minimum duration requirement for the survey, indicated in the demographics form

that they had not current or former military experience, failed the military validity screening, or

indicated on the seriousness check that they did not pay attention during the survey. See Table 1

for the number of participants who passed each of these data quality checks.

Table 1.
Number of Participants in Initial Sample (N = 256) who Passed Data Quality Checks

Data Quality Variable	Passed (*N*)	Failed (*N*)	Incomplete or Discontinued (*N*)
Completion	156	100	-
Duration	171	85	-
Self-Report Military Service Item	162	5	89
Military Validity Questions	140	20	96
Self-Report Attention Item	157	2	98

Of the 256 participants in the study, 100 provided incomplete data and were excluded.

Most exclusions for incomplete data was due to participants discontinuing the study (see Table

2). Other exclusions for incompleteness were due to participants leaving more than 10% of items

on a measure unanswered. If less than 10% of items were missing, those data were retained, and

missing values were replaced with the series mean.

Table 2.

Completion of Primary Study Questionnaires by All Enrolled Participants (N = 256)

Study Questionnaire	Complete (*N*)	Incomplete (*N*)	Discontinued Before this Point (*N*)	Attrition (%)
(1) TAS	189	9	58	22.66
(2) MIES	182	4	70	25.34
(3) GMVS	176	2	78	30.47
(4) TLEQ	174	2	80	31.25
(5) PCL-5	172	3	81	31.64
(6) PTCI	168	3	85	33.21
All Six	156	15	-	-

Note: Study questionnaires are listed in the order they were administered. Questionnaires were considered incomplete if more than 10% of items were left blank.

For an additional data quality check, a minimum duration cutoff was also utilized. I

considered two seconds per question (approximately 284 seconds total) to be the minimum

amount of time a participant could reasonably complete the survey. Eighty-five participants

failed to meet this minimum, and their data were excluded.

An item in the Demographics Form asked participants their military status, and although

all participants were labeled by MTurk as having military experience, five participants denied

ever being in the military. Their data were excluded.

After examining the responses provided by participants on the Military Validity Screen,

there were a surprising number of failures across the five items, and there appeared to be a

discrepancy in scoring for one particular item. Additionally, a participant provided feedback over

email that when completing the questions on a smartphone, it was difficult to complete a

question that required participants drag the answers to reorder them. It is possible that some

participants might have given incorrect responses on the task if they complete the survey on their phone rather than a computer.

To address my concern about overall errors in responses, I consulted a small group of military service members and veterans personally known to me to gather feedback on the quality of these validation questions. They were able to provide additional acceptable responses to one of the validity questions, and they were able to confirm that there was a discrepancy in the Qualtrics scoring for another item. (The discrepancy was related to survey coding or interface issue rather than the answer key itself or the quality of the data.) Several of them also noted that correct responses to one item would not likely be known by most enlisted service members; however, with the added acceptable response for one item and the confirmation of scoring on another item, of the 160 participants who were presented the MVS (i.e., had not discontinued by the point), only 20 did not answer at least two items correctly. Therefore, it appeared the cut off for two out of five correct answers recommended by Lynn (2014) provided the flexibility needed to address these potential issues participants might have encountered.

CHAPTER 4: RESULTS

Descriptive statistics were analyzed for the primary study variables (see Table 3). Of

note, 65 (49.60%) of participants were classified as having current PTSD based on a score of 33

or greater on the PCL-5.

Table 3
Descriptives for Primary Study Variables

Variables	*M*	*SD*
Transgressive Acts Scale total	1.18	1.61
Moral Injury Events Scale total	25.09	11.14
Traumatic Life Events Questionnaire total	28.08	8.01
PTSD Checklist for the DSM-5 total	37.13	15.89
Post-traumatic Cognitions Inventory total	88.63	37.73
Global Meaning Violation Scale Intrinsic Goal Violations subscale	10.39	4.78

HYPOTHESIS 1

To test the first study hypothesis that pMIE (TAS), moral injury (MIES), PTSD

symptoms (PCL-5), global meaning (PTCI), and negative situational appraisal (GMVS) would

be positively correlated to each other, Pearson correlations were examined among these study

variables (see Table 3). All relationships were found to be significant in the expected directions.

Consistently, moral injury had a moderate, positive correlation with pMIE, negative situational

appraisal, global meaning violations and PTSD symptoms. Further, global meaning violations

had a strong, positive correlation with PTSD symptoms. These results suggest that veterans who

report having experiences of pMIE are also likely to report more severe moral injury, more

significant global violations in beliefs, more significant negative situational appraisals, and to

endorse more severe PTSD symptoms.

