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Association Between Combat, Morally Injurious Experiences, Spiritual Injury, and Alcohol Use Among Active Duty Military Personnel and Veterans

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**ASSOCIATION BETWEEN COMBAT, MORALLY INJURIOUS
EXPERIENCES, SPIRITUAL INJURY, AND ALCOHOL USE AMONG ACTIVE
DUTY MILITARY PERSONNEL AND VETERANS**

by

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B.A. May 2007, North Carolina State University

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ABSTRACT

Association between Combat, Morally Injurious Experiences, Spiritual Injury and Alcohol Use among Active Duty Military Personnel and Veterans

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Literature has supported that, along with physical and psychological injuries, combat profoundly impacts veterans' moral and spiritual belief systems and may contribute to negative health behaviors. Moral injury is a developing construct related to negative consequences associated with war-zone stressors that transgress military veterans' deeply held values and belief systems. Additionally, spiritual injury addresses negative responses to an event that damages their relationship with God, self, and others, and alienates an individual from that which gives meaning to their lives. The purpose of the present study was to examine the relationship between combat exposure, morally injurious experiences (MIEs), spiritual injury, and hazardous alcohol use among U.S. active duty personnel, National Guard/Reserves, and veterans. Data were collected via online survey of 380 (260 men, 120 women) U.S. active duty personnel, National Guard/Reserves, and veterans. Participants completed the Combat Exposure Scale (CES; Keane et al., 1989), the Moral Injury Questionnaire – Military version (MIQ-M; Currier, Holland, Drescher, & Foy, 2015), the Spiritual Injury Scale (SIS; Berg, 1994), and the Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Greater combat exposure, MIEs, and spiritual injuries were hypothesized to be positively associated with higher hazardous alcohol use. Additionally, both MIEs and spiritual injury were hypothesized to mediate the relationship between combat exposure and hazardous alcohol use. Further, a sequential mediation (combat exposure → MIEs → spiritual injury

→ hazardous alcohol use) was expected. Exploratory analysis examined the influence of gender on the relationship between combat exposure, MIEs, and hazardous alcohol use. As expected, combat exposure, MIEs and spiritual injury were positively correlated with hazardous alcohol use. Results of a mediation analysis revealed that MIEs mediated the combat exposure-hazardous alcohol use relationship. However, spiritual injury did not significantly mediate the combat exposure-hazardous alcohol use relationship. Given the lack of significance as spiritual injury as a mediator, path analysis of the sequential mediation model was not conducted. A follow-up exploratory path analysis revealed that mediated role of MIEs on the combat-hazardous alcohol use relationship significantly differed for men and women, such that the mediation was only significant among men. Results suggest that MIEs and spiritual injury are associated with hazardous alcohol use; however, MIEs may only explain the relationship between combat exposure and hazardous alcohol use for men. These results point to the importance of understanding how links between combat exposure, MIEs, and hazardous alcohol use may be nuanced by gender. Further, these results have implications for screening and trauma treatment among military members and veterans.

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	viii
LIST OF FIGURES	x
 Chapter	
1. INTRODUCTION	1
COMBAT EXPOSURE AND MENTAL HEALTH	2
MORAL AND ETHICAL CHALLENGES IN COMBAT.....	3
DEFINING MORAL INJURY	6
MORALLY INJURIOUS EXPERIENCES	7
MORAL INJURY SYMPTOMS.....	8
SPIRITUAL INJURY AND TRAUMA.....	10
MORAL INJURY AND SPIRITUAL INJURY.....	11
ALCOHOL USE IN THE MILITARY	14
TRAUMA AND ALCOHOL USE.....	15
MORAL INJURY AND ALCOHOL USE.....	19
SPIRITUAL INJURY AND ALCOHOL USE.....	19
PURPOSE OF THE CURRENT STUDY	20
 2. METHOD	 24
PARTICIPANTS	24
PROCEDURE.....	26
OVERVIEW OF MATERIALS	26
POWER ANALYSIS.....	36
HYPOTHESES AND ANALYSIS.....	36
 3. RESULTS	 41
PRELIMINARY ANALYSIS	41
FACTOR ANALYSIS OF MIQ-M	44
CORRELATIONS	47
MODEL SPECIFICATION.....	48
 4. DISCUSSION.....	 66
MORALLY INJURIOUS EXPERIENCES	67
COMBAT EXPOSURE AND MORALLY INJURIOUS EXPERIENCES	68
MORAL INJURY AND HAZARDOUS ALCOHOL USE.....	70
MEDIATING ROLE OF MORAL INJURY	72
ROLE OF GENDER.....	75
SPIRITUAL INJURY AND COMBAT EXPOSURE	78
SPIRITUAL INJURY AND HAZARDOUS ALCOHOL USE.....	79
SPIRITUAL INJURY AND MORAL INJURY.....	81
FUTURE RESEARCH	82

	Page
CLINICAL IMPLICATIONS.....	85
LIMITATIONS.....	88
5. CONCLUSION.....	89
REFERENCES	91
ADDENDICES.....	124
VITA.....	135

LIST OF TABLES

Table	Page
1. Demographic Characteristics of Final Sample.....	25
2. Descriptive Information about Combat Exposure.....	28
3. Descriptive Information about Morally Injurious Experiences.....	32
4. Descriptive Statistics for Study Measures.....	43
5. Gender Differences on Study Variables.....	43
6. Unidimensional Model Factor Loads of the Moral Injury Questionnaire – Military version	46
7. Correlations between Study Variables.....	47
8. Results of Hierarchical Regression Examining the Association between Combat Exposure and Hazardous Alcohol Use Controlling for Gender.....	49
9. Results of Hierarchical Regression Examining the Association between Combat Exposure and Morally Injurious Experiences Controlling for Gender.....	50
10. Results of Hierarchical Regression Examining Associations between Hazardous Alcohol Use and Morally Injurious Experiences Controlling for Gender.....	51
11. Results of Hierarchical Regression Examining Associations between Hazardous Alcohol Use, Combat Exposure, and Morally Injurious Experiences Controlling for Gender.....	52
12. Model Predicting Hazardous Alcohol Use from Combat Exposure and Morally Injurious Experiences Controlling for Gender.....	54
13. Indirect Effects of Combat Exposure on Hazardous Alcohol Use via Morally Injurious Experiences Controlling for Gender.....	54
14. Results of Hierarchical Regression Examining the Associations between Combat Exposure and Spiritual Injury Controlling for Gender.....	55

	Page
15. Results of Hierarchical Regression Examining the Association between Spiritual Injury and Hazardous Alcohol Use Controlling for Gender.....	56
16. Results of Hierarchical Regression Examining Associations between Hazardous Alcohol Use, Combat Exposure, and Spiritual Injury Controlling for Gender.....	57
17. Model Predicting Hazardous Alcohol Use from Combat Exposure and Spiritual Injury Controlling for Gender.....	58
18. Indirect Effects Standardized Path Coefficients for Path Analysis of Relations Between Combat Exposure and Spiritual Injury.....	59
19. Results of Hierarchical Regression Examining Associations between Morally Injurious Experiences and Spiritual Injury Controlling for Gender	60
20. Results of Hierarchical Regression Examining the Associations between Hazardous Alcohol Use, Combat Exposure, Morally Injurious Experiences, and Spiritual Injury Controlling for Gender.....	61
21. Model Predicting Effects of Gender on Hazardous Alcohol Use from Combat Exposure and Morally Injurious Experiences.....	64
22. Indirect Effects Standardized Path Coefficients of the Moderating Effect of Gender on Relations between Combat Exposure, Morally Injurious Experiences, and Hazardous Alcohol Use.....	65

LIST OF FIGURES

Figure	Page
1. Mediation Model of the Relations between Combat Exposure, Morally Injurious Experiences, and Hazardous Alcohol Use.....	38
2. Mediation Model of the Relations between Combat Exposure, Spiritual Injury, and Hazardous Alcohol Use.....	39
3. Double Mediation Model of the Relations between Combat Exposure, Morally Injurious Experiences, Spiritual Injury and Hazardous Alcohol Use.....	40
4. Direct Effects of the Mediation of the Relations between Combat Exposure, Morally Injurious Experiences and Hazardous Alcohol Use.....	53
5. Direct Effects of the Mediation of the Relations between Combat Exposure, Spiritual Injury and Hazardous Alcohol Use.....	58
6. Direct Effects of the Moderated-Mediation of the Relations between Combat Exposure, Morally Injurious Experiences, and Hazardous Alcohol Use among Men.....	62
7. Direct Effects of the Moderated-Mediation of the Relations between Combat Exposure, Morally Injurious Experiences, and Hazardous Alcohol Use among Women.....	63

CHAPTER I

INTRODUCTION

Combat theaters and other deployed scenarios place military service members in complex, precarious situations that routinely result in physical and psychological harm (Hoge & Castro, 2006; Hoge et al., 2004). Beyond physical danger and psychological distress, however, the combat theater presents frequent situations in which morally appropriate behaviors (i.e., actions consistent with rules of engagement) may be in conflict with individuals' moral/ethical belief systems (Grossman, 2009; Maguen et al., 2010a). For example, warriors may have long held the general belief that killing is wrong but engage in sanctioned killing acts after joining the Armed Forces. Such actions may create cognitive dissonance between beliefs about the self and the reality of one's actions. In recent years, investigators have acknowledged the importance of the moral and ethical implications associated with combat and other dangerous or potentially dangerous military missions. In response, the concept of moral injury (MI) has been developed to address the psychospiritual changes associated with experiencing morally-challenging traumatic situations (Litz et al., 2009). The term moral injury is not meant to judge the actions of military personnel. Rather, it is a recognition of the predictable psychospiritual responses exhibited by warriors when their lawful actions conflict with deeply held personal beliefs. When cognitive dissonance that results from moral injury fails to resolve, substance abuse may be one possible outcome (Litz et al., 2009). The purpose of this study is to investigate the relationships between combat exposure, morally injurious experiences (MIEs), spiritual injury, and hazardous alcohol use among active duty personnel, National Guard/Reserves members and veterans.

Combat Exposure and Mental Health

Exposure to violence, killing, and the aftermath of battle (e.g., witnessing dead bodies, dying or injured individuals, destruction of property, emotional distress) can have enduring effects on service members' psychological functioning. Deployment stress and exposure to combat are associated with mental health problems including mood disorders (Breslau, Davis, Peterson, & Schultz, 2000; Hoge et al., 2004; Hotopf et al., 2006), posttraumatic stress disorder (PTSD; Brewin, Andrews, & Valentine, 2000; Hoge, et al., 2004; Ozer, Best, Lipsey, & Weiss, 2003) and alcohol use (Jacobson et al., 2008; Rona et al., 2007; Wilk et al., 2010). Among soldiers and marines deployed to Iraq and Afghanistan, combat exposure was significantly associated with higher rates of mental health problems, particularly PTSD (Hoge et al., 2004). Another study investigating the impact of combat among women veterans found that higher combat exposure was significantly associated with higher rates of alcohol misuse, posttraumatic stress symptoms (PTSS), and depressive symptoms (DSS; Hassija, Jakupcak, Maguen, & Shipherd, 2012). Furthermore, after accounting for the impact of combat, the influence of other types of lifetime traumatic events were no longer significantly associated with alcohol misuse, PTSS, or DSS (Hassija et al., 2012).