Table 4
Pearson Correlations Among Study Variables

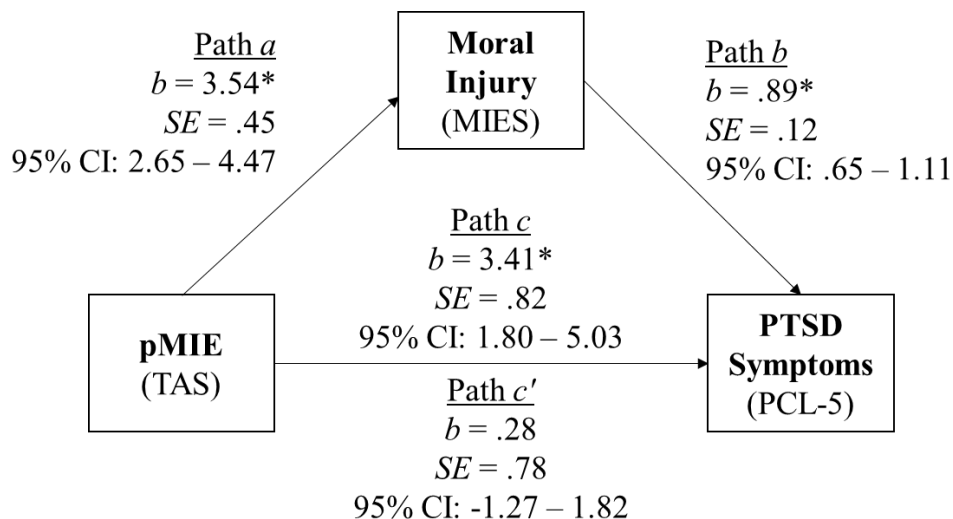| Variables	TAS	MIES	GMVS	TLEQ-2	PCL-5
Potentially Morally Injurious Events (TAS)	-				
Moral Injury (MIES)	.51**	-			
Negative Situational Appraisal (GMVS)	.36**	.57**	-		
Lifetime Traumatic Events (TLEQ-2)	.25**	.37**	.29**	-	
Current PTSD Symptoms (PCL-5_	.35**	.64**	.60**	.44**	-
Global Meaning Violation (PTCI)	.30**	.64**	.54**	.34**	.80**

Note: TAS = *Transgressive Acts Scale*, MIES = *Moral Injury Events Scale*, GMVS = Intrinsic
Goal Violations subscale of the *Global Meaning Violation Scale*, TLEQ-2 = *Traumatic Life
Events Questionnaire*, PCL-5 = *PTSD Checklist for the DSM-5*, PTCI = *Post-traumatic
Cognitions Inventory*
** $p < .01$

HYPOTHESIS 2

To examine the second hypothesis that moral injury would fully mediate the relationship

between pMIE and PTSD symptoms, a simple mediation analysis (Process Model 4; 5,000

bootstrap samples with 95% bias-corrected confidence intervals) was conducted to examine the

relationship between pMIE, moral injury, and symptoms of PTSD. In this model, the *a* pathway

represents the path between pMIE and moral injury, the *b* pathway represents the path between

moral injury and PTSD symptoms, and the *c* pathway represents the total relationship between

pMIE and PTSD symptoms. Finally, the *c'* represents the direct relationship between pMIE and

PTSD when accounting for moral injury (see Figure 1).

Figure 1. Simple Mediation Model for Hypothesis 2

Path *a*		Path *b*
b = 3.54*	**Moral**	b = .89*
SE = .45	**Injury**	SE = .12
95% CI: 2.65 – 4.47	**(MIES)**	95% CI: .65 – 1.11

Path *c*
b = 3.41*
SE = .82
95% CI: 1.80 – 5.03

pMIE
(TAS)

Path *c'*
b = .28
SE = .78
95% CI: -1.27 – 1.82

PTSD
Symptoms
(PCL-5)