Length of deployment is also associated with mental health outcomes. Rona and colleagues (2007) assessed the relationships between duration of deployment, exposure to combat, and severe alcohol problems among U.K. Armed Forces personnel deployed to Iraq. They found nearly 20% of military personnel deployed for 9 to 12 months reported increased alcohol problems after deployment. The association between deployment and alcohol problems was partly accounted for by combat exposure. Several other studies

have also established that the intensity of combat is associated with mental health outcomes in that more intense combat experiences are associated with greater PTSS, DSS, alcohol and other substance use (Hoge & Castro, 2006; Hoge et al., 2004; Hotopf et al., 2006; Iversen et al., 2008; Unwin et al., 1999; Wolfe, Brown, & Kelly, 1993).

Moral and ethical challenges in combat. Combat scenarios, particularly those involving unconventional tactics (e.g., ambiguous civilian threats and improvised explosive device), may expose military personnel to unpredictable and non-contingent violence which may fail to conform to individuals' established beliefs and expectations about warfare (Litz et al., 2009). A field survey of Operation Iraqi Freedom (OIF) soldiers in theater revealed that 27% reported facing ethical situations during deployment in which they did not know how to respond (Mental Health Advisory Team [MHAT-V], 2008). An additional study found 20% of soldiers and Marines deployed to Iraq surveyed endorsed responsibility for the death of a non-combatant (Hoge et al., 2004). Litz et al. (2009) contend that situations faced by current era combatants have increased the ambiguity of the enemy and the likelihood that civilians may be injured or killed. These morally questionable and ethically ambiguous situations may result in greater difficulty for service members to determine the most judicious course of action towards combatants and non-combatants.

According to Litz (2009), moral injury is defined as morally and ethically challenging situations that fail to conform to an individual's moral belief systems (e.g., beliefs about right and wrong as well as personal goodness) or conflict with ethical guidelines or rules of appropriate behavior (e.g., military rules of engagement). In particular, acts of perpetration, including atrocities (i.e., unnecessary, cruel, and abusive

harm to others or lethal violence) and killing, are uniquely morally challenging events that have been found to be significant predictors of mental health outcomes including PTSD, depression, suicidality, dissociation, and functional impairment (Litz et al., 2009). Engaging in acts of killing has deleterious effects on service members and veterans functioning. Specifically, killing during combat is shown to have a significant influence on substance use. Maguen and colleagues (2010a) found that both direct (e.g., intentional or willed killing) and indirect (e.g., perceiving or believing that others were killed as a result of personal actions) killing significantly predicted veterans' post-deployment functioning, even after controlling for combat exposure. Research with OIF veterans has also shown that killing is a significant predictor of alcohol abuse, PTSD, dissociation experiences, functional impairment, and relationship problems, even after controlling for combat exposure (Fontana, Rosenheck, & Brett, 1992; Maguen & Litz, 2012). Further, Fontana and Rosenheck (1999) found that after controlling for killing, other combat experiences, including witnessing atrocities, no longer predicted PTSD symptoms, suggesting that killing a combatant or non-combatant during wartime is a more salient variable in predicting mental health outcomes than other combat experiences such as witnessing the death of an enemy. However, these researchers also acknowledged that other forms of killing, including other sanctioned acts of killing, killing in self-defense, offensive initiatives, counterinsurgencies, and friendly fire (i.e., unintentional, collateral civilian deaths), can have damaging effects of service members. Although killing an enemy or non-combatant appears to have the strongest impact on mental health functioning, witnessing atrocities and their aftereffect, failing to prevent atrocities, and

learning about atrocities in combat, are also associated with PTSD (Fontana et al., 1992; Laufer, Brett, & Gallops, 1985).

Military culture attempts to prepare members to anticipate and react appropriately to the use of violence, killing, and witnessing the effects of war by incorporating moral and ethical trainings into military training (Litz et al., 2009). Although training aids in fostering ideals of strong moral and ethical conduct, some combat situations may deviate from the service members' realm of moral and ethical understanding. Exposure to morally and ethically challenging combat stressors may disrupt service members' compliance with and belief in appropriate rules of engagement. These threats may motivate service members to act in an unnecessarily and inappropriately aggressive manner towards enemy combatants or civilian non-combatants, and subsequently violate rules of engagement. For instance, among soldiers deployed to Iraq, 31% reported insulting or cursing at civilians, 5% reported mistreating civilians, and 11% reported damaging property unnecessarily (Mental Health Advisory Team [MHAT-IV], 2006, 2008). Furthermore, while 45% of a sample of OIF soldiers and Marines assessed in theater believed non-combatants (i.e., local civilians) should be treated with respect, 17% of military members' surveyed believed that non-combatants should be treated as insurgents, that is, enemies (MHAT-IV, 2006). Regardless of the specific type of experience (e.g., witnessing a violent death, engaging in the death of an enemy combatant, unintentionally harming civilians, or ethical ambiguities), combat experiences may have a significant influence on moral and ethical belief systems (Fontana & Rosenheck, 2004).

Defining Moral Injury

Combat experiences are often examined in relation to mental health outcomes; however, limited research has focused on the moral implications of combat. In response to these limitations, the construct of moral injury (MI) was developed to address the psychological, spiritual, behavioral, and social impact of exposure to a morally or ethically challenging situation. MI is conceptualized as a “distinct syndrome of psychological, biological, behavioral, and relational problems” resulting from “perpetrating, failing to prevent, or bearing witness to acts that transgress deeply held moral beliefs and expectations” and “cause dissonance and inner conflict” (Litz et al., 2009). MI develops from violations in an individual’s moral and ethical belief systems. These belief systems are maintained by moral emotions, both self-focused and other-focused, and are predominately driven by expectations of others’ responses to perceived transgression (Litz et al., 2009). How individuals respond to internal conflict resulting from MIEs is suggested to be a key determinant of the development of MI (Litz et al., 2009). When military members are unable to assimilate or accommodate MIEs within existing self- and relational-schemas, they may experience internal conflict in the form of guilt, shame, and anxiety, all of which are characteristic of moral injury (Drescher et al., 2011; Litz et al., 2009; Nash & Litz, 2013; Tangney et al., 2007).

Difficulties making meaning of traumatic experiences, especially those of a moral nature, are shown to be uniquely linked to PTSD and other mental health complaints (Currier, Holland, Chisty, & Allen, 2011). Moral conflict has been shown to create severe peri- or post-event emotional distress which subsequently increases motivation to avoid various cues that serve as reminders of the experience (Litz et al., 2009). Behavioral, cognitive, and emotional responses to unreconciled moral conflict that

manifest as withdrawal and self-condemnation (i.e., blaming oneself) tend to mirror symptoms of re-experiencing, avoidance, and emotional numbing typically associated with PTSD (Litz et al., 2009). However, it should be noted that moral injury is proposed to be inherently distinct from PTSD. Specifically, PTSD is argued to be best understood as a fear and stress response following perceived danger of life threat (Foa, Steketee, & Rothbaum, 1989; Hoge, 2010; Norrholm et al., 2011) whereas moral injury is argued to be the result of deep moral conflict, in which an individual's actions or the actions of trusted individuals are perceived as violations of indisputable codes of conduct or strongly held ethical or spiritual values (Buechner & Jinkerson, 2016).

Morally injurious experiences. Combat situations are suggested to place military personnel at increased risk for experiencing morally injurious experiences (MIEs), which are occurrences that are incongruent and discrepant with fundamental beliefs and assumptions about how the world operates, how an individual or group should be treated, or is at odds with military training and rules of combat engagement (Litz et al., 2009). Litz and colleagues (2009) argued that MIEs are acts of transgression that create dissonance and conflict because they violate assumptions and beliefs about right and wrong and personal goodness. Potentially MIEs have been suggested to include perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations as well as actions that are inhumane, cruel, depraved, or violent that bring about pain, suffering, or death of others (Drescher et al., 2011; Litz et al., 2009). Additionally, subtle actions or experiencing reactions that, upon reflection, transgress a moral code are suggested to be MIEs (Litz et al., 2009). Although MIEs can occur in non-combat situations, such as police shootings, potential MIEs are

frequent in modern combat theaters, thus the possibility of moral injury may be more likely.

Research examining moral and ethical challenges experienced in combat have found that the most common MIEs reported among Vietnam veterans' involved civilian deaths, betrayals, and within-rank violence (Flipse Vargas, Hanson, Kraus, Drescher, & Foy, 2013). In interviews with 23 mental health providers and chaplains who work with veterans, the most common forms of MIEs reported were betrayal (e.g., leadership failures and failure to act in accordance with one's values), incidents involving harm to civilians or their property, within-rank violence (e.g., sexual assault), inability to prevent death and suffering, and ethical dilemmas/moral conflicts (Drescher et al., 2011). Investigators have also found that certain types of MIEs (e.g., betrayal and killing civilians) increase the risk of maladjustment following combat beyond additional exposure across combat eras (Maguen et al., 2009; Maguen et al., 2010a; Maguen et al., 2010b; Maguen et al., 2011).

Moral injury symptoms. Service members who encounter MIEs may eventually experience cognitive dissonance and internal conflict and face the task of reconciling their discomfort and expectations of social condemnation and rejection (Higgins, 1987; Litz et al., 2009). It is this unresolved moral dissonance that theoretically leads to the proposed core symptoms of moral injury, shame, guilt, and anxiety. These core symptoms are in turn the theoretical pathways to self-condemnation, loss of subjective meaning in life, loss of trust in self/others, and interpersonal problems (Currier, Holland, & Malott, 2015; Currier et al., 2015; Drescher et al., 2011; Litz et al., 2009; Nash & Litz, 2013; Shay, 2002). According to Litz and colleagues' (2009) model, self-condemnation

contributes to a host of other problems, including re-experiencing of moral conflicts, avoidance, self-punishment, and self-harm behaviors, including substance abuse.

Regarding theoretical moral injury symptoms, subject matter experts have identified betrayal/loss of trust, self-deprecation (i.e., shame and guilt), social problems, spiritual/existential issues, and psychological symptoms as moral injury symptoms (Bryan, Bryan, Morrow, Etienne, & Ray-Sannerud, 2014; Drescher et al., 2011; Maguen & Litz, 2014; Nash et al., 2013). When the National Vietnam Veterans Readjustment Survey was qualitatively reviewed with these areas in mind, the moral injury domains described most frequently by veterans were loss of trust, social problems, betrayal, spiritual/existential problems, and psychological problems (Conway, 2013; Vargas et al., 2013). Several participants also described shame and guilt (Vargas et al., 2013). Among veterans receiving evidenced-based treatments for PTSD in VA hospitals, killing in combat and failing to save wounded individuals were both associated with traumatic guilt, spiritual crisis, and loss of subjective spiritual meaning (Fontana & Rosenheck, 2004). Guilt, anxiety, depression, and PTSD have also been correlated with suicidal behavior in combat veterans (Hendin & Haas, 1991). Finally, MacNair (2002a, 2002b) found Vietnam veterans who reported killing were more likely to exhibit intrusive thoughts, anger, sleep problem, violent outbursts, social alienation, nightmares, survivors' guilt, hyper-alertness, and substance abuse. Collectively, these studies demonstrate that shame, guilt, loss of trust, spiritual/existential problems, and additional psychiatric symptoms may be understood as authentic moral injury symptoms.