Note: b = unstandardized coefficient; SE and CI = bootstrapped standard errors and confidence intervals, respectively; * *p* < .001
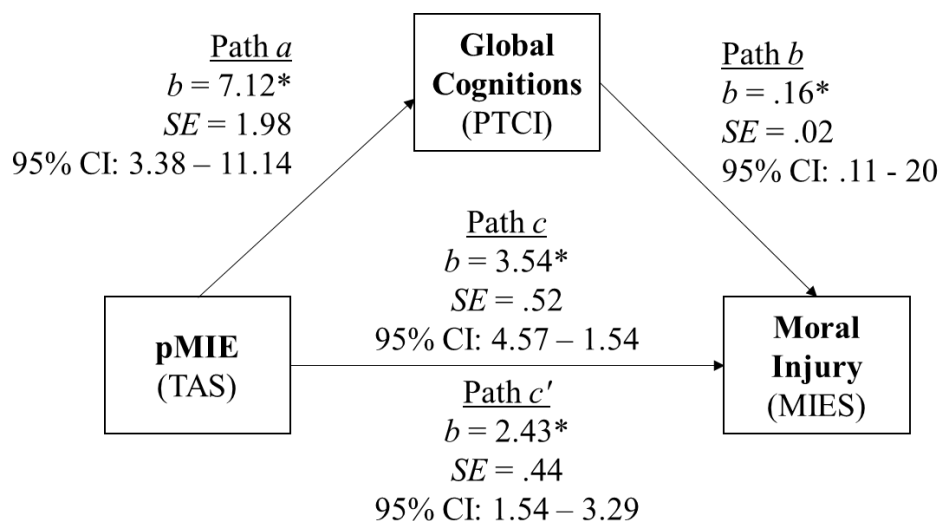
The total effect between pMIE and PTSD symptoms is significant; however, when moral injury is taken into account, only the indirect relationship, not the direct relationship, is significant, *b* = 3.14, SE = .59, 95% CI [2.09, 4.40]. Thus, in this sample, moral injury fully mediates the relationship between pMIE and PTSD symptoms. These results suggest there is a statistically significant indirect effect of moral injury on the relationship between pMIE and symptoms of PTSD. This mediation analysis supports the study hypotheses and is consistent with previous research.

HYPOTHESIS 3

To test the third hypothesis that global meaning would mediate the relationship between pMIE and moral injury and that negative situational appraisal would moderate that mediation, a two-step process was used. First, a simple mediation analysis was conducted. The simple mediation analysis (Process Model 4; 5,000 bootstrap samples with 95% bias-corrected confidence intervals) was conducted to examine the relationship between global cognitions

(PTCI), pMIE (TAS), and moral injury (MIES). In this model, the *a* pathway represents the path

between pMIE and global cognitions, the *b* pathway represents the path between global

cognitions and moral injury, and the *c* pathway represents the total relationship between pMIE

and moral injury. Finally, the *c'* represents the direct relationship between pMIE and moral

injury when accounting for global cognitions (see Figure 2).

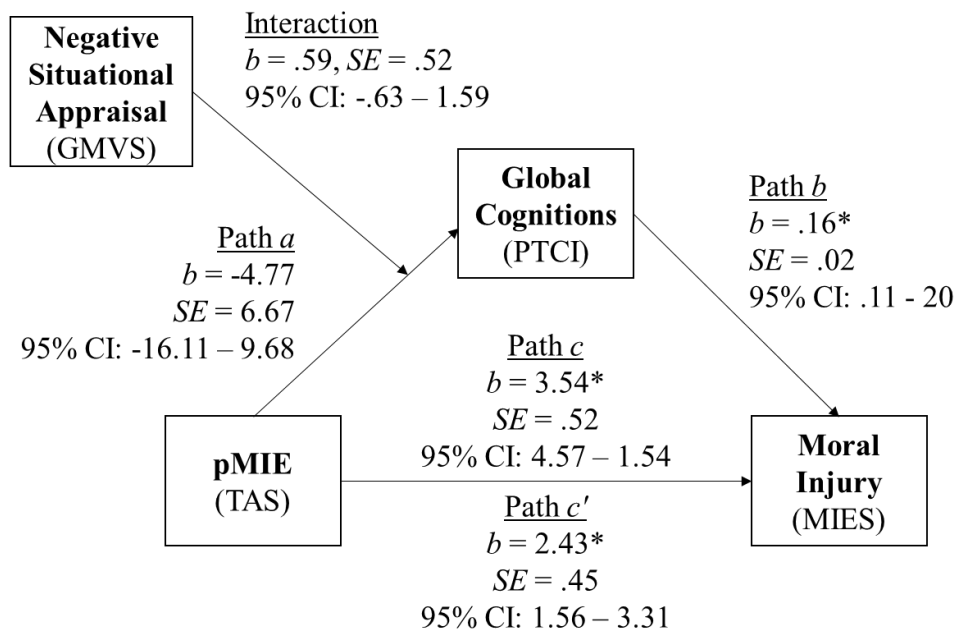Figure 2. Simple Mediation Model for Hypothesis 3a

Note: b = unstandardized coefficient; SE and CI = bootstrapped standard errors and confidence
intervals, respectively; * *p* < .001

The results of this analysis show that the total effect between pMIE and moral injury is

significant, and both the direct effect between pMIE and PTSD symptoms and the indirect effect,

b = 1.11, SE = .36, 95% CI [.49, 1.88], through global cognitions are significant. Thus, in this

sample, global cognitions partially mediate the relationship between pMIE and moral injury.