Based upon a review of theoretical and empirical moral injury symptoms, Jinkerson (2016) proposed an updated syndrome definition that is consistent with Litz

and colleagues' (2009) working definition and etiological model. In Jinkerson's (2016) model, moral injury is comprised of several core symptoms which may catalyze or contribute to the development of secondary symptoms, or, the broader constellation of co-morbid symptoms associated with moral injury. Guilt, shame, spiritual/existential conflict (including loss of subjective meaning in life), and loss of trust are identified as core symptoms while psychological problems (i.e., depression, anxiety, re-experiencing, suicidal ideation, and substance abuse) and social problems (e.g., alienation, interpersonal difficulty) are construed as secondary symptoms. As it relates to the current discussion, substance abuse may be understood as a secondary symptom of moral injury.

Spiritual Injury and Trauma

Trauma researchers and clinician have widely agreed that one of the most pervasive difficulties experienced by individuals struggling to cope with trauma is loss of meaning or purpose in life that is often expressed as a weakening of spiritual or religious faith or (Calhoun & Tedeschi, 1999; Decker, 1993; Fontana & Rosenheck, 2004; Janoff-Bulman, 1992; Lifton, 1988). Literature also supports a significant inverse association between strength of spiritual belief/religious faith and severity of trauma-related symptoms (Astin, et al., 1993; Drescher & Foy, 1995; Fontana & Rosenheck, 2004). Specifically, dimensions of spirituality and existential belief systems influence responses to traumatic events as well as influence severity of mental health outcomes (Koenig, 2010). Military combat and other traumatic events may precipitate changes in or loss of spiritual or existential beliefs. An examination of survivors of the 9/11 attacks (Seirmarco et al., 2012) and other traumatic experiences (Falsetti, Resick, & Davis, 2003) revealed that 10% to 16.7%, respectively, of respondents experienced a loss of

spirituality. Spirituality, defined as “a personal search for meaning and purpose in life, which may or may not be related to religion” (Tanyi, 2002), may impact service members and veterans abilities to adjust and function after experiencing stressful deployments and/or combat exposure (Sterner & Jackson-Cherry, 2013).

For many individuals, spiritual and existential beliefs are critical factors in people’s efforts to establish meaning in their lives, particularly in response to stressful experiences. When confronted with stressful events, individuals may appraise these experiences in ways that are either consistent or inconsistent with their larger meaning systems (Park, 2005). If the situational meaning derived from the stressful or traumatic experience (e.g., “My Higher Power has abandoned me and my unit”) is at odds with global meanings (e.g., “Higher Power is omnipotent and benevolent”), significant spiritual injury and distress may result (Harris et al., 2015). According to Berg (2011b), spiritual injury is defined as an individual’s response to an event that damages their relationship with God, self, and others, and alienates them from that which gives meaning to their lives. Injuries of a spiritual nature may manifest as: (a) guilt; (b) anger or resentment, (c) grief or sadness; (d) lack of meaning or purpose; (e) despair or hopelessness; (f) feeling that God/life has been unfair; (g) religious doubts or disbelief; and (h) fear of death. Spiritual injury is suggested to connote a personal, interpersonal, moral, and sacred dimension missing in traditional bio-psycho-social explanations.

Moral injury and spiritual injury. The predominance of religiosity and spirituality in the general U.S. population and in the U.S. military, as well as the links between morality and spirituality (Baumsteiger, Chenneville, & McGuire, 2013), provide compelling support for viewing moral injury from a psycho-spiritual vantage. Although

not every individual has an explicit spiritual identity or will experience moral injury as spiritual distress, researchers have argued that understanding the spiritual perspective is critical to providing necessary clinical attention to potential spiritual or religious needs (Harris et al., 2015). Given the meaning making capacities of spirituality, it is important to consider specific aspects of spiritual functioning with respect to coping with traumatic events (Currier, Drescher, & Harris, 2014).

Potential spiritual consequences of MIEs have been identified as changes in or loss of spiritual or religious beliefs, difficulty forgiving self or others, difficulty trusting self or others, loss of a sense of meaning or purpose, fatalism, difficulties in relationship with a relevant community of faith, and negative changes in attributions about or relationship with Higher Power (Drescher et al., 2011; Nash et al., 2013; Ogden et al., 2011). In order to alleviate distress, individuals may engage in meaning making efforts in order to revise global and/or situational meanings and to resolve experienced discrepancy/distress in the spiritual meaning system (Park, 2005). Both cross-sectional and longitudinal studies have found that individuals who experience spiritual distress report more symptoms of PTSD (Harris et al., 2008; Harris et al., 2012; Ogden et al., 2011). Further, those who abandoned their faith as a result of trauma reported poorer mental health outcomes (Ben-Erza et al., 2010; ter Kuile & Ehring, 2014). Among service members, those who reported killing in combat had more significant mental health sequelae if they also reported experiencing spiritual distress (Harris, Erbes, & Polusny, 2014).

Specific MIEs, such as killing, death of close service unit member, or betrayal by trusted authorities or service unit members, often result in significant spiritual injury

(Currier et al., 2015; Drescher et al., 2011; Litz et al., 2009; Nash et al., 2013). If MIEs challenge the concept of a Higher Power or spiritual worldview, questions about deeply held beliefs can spur continued doubts about values, purpose, meaning, and the worthiness of the Higher Power itself. Serious existential questions about personal faith, vocation, meaning, and worth can also result from MIEs (Currier et al., 2015; Drescher et al., 2011; Fontana & Rosenheck, 2004; Litz et al., 2009; Nash et al., 2013). For 90% of service members who identified as religious, witnessing the death of innocent people or loss of a respected unit member resulted in increased difficulties resolving their concept of Higher Power with the existence of “unfair evil and suffering” (Fontana & Rosenheck, 2004; Harris et al., 2015). Also, these type of difficulties may reflect an individual’s distressing doubts about faith as well as disrupt potentially supportive relationships with one’s beliefs in a Higher Power or a faith-based community (Harris et al., 2008; Odgen et al., 2011).

Although literature with military samples has shown higher levels of spirituality or spiritual well-being is associated with lower rates of negative mental health outcomes, including depression, anxiety, and alcohol and drug use (Hourani et al., 2012; Pargament & Sweeney, 2011), a paucity of literature has examined associations between combat experiences, MIEs, spiritual injury, mental health or substance use. In one of the few studies to address spirituality and mental health among active duty personnel, spirituality had a positive influence on depression and PTSD, that is, higher levels of spirituality were associated with lower levels of depression and PTSD (Hourani et al., 2012). However, associations between spirituality and depression and PTSD did not hold after controlling for levels of combat exposure. Research on combat trauma has documented

the association between several types of spiritual injuries and mental health problems, particularly PTSD, suicidality, and depression, among military members (Berg, 2011a; Kopacz, Hoffmire, Morley, & Vance, 2015; Ogden et al., 2011; Witvlet, Phillipps, Feldman, & Beckham, 2004). Cross-sectional studies have found associations between negative religious/spiritual coping (Ogden et al., 2011; Witvlet et al., 2004), negative concepts of Higher Power (Tran, Kuhn, Walser, & Drescher, 2012), problems with forgiveness (Witvlet et al., 2004), and greater risk for PTSD (Harris et al., 2008).

Alcohol Use in the Military

Excessive alcohol use, particularly in the form of binge and heavy drinking, is a well-known problem among military personnel (Bray et al., 2009; Bray et al., 2010). Alcohol use problems are of considerable concern due to the increased likelihood that service members will experience negative alcohol-related problems (Mattiko, Olmsted, Brown, & Bray, 2011; Stahre, Brewer, Fonseca, & Naimi, 2009). Across samples of veterans of recent conflicts, estimates of alcohol misuse range from 12% to 40%, as defined by meeting cut-off scores of the Alcohol Use Disorders Identification Test (AUDIT) (Bray, Brown, & Williams, 2013; Burnett-Zeigler et al., 2011; Calhoun, Elter, Jones, Kudler, & Straits-Troster, 2008; Kelley et al., 2013). Additionally, problems stemming from excessive alcohol use can compromise the ability of military members to carry out their missions and result in lower readiness and lower total force fitness of the Armed Forces (Jonas et al., 2010).

Military deployments and combat exposure are also associated with increases in alcohol consumption, binge (i.e., drinking on a single occasion ≥ 5 drinks for men or ≥ 4 drinks for women), and heavy drinking (i.e., drinking on a single occasion ≥ 5 drinks for

men or ≥ 4 drinks for women for 5 or more days in the past 30 days) as well as alcohol-related problems (Jacobson et al., 2008; Kelley et al., 2013; Lande, Marin, Chang, & Lande, 2008; Santiago et al., 2010; Spera, 2011). Bray and colleagues (2013) investigated trends in alcohol use among U.S. active duty personnel who served between 1998 and 2008. They found that personnel who experienced high levels of combat exposure reported significantly higher rates of heavy (26.8%) and binge (54.8%) drinking compared to those with little or no combat exposure. Although research supports the link between traumatic experiences, particularly combat-related trauma, and alcohol use, to the author's knowledge no empirical investigation to date has examined the association between moral injury and alcohol use. However, models of the connection between trauma and substance use may further illuminate the relationship between moral injury and alcohol use.

Trauma and alcohol use. Many theories of alcohol use postulate that stress plays an important role in motivating addictive substance abuse (Koob & Le Moal, 1997; Leventhal & Cleary, 1980; Marlatt & Gordon, 1985; Russell & Mehrabian, 1975; Shiffman, 1982; Wills & Shiffman, 1985). In particular, many of these models are based on the longstanding view that individuals use alcohol in an attempt to cope or ameliorate negative emotions and distress (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). The motivational models, stress-coping theory, and tension-reduction models are among the most prominent models for understanding the connection between trauma and alcohol use and are reviewed here.

According to the motivational model of alcohol use, individuals engage in alcohol use to attain personally valued outcomes (i.e., unique motivations) (Cooper,

1994; Cooper, Frone, Russell, & Mudar, 1995; Cox & Klinger, 1988; Willis & Hirky, 1995). Hazardous alcohol use is motivated by different needs, or serves different functions, according to personal patterns of antecedents and consequences (i.e., learning history) (Cooper, 1994; Cutter & O'Farrell, 1984). These motivations are characterized by two underlying dimensions reflecting the reinforcement valence (positive, negative) and the outcome source an individual hopes or expects to achieve (internal, external) (Cooper, 1994; Cooper et al., 1995; Cox & Klinger, 1988, 1990). Across these two dimensions, four classes of motivations have been identified: 1) internally generated, positive reinforcement (i.e., drinking to enhance well-being), 2) externally generated, positive reinforcement (i.e., drinking to obtain positive social rewards), 3) internally generated, negative reinforcement (i.e., drinking to reduce or regulate negative emotions), and 4) externally generated, positive reinforcement (i.e., drinking to avoid social rejection) (Cox & Klinger, 1988, 1990). This model assumes that these four classes of alcohol use behavior, motivated by different needs, constitute phenomenologically distinct functional groups (Cooper, 1994). Investigations into the relationship between motives and alcohol use outcomes have generally shown differential effects between specific motives and alcohol outcomes (Kuntsche, Knibbe, Gmel, & Engels, 2005). In general, using alcohol to cope with negative mood both directly and indirectly predict alcohol use problems (Cadigan, Martens, & Herman, 2015; Najavits & Ramya, 2016; Watkins, Franz, DiLillo, Grantz, & Messman-Moore, 2015). Consistent with the motivational model of alcohol, the stress-coping model (or, self-medication model) of substance use contends that individuals use alcohol and drugs to regulate negative affect/distress, which tends to be a somewhat effective, albeit, maladaptive long-term

coping strategy (Dass-Brailsford & Myrick, 2010; Khantzian, 1985; Wills & Shiffman, 1985). The stress-coping model could be viewed as reflecting an internally generated, negative reinforcement as discussed in the motivational model.