These results suggest there is a statistically significant indirect effect of global cognitions on the

relationship between pMIE and moral injury. This mediation analysis partially supports the study

hypotheses that global cognitions would mediate the relationship between pMIE and moral

injury, which is also consistent with previous research findings.

Next, a moderated mediation analysis was conducted to test the second part of the third

hypothesis that negative situational appraisals would moderate the above mediation. A

moderated mediation analysis (Process Model 7; 5,000 bootstrap samples with 95% bias-

corrected confidence intervals) was conducted to examine the relationship between pMIE,

negative situational goal appraisals, global cognitions, and moral injury (see Figure 3). In this

model, adding negative situational appraisals did not result in a moderation of the mediation

effect from hypothesis 3a. The results of this analysis did not support the study hypothesis.

Figure 3. Moderated Mediation Model for Hypothesis 3b

Note: b = unstandardized coefficient; SE and CI = bootstrapped standard errors and confidence
intervals, respectively; * $p < .001$

RURAL COMPARISONS

To explore potential differences in study variables by rural status, a between factors

MANOVA was conducted with rural status (1 = rural, 0 = suburban or urban) as the independent

variable and all study variables (TAS, MIES, GMVS Intrinsic Goal Violations subscale, TLEQ-

2, PCL-5, and PTCI) as the dependent variables. A MANOVA was used to reduce the chance of Type 1 error from multiple comparisons. Although the omnibus MANOVA was not significant, Wilk's $\lambda = .91$, $F(6, 124) = 1.98$, $p = .07$, partial $\eta^2 = .09$, there was a notable between-subjects effect specific to the TAS, $F(1, 129) = 9.03$, $p = .003$, partial $\eta^2 = .07$. Rural participants reported higher scores on the TAS ($M = 2.00$, $SD = 1.87$) compared to non-rural participants ($M = .97$, $SD = 1.48$). Importantly, observed power for this MANOVA was only .71, meaning the analysis was underpowered. While not statistically significant within the MANOVA, this pattern of results warrants additional attention. It may be important to explore implications of this trend toward a higher number of reported transgressive acts for the rural population of this sample.

CHAPTER 5: DISCUSSION

The goal of this study was to examine variables that had previously never been studied together. This study examined the relationship between pMIE, moral injury, PTSD symptoms, and determined the relevance of global meaning and negative situational appraisals as mediating or moderating variables in those relationships. Additionally, this study examined the differences between rural and non-rural participants on these study variables.

The first hypothesis was that pMIE (TAS), moral injury (MIES), PTSD symptoms (PCL-5), global meaning (PTCI), and negative situational appraisal (GMVS) positively correlated with each other. These study variables were hypothesized to be positively correlated with each other due to their theoretical relationship and previous research findings. Based on research by Litz and colleagues (2009), moral injury is a wound that can occur during war-time experiences following a pMIE as it relates to shame, guilt, regret, or betrayal. Further, this experience of moral injury has been positively correlated with PTSD symptoms in other studies (Hodgson & Carey, 2017; Maguen et al., 2011, 2012). Park (2010) proposed a model describing the importance of global meaning and situational appraisals in the coping process following different types of traumatic experiences. Therefore, based on these theories, it was concluded that an increased number of pMIE would be positively correlated with self-reported experiences of moral injury and PTSD symptoms. Further, as a byproduct of a maladaptive coping process, a higher report of moral injury and PTSD symptoms, would also be correlated with greater distortions in global beliefs or meanings and the individuals' perception of the degree to which a particular morally injurious event interferes with their ability to accomplish personally meaningful goals. The results supported this hypothesis that the study variables including pMIE (TAS), moral injury (MIES), PTSD symptoms (PCL-5), global meaning (PTCI), and negative

situational appraisal (GMVS) positively correlated with each other. Importantly, since these variables were significantly positively correlated, the relationship between them may require additional research to gain clarification about the exact relationship including different moderating or mediating variables that exist between them.