Similar to stress-coping models of substance use, tension reduction models propose that individuals use alcohol to enhance mood and alleviate tension or emotional distress (Cooper et al., 1992; Conger, 1956; Sher & Levenson, 1982). Accordingly, exposure to tension-producing circumstances (i.e., stressors) may contribute to increased alcohol use, as individuals seek relief from stress or tension. Indeed, numerous investigations have demonstrated that social and problem drinkers expect alcohol to relieve tension, anxiety, and stress while promoting relaxation (Critchlow, 1986; Goldman, Brown, & Christiansen, 1987; Greeley & Oei, 1999; Jones, Corbin, & Fromme, 2001; Leigh, 1990). Further, research with mainly college-student samples has demonstrated that alcohol and drug often initially reduce symptoms of PTSD, anxiety, and depression (e.g., Kuntsche et al., 2005; Martens et al., 2008; Park & Levenson, 2002; Stewart & Devine, 2000). Because alcohol is used to relieve stress, there is increased motivation to use alcohol when stressors are present. Although alcohol use may initially temper distress and enhance mood, as the behavior is reinforced and becomes ubiquitous, it is less instrumentally successful (Sinha, 2001). Furthermore, relying on alcohol to cope often results in declining adaptive coping and increased psychological dependence (Cooper, 1994; Cooper, Russell, & George, 1988).

In regards to military members, stressors associated with military service (e.g., frequent deployments, combat exposure, and operational pressures) can significantly impact service members by increasing stress and negative mood states, which contribute

to substance misuse risk. Indeed, military deployments and combat exposure have been correlated with increase substance use in service members (Bray, Brown, & Lane, 2013; Bray et al., 2010; Burnett-Zeigler et al., 2011; Clarke-Walper, Riviere, & Wilk, 2013; Institute of Medicine, 2012), with those with multiple deployments being at greater risk for substance use problems (Browne et al., 2008; Hooper et al., 2008; Kelley et al., 2013; Kelley et al., 2015; Maguen et al., 2010a; Wilk et al., 2010). In addition, degree of combat exposure has been shown to impact hazardous alcohol use as those with greater combat exposure report significantly higher rates of heavy (26.8%) and binge (54.8%) drinking (Bray et al., 2013). Military personnel may also be motivated to use alcohol to cope with daily operational stressors associated with service. Over time, individuals who attempt to regulate negative emotions by using alcohol may be at an increased risk for alcohol problems (Cooper, Frone, Russell, & Mudar, 1995).

Mood disorders, such as anxiety and depression, have also been associated with hazardous alcohol use among civilians (Bolton, Robinson, & Sareen, 2009) and among those exposed to combat (Prigerson, Maciejewski, & Rosenheck, 2002; Shipherd, Stafford, & Tanner, 2005). Further, while rates vary, studies have shown that among U.S. Veterans of OEF/OIF, anywhere from 4 to 22 percent have PTSD (Milliken, Auchterlonie, & Hoge, 20097; Richardson, Frueh, & Acierno, 2010; Seal et al., 2007; Vasterling et al., 2006). For some service members, substances may be used not only as a way to cope with normal stressors but with traumatic stress symptoms, such as hyperarousal or numbing/detachment. In particular, researchers believe that alcohol is used to provide relief from the psychological and physiological symptoms of warzone trauma (Al'Absi, 2007; Dixon et al., 2009; Hoge et al., 2004; Jacobsen, Southwick, &

Kosten, 2001; Schumm & Chard, 2012). This argument is consistent with Cox and Klinger's (1988) contention that some individuals may drink to reduce or regulate negative emotions. Further, some support has been demonstrated for the self-medication model of substance use among veterans (Kelley et al., 2013, 2015; Shipherd, Stafford, & Tanner, 2005).

Moral injury and alcohol use. While ample research has examined the influence of combat on alcohol use, no empirical investigation to date has examined the relationship between MIEs and alcohol use among military personnel and veterans. However, given what we know about combat exposure and combat-related PTSD and hazardous alcohol use, and drug use, the researcher proposes that MIEs and moral injury may be associated with substance use. As discussed above, higher levels of combat experiences are associated with higher reports of alcohol use (Browne et al., 2008; Hooper et al., 2008; Kelley et al., 2013; Maguen et al., 2010a; Wilk et al., 2010). MIEs are also linked to a host of primary symptoms such as guilt, shame, spiritual/existential conflict, and loss of trust. Further, MIEs may be associated with secondary problems including depression, anxiety, and substance use. The researcher believes a complex relationship may exist between combat exposure, MIEs, and substance use and hypothesized that the association between combat exposure and alcohol use will be reduced or attenuated among those with greater MIEs.

Spiritual injury and alcohol use. A long history of research has shown that religious beliefs and spirituality are inversely associated with alcohol use and alcohol-related problems (Gorsuch, 1995; Humphries & Gifford, 2006; Koenig, McCollough, & Larson, 2001; Miller, 1998). However, little research has examined the association

between spiritual injury and hazardous alcohol use. Spiritual injury, which is an individual's response to an event that damages their relationship with God, self, and others, and alienates them from what gives meaning to their lives (Berg, 2011b), often manifests as guilt, anger/resentment, lack of meaning of purpose, despair/hopelessness, and religious doubts or disbeliefs (Berg, 2011b). Research has supported the association between spiritual distress and mental health problems such as PTSD and depression (Ben-Erza et al., 2010; Harris et al., 2008; Harris et al., 2012; Ogden et al., 2011). Experiences of spiritual distress are also thought to increased alcohol-related problems (Gorsuch, 1995). Given the established inverse relationship between levels of spirituality and alcohol use, it is believed that the association between combat experiences and alcohol use would be mediated by spiritual injury.

Purpose of the Current Study

Combat theaters and other deployed scenarios place military service members in complex, precarious situations that routinely result in physical and psychological harm (Hoge & Castro, 2006; Hoge et al., 2004). Stressors associated with deployments and combat have been linked to greater alcohol use in military members, in which greater combat exposure was associated with higher levels of binge and heavy drinking (Bray et al., 2013). In recent years, investigators have acknowledged the importance of the moral and ethical implications associated with combat and other dangerous or potentially dangerous military missions. As such, the concept of moral injury was developed to address the psychospiritual changes associated with experiencing morally-challenging traumatic situations (Litz et al., 2009). Although empirical investigations of moral injury

are burgeoning, no research could be found examining the relationship between moral injury and hazardous alcohol use.

There are three main purposes of the current study. The primary aim of the study was to help elucidate our knowledge of the relationship between combat exposure, MIEs, spiritual injury, and hazardous alcohol use among previously deployed active duty personnel, National Guard/Reserves (NG/R), and veterans. Second, prior to hypothesis testing, a factor analysis was conducted to confirm the factor structure of the Moral Injury Questionnaire – Military Version (MIQ-M; Currier et al., 2015). The rationale for conducting the factor analysis is that the MIQ-M is a new instrument that assesses a range of potential MIEs including: “Things I saw/experienced in the war left me feeling betrayed or let-down by military/political leaders”, “I saw/was involved in the death(s) of an innocent of war”, “I saw/was involved in violence that was out of proportion to the event.” Although the authors of the MIQ-M report the MIQ-M is a single factor construct and item scores can be summed to create a total score that reflects overall MIEs, as noted, the MIQ-M is a new instrument that assesses a wide range of items from feeling betrayed by military leaders to having killed or caused the death of another person. For this reason, a confirmatory factor analysis was conducted to ensure the single factor structure of the MIQ-M prior to hypothesis testing. The third aim of the study was to conduct an exploratory analysis into possible gender differences in the relationship between combat exposure, MIEs, spiritual injury, and hazardous alcohol use.

Combat exposure and hazardous alcohol use. It was hypothesized that combat exposure would be associated with hazardous alcohol use such that more combat exposure would be positively correlated with higher levels of hazardous alcohol use.

Combat exposure and morally injurious experiences. It was hypothesized that combat exposure would be associated with MIEs such that more combat exposure would be positively correlated with more MIEs.

Moral injurious experiences and hazardous alcohol use. It was hypothesized that MIEs would be associated with hazardous alcohol use in that more MIEs would be positively correlated with more hazardous alcohol use.

Combat exposure, morally injurious experiences, and hazardous alcohol use. It was hypothesized that MIEs would partially mediate the relationship between combat experiences and hazardous alcohol use, such that MIEs would account for a significant portion of the variance in the relationship between combat exposure and hazardous alcohol use.

Combat exposure and spiritual injury. It was hypothesized that combat exposure would be associated with spiritual injury in that more combat exposure would be associated with greater spiritual injury.

Spiritual injury and hazardous alcohol use. It was hypothesized that spiritual injury would be associated with hazardous alcohol use in that higher spiritual injury would be associated with higher levels of hazardous alcohol use.

Combat exposure, spiritual injury, and hazardous alcohol use. It was hypothesized that spiritual injury would partially mediate the relationship between combat exposure and hazardous alcohol use. That is, the association between combat exposure and hazardous alcohol use would be reduced among those who report higher spiritual injury.

Moral injurious experiences and spiritual injury. It is hypothesized that MIEs will be associated with spiritual injury in that more MIEs will be associated with higher spiritual injury.

Combat exposure, morally injurious experiences, spiritual injury, and hazardous alcohol use. No previous studies have examined whether MIEs and spiritual injury may mediate the association between combat exposure and hazardous alcohol use. The present study examines whether MIEs and spiritual injury are potential sequential mediators of the association between combat exposure and hazardous alcohol use among active duty personnel, NG/R, and veterans. I hypothesize that the association between combat exposure and hazardous alcohol use would be partially mediated by MIEs and spiritual injury, such that more combat experiences would relate to more MIEs. In turn, more MIEs would be related to higher spiritual injury, which would relate to higher hazardous alcohol use. Further, both higher MIEs and higher spiritual injury would reduce the association between combat exposure and hazardous alcohol use.

Exploratory examination. Additionally, no previous research has examined MIEs and spiritual injury as a function of gender. For this reason, an exploratory multi-group comparison was conducted to determine if model fit is similar for male and female veterans. Given the lack of previous research from which to develop gender-specific hypotheses, fit statistics were compared for women versus men; however, no specific hypotheses were made with respect to gender.

CHAPTER II

METHOD

Participants

This study included 380 (260 men, 120 women) active duty, National Guard/Reserve (NG/R), and veterans who have experienced at least one warzone deployment of three months or more. Previous research has included these distinct categories of military personnel with no indication of significant differences (Vogt, Samper, King, King, & Martin, 2008). Participants were recruited several ways including the Department of Psychology research pool at the participating university, university-wide announcements, listsites for veterans, active duty, and NG/R members, and at a state-wide conference for student veterans. MIEs are connected with warzone deployments. For this reason, data were examined from military members/NG/R/veterans who reported they had experienced as least one warzone deployment of three or more months. Majority of participants were veterans (67.1%), Navy affiliated (46.6%), and Caucasian (68.7%). The mean age was 35.29 ($SD = 9.58$). Demographics from current investigation are congruent with national demographics of active duty personnel and National Guard/Reserves. Per 2014 reports, women comprise 15.1% of active duty personnel and 18.8% National Guard/Reserve (Office of Deputy Assistance Secretary of Defense, 2014). Additionally, racial/ethnic minorities comprise less than a third of active duty personnel and a quarter of National Guard/Reserves personnel (Office of Deputy Assistance Secretary of Defense, 2014). Approval from the Institutional Review Board at the participating university was granted prior to data collection. All APA guidelines for the ethical treatment of subjects were followed (see

Appendix A for the information sheet given to all participants before the study). For more descriptive information, please see Tables 1.

Table 1

Demographic Characteristics of Final Sample (N = 380)

Variable	N	%
<i>Gender</i>		
Male	260	68.4%
Female	120	31.6%
<i>Ethnicity</i>		
Caucasian	261	68.7%
African-American	41	10.8%
Hispanic	21	5.5%
Asian	14	3.7%
Native American	5	1.3%
Multiracial	32	8.4%
Other	6	1.6%
<i>Marital Status</i>		
Single	97	25.5%
Married	210	55.3%
Divorced	48	12.7%
Separated	11	2.9%
Cohabiting	14	3.7%
<i>Military Status</i>		
Veteran	255	67.1%
National Guard/Reservists	57	15%
Active Duty	68	17.9%
<i>Military Branch</i>		
Navy	177	46.6%
Army	89	23.4%
Marines	43	11.3%
Air Force	38	10%
Reserves	19	5%
National Guard	12	3.2%
Coast Guard	2	0.5%

Note. Reserves includes Army, Air Force, Navy, National Guard, and Marines

Procedure

After opening the online survey, participants were given a notification statement informing them of their rights as participants and contact information of the researchers. Participants were informed in the notification statement that they could skip questions with no penalties. Participants could either receive research credit in a psychology course or be entered into a raffle for the chance to win one of twenty \$20 gift cards. Data were collected online and the survey took approximately 15 minutes to complete. At the end of the semester all non-student participants and student participants who indicated that they would like to be placed in the raffle (and did not receive research credit) were randomly chosen by an algorithm in R (R Development Core Team, 2008) that was run by an individual not associated with the study. Therefore, raffle winners were chosen completely at random and sent \$20 Amazon gift cards.

Measures

Overview of survey measures. Data analyzed for this study were part of a larger survey of military experiences that focused on pre, peri-, and post-military trauma. For this study, data were analyzed on combat exposure, MIEs, spiritual injury, and alcohol use. Additionally, participants completed demographic questions and were provided a study debriefing. Lastly, they were provided an informational page that provided resources for sexual trauma, depression, anxiety, and substance use. A number of the resources provided were for veterans or active duty members specifically. For descriptive information on the variables used in this study, please see Tables 4 and 5

Combat exposure scale. The Combat Exposure Scale (CES; Keane et al., 1989; see Appendix B) is a 7-item measure specifically designed to assess wartime stressors

experienced by veterans (i.e., “Were you ever under military fire?”, “Did you ever go on combat patrols or have other very dangerous duty?”, “How often did you fire rounds at the enemy?”). Answers to most of questions are scored on a 5-point scale (0 = *no*, to 4 = *51 times or more*). One question (“What percentage of the individuals in your unit were killed (KIA), wounded, or missing in action (MIA)?”) is scored on a 5-point scale (0 = *none*, to 4 = *76% or more*). The total score ranges from 0 to 41 and was calculated by summing weighted scores (Keane et al., 1989). For descriptive information on participants responding, see Table 2.

Moderate internal consistency has been found ($\alpha = .88$ for men and $.80$ for women in a sample in which 60% of respondents were VA users; Kelley et al., 2013; $\alpha = .79$ in a sample of female veterans from a community sample; Scott et al., 2013; and $.85$ in a sample of Vietnam-era veterans; Keane et al., 1989). Test-retest reliability with a 1-week interval of $.97$ was found in a sample of 39 Vietnam-theater veterans (Keane et al., 1989). In a sample of 62 Vietnam veterans (30 with PTSD, 32 with no psychiatric history), the CES was moderately correlated with the Mississippi Scale for Combat-Related PTSD (M-PTSD; Keane, Caddell, & Taylor, 1988; Keane et al., 1989). Specifically, the CES and M-PTSD were correlated $.43$ in those with no psychiatric history group however the corresponding correlation for the PTSD group did not reach statistical significance (Keane et al., 1989). Additionally, a significant between-group mean difference was found between groups in that those with PTSD reported greater amount of combat exposure compared to those with no psychiatric history, $t(60) = 2.98$; $p < .005$. The Cronbach alpha for this study was $.84$, which is similar to Kelley et al. (2013).

Table 2

Descriptive Information about Combat Exposure

Combat Exposure Scale	Men				Women			
	<i>n</i>	%	<i>M</i>	<i>SD</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>
Did you ever go on combat patrols or have other dangerous duty?	201	77.6%	3.00	1.48	58	22.4%	1.88	1.18
Were you ever under enemy fire?	133	77.1%	2.09	1.28	28	22.9%	1.35	0.70
Were you ever surrounded by the enemy?	67	70.6%	1.48	0.96	23	29.4%	1.33	0.80
How often did you fire rounds at the enemy?	94	76.6%	1.79	1.27	13	23.4%	1.18	0.56
How often did you see someone hit by incoming or outgoing rounds?	97	75.3%	1.62	0.94	13	24.7%	1.15	0.46
How often were you in danger of being injured or killed (e.g., pinned down, overrun, ambushed, near miss, etc.)?	148	75.4%	2.18	1.33	39	24.6%	1.54	0.92
What percentage of the individuals in your unit were killed (KIA), wounded, or missing in action (MIA)?	132	71.8%	1.55	0.58	37	28.2%	1.33	0.48

Note. Percent and *n* are given for people who endorsed combat exposure. Combat Exposure Scale response scales: Items 1: 1 = “no”, 2 = “1-3x”, 3 = “4-12x”, 4 = “13-50x”, 5 = “51+ times”; Item 2: 1 = “never”, 2 = “<1 month”, 3 = “1-3 months”, 4 = “4-6 months”, 5 = “7 mos or more”; Item 3: 1 = “no”, 2 = “1-2x”, 3 = “3-12x”, 4 = “13-25x”, 5 = “26+ times”; Item 4: 1 = “none”, 2 = “1-25%”, 3 = “26-50%”, 4 = “51-75%”, 5 = “76% or more”; Item 5, 6, & 7: 1 = “never”, 2 = “1-2x”, 3 = “3-12x”, 4 = “13-50%”, 5 = “51 or more”.

Moral injury questionnaire – military version. The Moral Injury Questionnaire – Military Version (MIQ-M; Currier et al., 2015; see Appendix C) is a 20-item measure developed as a screening instrument for assessing levels of possible MIEs in military populations. In an effort to capture a full range of stressors, items address the different domains of MIEs suggested by Drescher et al. (2011). Categories of MIEs comprise the following: (a) acts of betrayal (i.e., by peers, leadership, civilians, or self; “Things I saw/experiences in the war left me feeling betrayed or let-down by military/political leaders.”; 3 items); (b) acts of disproportionate violence inflicted on others (“I saw/was involved in violence that was out of proportion to the event”; 5 items); (c) incidents involving death or harm to civilians (“I saw/was involved in the death(s) of an innocent in the war”; 4 items); (d) violence within military ranks (“I was sexually assaulted”; 2 items); (e) inability to prevent death or suffering (“I feel guilt over failing to save the life of someone in the war.”; 2 items); and (f) ethical dilemmas/moral conflicts (“I had to make decisions in the war at times when I didn’t know the right things to do”; 4 items). Content items could be categorized as causes (e.g., I saw/was involved in the death(s) of an innocent in war) or effects (e.g., I feel guilty for surviving when others didn’t) of MIEs. Six MIQ-M items are regarded as effect indicators (items 1, 7, 9, 15, 18, and 20) and 14 items are regarded as causal indicators (items 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 16, 17, and 19). Participants are instructed to endorse the frequency with which they had experienced the MIEs within the context of their war-zone deployment(s). Response codes are scored on a 4-point Likert scale ranging from 1 (*Never*) to 4 (*Often*). In keeping with other stressor-specific measures, the MIQ-M is suggested to provide a unidimensional assessment of exposure to MIEs and results for this study provide

additional support to the unidimensional structure of the MIQ-M. For descriptive information on participants responding, see table 3.

Although the MIQ-M is a new instrument, Currier et al. (2015) examined the psychometric properties of the MIQ-M in community samples and service-connected veterans. To examine the factor structure of the MIQ-E, they conducted a confirmatory factor analysis in a community sample of 131 Iraq and/or Afghanistan veterans and a clinical sample of 82 returning veterans. In both samples, a significant unidimensional structure was revealed, in community ($\chi^2(74) = 146.24, p < .001$) and clinical samples ($\chi^2(72) = 75.97, p = .35$). CFIs were .83 and .90 and RMSEAs were .07 and .04, in the community and clinical samples, respectively. Although the MIQ-M appears to represent a single factor construct, given the newness of the scale, a confirmatory factor analyses was conducted prior to including conducting model testing.

Tests of construct validity and clinical utility were conducted using a series of independent samples *t*-tests which showed that veterans with PTSD endorsed significantly higher levels of exposure to and feelings about MIEs, $ps < .001$ (Currier et al., 2015). MIQ-M scores were associated with greater general combat exposure ($r = .63$), poorer work/social adjustment ($r = .42$), more severe PTSD ($r = .65$) and depressive symptoms ($r = .39$), all $ps < .001$. Four multivariate analyses were conducted in which outcomes (e.g., combat exposure, work/social adjustment, PTSD, and depressive symptoms) were each regressed onto veterans' demographics, military background, general combat exposure, and levels of MIEs. Each of the overall models were found to be statistically significant with R^2 ranging from .14 to .48, $F(8, 122) = 2.38$ to 14.16, all $ps < .05$. More specifically, MIQ-M scores were uniquely associated with impairments in

work and social functioning ($B = 1.35, SE = .33, p < .001$), suicide risk ($B = .22, SE = .11, p < .05$), posttraumatic stress symptoms ($B = .90, SE = .13, p < .001$), and depressive symptoms ($B = .46, SE = .10, p < .001$). The Cronbach alpha for this study was .91.