The second hypothesis was that moral injury mediated the relationship between pMIE and PTSD symptoms. This hypothesis was based on previous research findings by Jinkerson and Battles (2019), their model asserted that pMIE exposure predicted moral injury symptoms, including core symptoms of moral injury (i.e., guilt/shame, loss of meaning) and secondary symptoms (i.e., symptoms of depression, anxiety and PTSD). Further, they concluded that the relationship between pMIE and the secondary symptoms of moral injury, including symptoms of PTSD, were mediated by the core symptoms of moral injury. Therefore, based on this model, I hypothesized that morial injury would mediate the relationship between pMIE and PTSD symptoms. The study results supported the hypothesis that moral injury fully mediates the relationship between pMIE and PTSD symptoms. This result is significant because it lends support to the proposed model by Jinkerson and Battles (2019) and replicates their findings.

The third hypothesis was that global meaning or beliefs (PTCI) mediated the relationship between pMIE and moral injury. This hypothesis was largely based on the model proposed by Park (2010) and the cognitive theories of moral injury. Specifically, Litz and colleagues (2009) suggested that moral injury results from dissonance between the pMIE or the reality of that event and the service member's beliefs or morals. One of the three main proposed judgements by Litz and colleagues (2009) is whether a transgression is global, in other words, if the transgression is not context dependent. For example, if a service member came into the military believing they could trust other people; however, after a transgressive act, they questioned whether they could

trust anyone. The transgression would then be perceived as global because it extends beyond the specific context of that event and potentially to significant others, friends, and close family members. Similarly, the model proposed by Park (2010) suggests the recovery from traumatic events is inhibited by a dissonance between reality and the individual's belief system. Therefore, the relationship between pMIE and moral injury might be related to the process of integrating belief systems into reality. The study results partially supported the hypothesis that global cognitions mediate the relationship between pMIE and moral injury. Since the data revealed a partial mediation, these results suggest there is a statistically significant indirect effect of global cognitions on the relationship between pMIE and moral injury; however, there are likely other variables also playing a significant role in that relationship. Notably, study findings indicate that further research is needed to examine other potential mediating variables in the relationship between pMIE and moral injury.

Additionally, it was hypothesized that negative situational goal appraisals (GVMS) moderated the relationship between pMIE and global cognitions (PTCI). This hypothesis was also based on the model proposed by Park (2010) regarding the importance of an individual's perception of their intrinsic and extrinsic goal attainment to the recovery process. Specifically, I examined whether an individual's perceptions of their intrinsic and extrinsic goal attainment would moderate the relationship between pMIE and global cognitions. However, the results did not support the hypothesis that negative situational appraisals, in this case, perceptions of goal attainment moderated the relationship between pMIE and global cognitions. It is possible that results might be better explained by other study variables. However, though study findings were not statistically significant, it was trending towards significance and might be worth examining in future studies on moral injury and the coping process.

Finally, I explored differences in this sample between rural and non-rural veterans on the study variables. While group differences were not statistically significant, there was a notable trend in reported experiences of transgressive acts. Rural participants reported experiencing approximately twice as many transgressive acts as non-rural participants.

One possible explanation for this trend in the current study sample could be related to the stigma of being seen as weak, cowardly, or less masculine if a service member neglects to follow orders or speak out about an issue. Herron and colleagues (2020) explain the description of rural men's mental health as a "silent crisis." Specifically, Herron and colleagues (2020) examined how rural men paradoxically tend to report lower levels of stress and depression while also experiencing higher rates of suicide and substance use. In order to better understand rural masculinity, the silent crisis, internalized stigma, and cultural beliefs, they conducted semi-structured interviews with rural men to better understand their experiences. While some characteristics align with hegemonic masculinity or the tendency for masculinity to be associated with dominant social hierarchies, it is also important to note that some of these traits align with healthy ways of expressing masculinity in rural populations. For example, a small subset of their participants described feelings of shame and guilt when talking about mental health issues, but they also talked about different environments or in certain relationships they felt safe to disclose their difficulties or struggles. From Herron and colleagues (2020), one participant explained that living in a rural place fostered a sense of competition due to lack of resources and isolation. It is possible that challenging and competitive rural environments foster an additional pressure to be seen as strong or resilient (Herron et al., 2020). Another participant explained that someone in the community might have a great reputation and contribute a great deal to the community, but people will scoff if they find out about mental health issues or taking time off work and he

stated, "in a sense of being weak and just buck up and get the job done." Another cultural value that gets described in rural communities is a deference to authority, which can be adaptive in some military contexts (e.g., following orders) and detrimental to the service members in other contexts (i.e., committing an act that goes against their moral beliefs).