Table 3

Descriptive Information about Morally Injurious Experiences

Moral Injury Questionnaire – Military Version	Men				Women			
	<i>n</i>	%	<i>M</i>	<i>SD</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>
1. Things I saw/experienced in war left me feeling betrayed or let-down by military/ political leaders	141	54.2%	2.03	1.11	55	45.8%	1.92	1.13
2. I did things in the war that betrayed my personal values	74	28.4%	1.46	0.84	30	25.0%	1.37	0.71
3. There were times in the war that I saw/ engaged in revenge/ retribution for things that happened.	41	15.7%	1.23	0.61	13	10.8%	1.20	0.64
4. I had an encounter(s) with the enemy that made him/her seem more “human” and made my job more difficult	67	25.7%	1.41	0.79	28	23.3%	1.45	0.91
5. I saw/was involved in violations of rules of engagement	29	11.2%	1.16	0.52	13	10.8%	1.18	0.56
6. I saw/ was involved in the death(s) of an innocent in the war	44	16.9%	1.23	0.56	10	8.3%	1.12	0.41
7. I feel guilt over failing to save the life of someone in war	53	20.4%	1.38	0.85	15	12.5%	1.19	0.58
8. I had to make decisions in the war at times when I didn’t know the right thing to do	87	33.5%	1.48	0.77	20	16.7%	1.26	0.63
9. I feel guilt for surviving when others didn’t	73	28.1%	1.56	1.00	18	15.0%	1.27	0.70
10. I saw/ was involved in violence that was out or proportion to the event	41	15.7%	1.25	0.63	6	5.0%	1.09	0.43
11. I saw/ was involved in the death(s) of children	39	15.0%	1.23	0.62	9	7.5%	1.10	0.40
12. I experienced tragic warzone events that were chaotic and beyond my control	96	36.9%	1.63	0.95	19	15.8%	1.25	0.66
13. I was sexually assaulted	4	1.5%	1.02	0.16	19	15.8%	1.22	0.57
14. I sometimes treated civilian more harshly than was necessary	48	18.5%	1.28	0.67	13	10.8%	1.16	0.49
15. I felt betrayed or let-down by trusted civilians during the war	66	25.4%	1.38	0.44	17	14.2%	1.19	0.52
16. I saw/ was involved in a “friendly-fire” incident	23	8.8%	1.12	0.43	4	3.3%	1.06	0.35
17. I destroyed civilian property unnecessarily during the war	28	10.8%	1.13	0.42	3	2.5%	1.05	0.34
18. Seeing so much death has changed me	79	30.4%	1.59	1.01	23	19.2%	1.31	0.73
19. I made mistakes in the warzone that led to injury or death	21	8.1%	1.11	0.41	5	4.2%	1.04	0.21
20. I came to realize during the war that I enjoyed violence	48	18.5%	1.29	0.69	4	3.3%	1.06	0.35

Note. Percent and *n* are given for people who endorsed exposure to morally injurious experiences. MIQ-M response scale: 1 = “never”, 2 = “seldom”, 3 = “sometimes”, 4 = “often”.

Spiritual injury scale. The Spiritual Injury Scale (SIS; Berg, 1994; see Appendix D) is an 8-item measure of attitudes and affects related to the degree of subjective spiritual discomfort or “injury” people may experience. The following spiritual injuries are assessed: (a) guilt (“How often do you feel guilty over past behaviors?”); (b) anger or resentment (“Does anger or resentment block your peace of mind?”); (c) grief or sadness (“How often do you feel sad or experience grief?”; “How often do you feel despair or hopeless?”); (d) lack of meaning or purpose in life (“Do you feel that life has no meaning or purpose?”); (e) feeling that God/life has been unfair (“Do you feel that God/Life has treated you unfairly?”); (f) religious doubt or disbelief (“Do you worry about your doubt/disbelief in God?”) and (g) fear of death (“How often do you think about death?”). Items are scored using a 4-point Likert scale ranging from 1 (*Never*) to 4 (*Very Often*). Concerns were raised over the content similarity between the SIS and other mental health concerns, particularly depression. Given these concerns, only items 6 and item 7 from the SIS scale, which explicitly address beliefs towards and relationship with God were examined.

Analyses conducted with a sample of 101 male veterans receiving outpatient services in substance abuse program demonstrated good internal consistency $\alpha = .79$ (Lawson, Drebing, Berg, Jones, & Penk, 1998). Of note, one item (“How often do you think about death?”) was found to have lower internal consistency and correlated poorly with other SIS items ($r = .17$). After this item was removed, Cronbach’s alpha increased to .81. Split-half correlation was found to be .81. In this study, the Cronbach’s alpha for the total SIS was .87; for items 6 and 7 Cronbach’s alpha was .60. Additionally, the SIS showed a moderate correlation with the MMPI-2 Depression scale ($r = .33$) and with

Psychasthenia scale ($r = .39$; Butcher, Butcher, Tellegen, Graham, & Graham, 1989). In a study of 1207 male veterans, researchers investigated the relationship between past experiences of child abuse (sexual, physical, or emotional) and spiritual injury (SIS scores; Lawson, Drebing, Berg, Vinvellette, & Walter, 1998). The type of abuse experienced was found to be significantly related to SIS scores in that more “severe” forms of sexual and physical violence victimization were associated with higher SIS scores. Multiple regression analyses were conducted to examine the contribution of different types of abuse to SIS scores. Results demonstrated an R^2 of .25, explaining only 6% of the variance. SIS scores have also been found to be correlated with PTSS ($r = .56$), as measured by the Watson Posttraumatic Stress Disorder Interview (Watson, Juba, Manifold, Kucala, & Anderson, 1991), and depressive symptoms ($r = .70$), as measured by the Zung Self-Rated Depression Scale (Zung, 1965), respectively, among 94 Vietnam combat veterans (Berg, 2011a).

Alcohol use disorder identification test. The Alcohol Use Disorder Identification Test (AUDIT; Saunders et al., 1993; see Appendix E) is a 10-item measure used to identify persons with hazardous and harmful patterns of alcohol consumption. It evaluates the amount and frequency of alcohol use, impairment in controlling drinking, and alcohol consequences (e.g., alcohol-related injury) in the previous 12 months. AUDIT items assess (a) alcohol consumption (items 1-3); (b) drinking behaviors (items 4-6); (c) adverse reactions (items 7, 8); and alcohol-related problems (items 9, 10). A sample item is: “How often do you have six or more drinks on one occasion?” Most AUDIT items have response options corresponding to the nature of the specific question, but all of these response options range from 0 – 4, with higher scores indicating more

problematic alcohol use. Two AUDIT items (e.g., “Have you or someone else been injured because of your drinking?”; “Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?”) have response options including “No” (scored 0); “Yes, but not in the last year” (scored 2); and “Yes, during the last year” (scored 4). A total score of 8 or higher is suggested to indicate “hazardous and harmful alcohol use, as well as possible alcohol dependence” (Barbor, Biddle-Higgins, Saunders, & Monteiro, 2001).

Considerable evidence of reliability and validity has accumulated through numerous studies of the AUDIT (Maisto, Conigliaro, McNeil, Kraemer, & Kelley, 2000). Cross national investigation of the reliability and validity of the AUDIT yielded an overall Cronbach alpha of .93 (Saunders et al., 1993). Results from several countries (e.g., Australia, Bulgaria, Kenya, Norway, and USA) were compared and little variation between countries resulting in Cronbach’s alphas ranging from .80 to .98 (Saunders et al., 1993). The Cronbach alpha for this study was .85. AUDIT scores were also compared to an external reference group of known alcoholics. Results indicate that 99% of individuals with an alcohol use disorder had an overall AUDIT score of 8 or more (Saunders et al., 1993). In a sample of 441 male veterans, an AUDIT cut-off value of 8 or higher yielded a sensitivity of .71 and specificity of .85 (Bradley et al., 1998). Kendall’s Tau-b correlations between baseline AUDIT scores and the same measure administered 3 months later for dimensions of consumption ranged from .65 to .85, among veterans who indicated they had not changed their drinking. AUDIT consumption questions had a Guyatt responsiveness statistic of 1.04 for detecting change of 7 drinks/week which suggests changes in AUDIT scores have excellent responsiveness to

change in actual alcohol use. Furthermore, AUDIT scores are highly correlated with other measures of alcohol use. For instance, Bohn, Barbor, and Kranzler (1995) demonstrated a significant correlation, $r = .88$, between the Michigan Alcoholism Screening Test (Skinner, 1979) and AUDIT scores (Bohn et al., 1995). Rigmaiden and colleagues (1995) compared AUDIT scores with the CAGE questionnaire (e.g., “Cut down on drinking”, “Annoyed you by criticizing your drinking”, “Guilty about your drinking”, and “Eye opener about your drinking”) in ambulatory care patients and found 88% who scored positive on the CAGE were identified as exceeding the AUDIT cut-off score of 8 indicating possible problematic alcohol use.

Power Analysis

As the estimation method used for this study was Maximum Likelihood (ML) the N:q rule was used as the best estimate as to the necessary power of this study (Kline, 2011). According to Kline (2011) the best estimate for power in path analysis is 20:1 that is a sample size of at least 20 for each parameter. In this study there are eight parameters, therefore, 20 X 7 would be a sample size of at least 140 participants. A total final sample of 380 participants completed the full survey.

Hypotheses and Analyses

Combat exposure and hazardous alcohol use. It was hypothesized that combat exposure in active duty, National Guard/Reserves, and veteran would be associated with hazardous alcohol use. Due to continuous nature of combat exposure and AUDIT scores, a Pearson’s r correlation was used to analyze this hypothesis.

Combat exposure and morally injurious experiences. It was hypothesized that combat exposure would be associated with exposure to MIEs. A Pearson's r correlation was run to test this relationship.

Moral injurious experiences and hazardous alcohol use. Hypothesis 3 states that exposure to MIEs would be associated with hazardous alcohol use. To test this hypothesis, a Pearson's r correlation was conducted.

Combat exposure, morally injurious experiences, and hazardous alcohol use. It was hypothesized that MIES would partially mediate the relationship between combat exposure and hazardous alcohol use (see Figure 1). To test this prediction, a hierarchical linear regression was first conducted to analyze the relationship between combat exposure, MIEs, and hazardous alcohol use. Next, a path analysis was used in MPlus (Muthén & Muthén, 2012) to examine the indirect (mediated) effects of MIEs on the relationship between combat exposure and hazardous alcohol use. Furthermore, in order to test the significance of the indirect (mediated) effects, results of a bootstrapping procedure, shown to be one of the most powerful tests of indirect effects (Preacher et al., 2007; Shrout & Bolger, 2002), were conducted. The significance of the indirect effect is confirmed if the respective 95% bias-corrected confidence interval (based on 10,000 bootstrapped sample) does not contain zero.

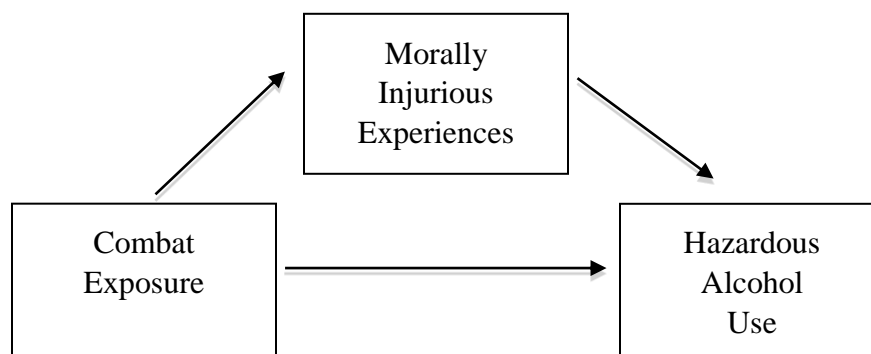


Figure 1. Mediation model of the relations between combat exposure, MIEs, and hazardous alcohol use

Combat exposure and spiritual injury. It was hypothesized that combat exposure would be associated with spiritual injury. To test this hypothesis, a Pearson's r correlation was conducted and it was expected that a significant positive correlation will be found.

Spiritual injury and hazardous alcohol use. It was hypothesized that spiritual injury would be associated with hazardous alcohol use. A Pearson's r correlation was conducted and a significant positive correlation was anticipated. Thus, it was expected that respondents who report higher spiritual injury would also report higher alcohol use.

Combat exposure, spiritual injury, and hazardous alcohol use. It was predicted that spiritual injury would partially mediate the relationship between combat exposure and hazardous alcohol use, such that the association between combat exposure and hazardous alcohol use would be partially mediated by spiritual injury, with higher levels of spiritual injury in part accounting for the association between combat exposure and hazardous alcohol use (see Figure 2). To test this hypothesis, first, a hierarchical linear regression was conducted to examine the relationship between combat exposure, spiritual injury, and hazardous alcohol use. Next, a path analysis was used in MPlus

(Muthén & Muthén, 2012) to examine the indirect (mediated) effects of spiritual injury on the relationship between combat exposure and hazardous alcohol use. Furthermore, in order to test the significance of the indirect (mediated) effects, the bootstrapping procedure was used.

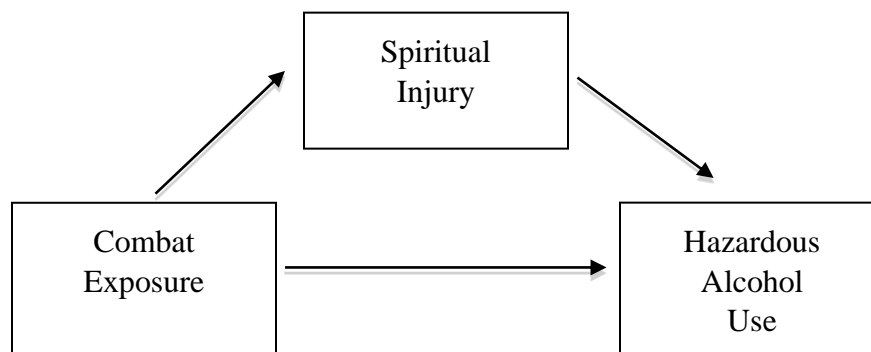


Figure 2. Mediation model of the relations between combat exposure, spiritual injury, and hazardous alcohol use.

Moral injurious experiences and spiritual injury. It was hypothesized that MIEs would be associated with spiritual injury. To test this hypothesis, a Pearson's r correlation was conducted. A significant positive correlation was expected to be found.

Combat exposure, morally injurious experiences, spiritual injury, and hazardous alcohol use. MIEs and spiritual injury were hypothesized to be mediators of the association between combat exposure and hazardous alcohol use (see Figure 3). It was expected that the association between combat exposure and hazardous alcohol use would be partially mediated by MIEs and spiritual injury, such that more combat exposure would relate to more MIEs. In turn, more MIEs would be related to higher spiritual injury, which would relate to higher hazardous alcohol use. To test this hypothesis, first a hierarchical linear regression was conducted. This was completed in order to fulfill requirements of medication (Kenny, 2016) by determine that a significant relationship was present between causal variable (i.e., combat exposure), mediation

variables (i.e., MIEs and spiritual injury) and the outcome variable (i.e., hazardous alcohol use). Next, a path analysis was also conducted using MPlus (Muthén & Muthén, 2012).

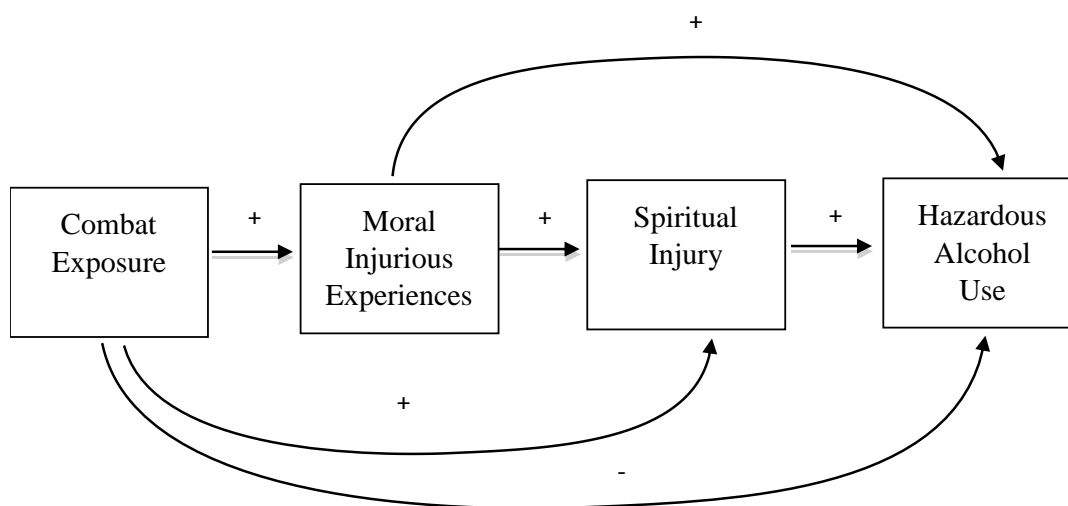


Figure 3. Sequential mediation model of the relations between combat exposure, MIEs, spiritual injury, and hazardous alcohol use.

Gender difference in moral injury, spiritual injury, and alcohol use. Although no existing research has examined MIQ-M in female military members, a multi-group path analysis was conducted to determine whether the model fits equally well for men versus women. Given the lack of available literature on moral and spiritual injury in female military members, no gender-specific hypotheses regarding model fit were made.

CHAPTER III

RESULTS

Preliminary Analyses

Data were first examined for missing values, outliers, skewness, and kurtosis. Although 570 individuals responded to the study notice, the final sample was composed of 380 respondents who had experienced at least one military deployment. Although the study was advertised for military members who had been or were currently in the military, or National Guard/Reserves, there were four demographics questions designed to verify that individuals were or had been in the military. The first was “What is your current military status?” Of the total 570 who responded to the survey, 52 participants did not endorse any previous or current military service and 133 did not endorse any deployment experience. Data from these participants were deleted. In addition, two participants responded “not applicable” when asked, “What is/was your job in the military?”. These same two participants also left blank, “How many years were you/have you been in the military?”, and “In what year did you join the military”, therefore, data from these two participants were removed as their responses indicate they had never been in the military. Therefore, the final sample was 380.

Composite scores were then created for combat exposure, MIEs, and hazardous alcohol use by creating summed item scores. For spiritual injury, scores for items 6 (“Do you feel that God/Life has treated you unfairly?”) and 7 (“Do you worry about your doubts/disbeliefs in God?”) were summed to create a composite score that reflected the participant’s relationship/belief in God. Next, for each of the continuous variables

univariate outliers were assessed via boxplots. For the MIEs composite measure, there was one score that was more than three standard deviations above the mean. The MIEs score for this participant was Winsorized (Cox, 2006) from 70 to 59, which was one higher than the highest score (i.e., 58). On the alcohol use composite, there were five outliers that were more than three standard deviations above the mean. The scores for these participants were Winsorized (Cox, 2006) from 26, 26, 26, 27, and 30 to 25, 26, 27, 28, and 29, which was one higher than the highest score (i.e., 24). There were no outliers on the combat exposure or spiritual injury composite measure.

Prior to a decision on how to address missing data, data were inspected for missingness. Missing data were found on the Alcohol Use Disorder Identification Test (AUDIT) scores and the Moral Injury Questionnaire – Military version (MIQ-M). For the AUDIT, missing data accounted for 1.5% of total responses. For the MIQ-M scores, missing data accounted for 0.3% of total responses. As recommended by Schlomer, Bauman, and Card (2010), Little's (1998) test was conducted to determine if the data were missing completely at random (MCAR). Results indicated data were MCAR, thus, missing data were addressed through maximum likelihood estimation. After assessing for missingness, skewness and kurtosis were examined for all variables via the skewness and kurtosis option in the SPSS descriptive variable section (SPSS Inc., 2009). All variables were below 20.00 for kurtosis (Mardia, 1974) indicating they were not kurtotic. When checking for skewness, all variables were below 3.0. Descriptive statistics for all study variables are presented in Table 4.

Table 4

Descriptive Statistics for Study Measures

Measure	<i>M</i> (<i>SD</i>)	Range [Min, Max]*	Skewness (<i>SE</i>)	Kurtosis (<i>SE</i>)
CES	8.90 (8.85)	35 [0, 35]	0.99 (.13)	0.11 (.25)
MIQ-M	26.15 (8.48)	39 [20, 59]	1.91 (.13)	3.29 (.25)
SIS	2.83 (1.30)	6 [2, 8]	1.86 (.13)	3.41 (.25)
AUDIT	5.66 (5.61)	29 [0, 29]	1.77 (.13)	3.18 (.25)

Note. N = 380; * Range [Min/Max] represents the range of scores for study participants; CES = Combat Exposure Scale; MIQ-M = Moral Injury Questionnaire – Military version; SIS = Spiritual Injury Scale (items 6 “Does you feel that God/life has treated you unfairly?” & item 7 “Do you worry about your doubts/disbelief in God?”); AUDIT = Alcohol Use Disorder Identification Test.

Prior to hypothesis testing, a series of analyses were completed to assess whether demographic variables were significantly related to any variables of interest. A series of independent samples *t*-tests were conducted to determine whether there were significant gender differences for the variables of interest (see Table 5). Men reported significantly higher combat exposure, MIES, and hazardous alcohol use than women. Therefore, gender was included as a covariate in the correlations and hierarchical regressions.

Table 5

Gender Differences on Study Variables

	Men		Women		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Combat Exposure	10.79	9.33	4.80	5.96	6.45***
Morally Injurious Experiences	26.92	8.87	24.46	7.31	2.65**
Spiritual Injury	2.81	1.27	2.89	1.37	-0.52
Hazardous Alcohol Use	6.59	6.08	3.64	3.72	4.91***

Note. N = 380; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Spiritual Injury = Spiritual Injury Scale (items 6 “Does you feel that God/life has treated you unfairly?” & item 7 “Do you worry about your doubts/disbelief in God?”); Hazardous Alcohol Use = Alcohol Use Disorder Identification Test.

** $p < .01$, *** $p < .001$.

Using a univariate ANOVA, ethnicity, which was dummy coded (Caucasian = 0, $n = 261$; Other ethnicities = 1, $n = 119$; see Table 1 for a breakdown of ethnicities) was not significantly associated with combat exposure scores, moral injurious experiences scores, spiritual injury scores, and alcohol use scores. Results of additional ANOVAs revealed that the variables of interest did not differ by military status (coded as: Veteran = 0, $n = 255$; Other military status = 1, $n = 125$; see Table 1 for breakdown of current military status).