LIMITATIONS

Notably, there are several limitations in the current study. Due to the correlational and cross-sectional nature of this study, causation cannot be inferred. Future studies should examine these relationships using longitudinal designs to better understand the causal relationship of transgressive acts, moral injury, and PTSD symptoms. Additionally, studies utilizing qualitative designs might further clarify additional study variables including potential moderating or mediating variables.

Another limitation in this study is the small sample size. A small sample size can increase the risk of a false positive finding or be an issue due to low statistical power. In other words, a lack of statistical significance in this study does not mean there is no effect. This limitation is particularly important because not all of the participants were combat veterans which might have further increased the chance of committing a Type II error due to a lack of power. Conversely, due to the small sample size in this study, it is also possible to commit a Type I error and have concluded a false positive finding. Therefore, results should be interpreted with caution and future research is needed to examine these findings or attempt to replicate.

Another important limitation worth noting in this study is the method of collecting data through self-report. There are several issues related to self-report data including issues verifying the information, in addition to potential sources of bias like hindsight bias, memory distortions, attribution biases, context effects, confirmation biases, and other sources of bias inherent in self-

report studies. However, one mitigating factor for self-report data is that the participants remained anonymous.

FUTURE DIRECTIONS

One interesting future direction would be to further explore the differences between rural and non-rural veterans on some of these study variables. Specifically, it may be important to examine the increased risk of rural veterans to experience a pMIE. Rural veterans have been shown to disproportionately experience higher rates of casualties, which has been linked to enlistment status and might also explain higher risk of experiencing pMIE.

Other future directions might include more exploration into moderating or mediating variables in the relationship between pMIE, moral injury, PTSD symptoms, and coping mechanisms or meaning making. In addition to further exploration of cognitive schemas or belief systems, it may also be interesting to further research coping responses (i.e., social isolation, acceptance, aggression, self-blame, etc.) emotional (i.e., sadness, anger, disgust, etc.) or social variables (i.e., support seeking, shared beliefs or values, social support/competitiveness) in this relationship.

Finally, it may also be beneficial to further examine possible therapeutic interventions for moral injury. Consistent with previous research, moral injury fully mediated the relationship between pMIE and PTSD symptoms and may be a possible point of intervention for prevention of PTSD symptoms. Further, due to the finding that global cognitions partially mediated the relationship between pMIE and moral injury, it may also be beneficial to explore therapeutic interventions that target changes in global belief systems as a byproduct of morally injurious events.

Clinical Directions. There are some important clinical implications based on the findings of this study. First, since we were able to replicate the mediation relationship between pMIE, moral injury and PTSD symptoms, it may be beneficial to explore patient's experiences of trauma and to differentiate whether their symptoms are more associated with traumatic loss/grief, threat to self or others (i.e., typical PTSD), or symptoms of moral injury (e.g., feeling shame/guilt, betrayal, loss of purpose or identity, etc…). Second, since we also found a significant partial mediation of global cognitions (i.e., "I am a weak person," "I feel dead inside," etc…), it may be beneficial to explore pathogenic beliefs they may have developed following the traumatic event. Importantly, successful treatment related to these traumatic events might include psychoeducation about shame/guilt, self-compassion, forgiveness, and stress responses or PTSD symptoms. It might also include a process for the veteran to further explore and disconfirm pathogenic beliefs they have developed about themselves, the world, and others. Finally, an important therapeutic consideration might be related to developing interventions that utilize both aspects of acceptance and change depending on the situation and the context of the event.

CONCLUSION

The current study examined the relationship between pMIE, moral injury, PTSD symptoms, global beliefs and situational appraisals in the context or wartime experiences. Results indicated that all variables were positively correlated, and moral injury mediated the relationship between pMIE and PTSD symptoms. Further, these results indicated that while global cognitions (i.e., "I am a weak person") did partially mediate the relationship between pMIE and moral injury, situational appraisals (i.e., this event interferes with my ability to achieve certain goals), did not significantly moderate that relationship. These findings are important for better understanding the theoretical implications of these two models of moral

injury and coping, as well as informing possible clinical interventions to prevent the

development or worsening of PTSD symptoms.

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