Factor Validity of Moral Injury Questionnaire – Military Version

To verify the factor validity of the MIQ-M, a confirmatory factor analysis was conducted. Because items were measured on an ordinal scale, factors were extracted using weighted least squares with mean and variance adjustment (WLSMV; Muthén, 1984; Muthén, 1993; Muthén & Satorra, 1995). A confirmatory factor analysis was conducted because of the unidimensional factor structure previously identified by Currier et al. (2015). The unidimensional model yielded reasonable fit to the data, $\chi^2(170) = 717.29$, $p < .001$; Root Mean Square Error of Approximation (RMSEA) = 0.09, 90% Confidence Interval (CI) = 0.08–0.99; Standardized Root Mean Square Residual (SRMR) = 0.05; Comparative Fit Index (CFI) = 0.83 (see Table 6 for item factor loadings). The item “I was sexually assaulted” did not significantly load onto the one-dimensional model. For this reason and for conceptual reasons (i.e., military sexual trauma may not constitute a MIE), the item assessing sexual assault was removed and the confirmatory factor analyses was conducted again. After dropping the item, the CFA fit indices were comparable, $\chi^2(171) = 719.92$, $p < .001$; RMSEA = 0.09, 90% CI = 0.08–0.99; SRMR = 0.06; CFI = 0.84. However, given the lack of conceptual justification for including

sexual assault in the moral injury scale and that the factor loading for sexual assault was poor (.09), a decision was made to delete the sexual assault item from the final MIQ-M. As shown in Table 6, all of the retained items loaded at .30 or higher suggesting acceptable factor loadings. Further, the fit indices indicate acceptable (CFI & TLI; Hu & Bentler, 1999) or mediocre fit (RMSEA; MacCallum, Browne, & Sugawara, 1996), respectively. The Cronbach alpha for this study was .91.

Table 6

Unidimensional Model Factor Loadings of the Moral Injury Questionnaire – Military version

Item	<u>Initial CFA</u>	<u>Final CFA</u>
	Loading	Loading
(1) Things I saw/experienced in the war left me feeling betrayed or let-down by military/political leaders	.53	.53
(2) I did things in the war that betrayed my personal values	.59	.59
(3) There were times in the war that I saw/engaged in revenge/retribution for things that happened	.63	.63
(4) I had an encounter(s) with the enemy that made him/her seem more 'human' and made my job more difficult	.52	.52
(5) I saw/was involved in violations of rules of engagement	.53	.53
(6) I saw/was involved in the death(s) of an innocent in the war	.57	.57
(7) I feel guilt over failing to save the life of someone in the war	.73	.73
(8) I had to make decisions in the war at times when I didn't know the right thing to do	.71	.71
(9) I feel guilt for surviving when others didn't	.76	.76
(10) I saw/was involved in violence that was out of proportion to the event	.71	.71
(11) I saw/was involved in the death(s) of children	.70	.70
(12) I experienced tragic war-zone events that were chaotic and beyond my control	.80	.80
(13) I was sexually assaulted	.09	--
(14) I sometimes treated civilians more harshly than was necessary	.58	.58
(15) I felt betrayed or let-down by trusted civilians during the war	.65	.65
(16) I saw/was involved in a 'friendly-fire' incident	.39	.39
(17) I destroyed civilian property unnecessarily during the war	.60	.60
(18) Seeing so much death has changed me	.80	.77
(19) I made mistakes in the war zone that led to injury or death	.51	.51
(20) I came to realize during the war that I enjoyed violence	.57	.57

Note. Item 13 (i.e., "I was sexually assaulted") from the Moral Injury Questionnaire – Military Version scale deleted.

Correlations

Pearson product-moment correlations were conducted in order to observe the relationships between the continuous variables of interest. Intercorrelations between study variables are presented in Table 7. As expected, combat exposure scores were positively and significantly correlated with MIEs scores, spiritual injury scores, and hazardous alcohol use scores. In addition, MIEs scores were positively and significantly correlated with spiritual injury scores and hazardous alcohol use scores. Finally, spiritual injury scores were found to be significantly positively associated with hazardous alcohol use scores.

Table 7

Correlations between Study Variables

Measure	1	2	3	4
<i>Men</i>				
Combat Exposure	--			
Morally Injurious Experiences	.72**	--		
Spiritual Injury	.22**	.40**	--	
Hazardous Alcohol Use	.21**	.30**	.23**	--
<i>Women</i>				
Combat Exposure	--			
Morally Injurious Experiences	.81**	--		
Spiritual Injury	.15	.23**	--	
Hazardous Alcohol Use	-.01	-.01	.16	--

Note. N = 380; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Spiritual Injury = Spiritual Injury Scale (items 6 “Does you feel that God/life has treated you unfairly?” & item 7 “Do you worry about your doubts/disbelief in God?”); Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

** $p < .01$.

Model Specification

Path analyses were conducted in Mplus Version 7 (Muthén & Muthén, 2012) to examine the effects combat exposure scores on hazardous alcohol use scores, and whether MIEs scores and spiritual injury scores mediated the association between combat exposure and alcohol use. For reference, mediation occurs when a third variable that links a cause and an effect (“why” and “how” the independent variable [IV] predicts the dependent variable [DV]) (Kenny, 2016).

Hypothesis 1. Hypothesis 1, which stated that exposure to combat and alcohol use would significantly relate to reports of hazardous alcohol use, was assessed via a Pearson’s r correlation and linear regression. The Pearson’s r correlation between combat exposure scores and hazardous alcohol use scores was significant, $r = 0.24$, $p = .01$. That is, higher combat exposure scores, as determined by the overall score on the Combat Exposure Scale, were associated with higher hazardous alcohol use scores, as determined by the overall score on the AUDIT. Because gender was associated with the dependent variable (i.e., hazardous alcohol use), the relationship between combat exposure scores and hazardous alcohol use scores were further assessed via linear regression after controlling for gender. That is, the significance between combat exposure and hazardous alcohol use was examined after removing the influence of gender. As expected, combat exposure scores were positively and significantly associated with hazardous alcohol use scores, $\beta = 0.19$, $t(376) = 3.59$, $p = .001$, partial $r^2 = .033$ after adjusting for gender (see Table 8 for complete results).

Table 8

Results of Hierarchical Regression Examining the Association between Combat Exposure and Hazardous Alcohol Use Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.09	0.03***
Gender	-2.25	0.62	-0.19	.001***		
Combat Exposure	0.12	0.03	0.19	.001***		

Note. N = 380; Combat Exposure = Combat Exposure Scale; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

*** $p < .001$.

Hypothesis 2. The second hypothesis explored the potential association between combat exposure and MIEs. Combat exposure scores were significantly correlated with moral injurious experiences scores, $r = 0.73$, $p = .01$. That is, higher combat exposure scores were associated with greater exposure to MIEs, as determined by the overall score on the MIQ-M. To further explore this relationship, a hierarchical linear regression was conducted in which MIES scores were regressed onto combat exposure scores and gender was controlled for across all variables. Consistent with hypotheses, combat exposure scores were positively associated with MIEs scores, $\beta = 0.76$, $t(376) = 20.82$, $p = .001$, partial $r^2 = .534$ after controlling for gender (see Table 9).

Table 9

Results of Hierarchical Regression Examining the Association between Combat Exposure and Morally Injurious Experiences Controlling for Gender

Morally Injurious Experiences	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.02	0.02**
Gender	-2.46	0.92	-0.13	.001***		
<i>Step 2</i>					0.54	0.53***
Gender	1.92	0.66	0.11	.004**		
Combat Exposure	0.73	0.03	0.76	.001***		

Note. N = 380; Combat Exposure = Combat Exposure Scale scores; Morally Injurious Experiences = Moral Injury Questionnaire – Military version scores; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

p* < .01, *p* < .001.

Hypothesis 3. Hypothesis 3, which stated that MIEs would be significantly related to hazardous alcohol use, was assessed via a Pearson's *r* correlation and hierarchical linear regression. MIEs scores were significantly correlated with hazardous alcohol use scores, $r = 0.27$, $p = .01$, such that, higher rates of MIEs were associated with significantly greater reports of hazardous alcohol use. The relationship between MIEs and hazardous alcohol use was further assessed via linear regression. Hazardous alcohol use scores were regressed on MIEs scores controlling for gender. As predicted, MIEs scores were positively and significantly associated with hazardous alcohol use scores, $\beta = 0.24$, $t(376) = 5.01$, $p = .001$, partial $r^2 = .062$ after controlling for gender (see Table 10).

Table 10

Results of Hierarchical Regression Examining Associations between Hazardous Alcohol Use and Morally Injurious Experiences Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.12	0.06***
Gender	-2.55	0.58	-0.21	.001***		
Morally Injurious Experiences	0.16	0.03	0.24	.001***		

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).
*** $p < .001$.

Hypothesis 4. Hypothesis 4 examined whether MIEs mediated the association between combat exposure and hazardous alcohol use. First, the relationship between combat exposure scores, MIEs scores and hazardous alcohol use scores were assessed via linear regression. Hazardous alcohol use scores were regressed on combat exposure scores, MIEs scores, and gender. Gender was controlled for across all variables. Consistent with the hypothesis, MIEs scores were positively associated with hazardous alcohol use scores, $\beta = 0.25$, $t(375) = 3.43$, $p = .001$, partial $r^2 = .030$ after controlling for gender (see Table 11).

Table 11

Results of Hierarchical Regression Examining Associations between Hazardous Alcohol Use, Combat Exposure, and Morally Injurious Experiences Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.09	0.03***
Gender	-2.25	0.62	-0.18	.001***		
Combat Exposure	0.12	0.03	0.18	.001***		
<i>Step 3</i>					0.12	0.03***
Gender	-2.56	0.62	-0.21	.001***		
Combat Exposure	-0.01	0.04	-0.00	.979		
Morally Injurious Experiences	0.16	0.04	0.25	.001***		

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

*** $p < .001$.

In order to ascertain whether MIEs mediate the relationship between combat exposure and hazardous alcohol use, a path analysis was conducted utilizing Mplus Version 7.0 (Muthén & Muthén, 2012). In this model, the number of free parameters exactly equaled the number of known values (i.e., just-identified model). As a result, model fit could not be estimated (Kline, 2012). One covariate, gender, was included in the model.

Direct Effects. A series of significant direct effect pathways were detected within this model (see Table 12 for complete results; see Figure 7 for graphical representation). Of note, MIEs scores were significantly and positively related to hazardous alcohol use scores, $\beta = 0.25$, $SE = 0.07$, $p = .002$. Combat exposure scores, however, were not significantly related to hazardous alcohol use scores, $\beta = -0.00$, $SE = 0.07$, $p = .979$.

Indirect Effects. In order to assess Hypothesis 4, indirect effects were tested using bootstrapped standard errors. Results indicated that MIEs scores mediated the relationship between combat exposure scores and hazardous alcohol use scores, $\beta = 0.19$ $SE = 0.06, p = .001, 95\% CI [.07, 0.31]$. Results provided support for Hypothesis 4 (see Table 13).

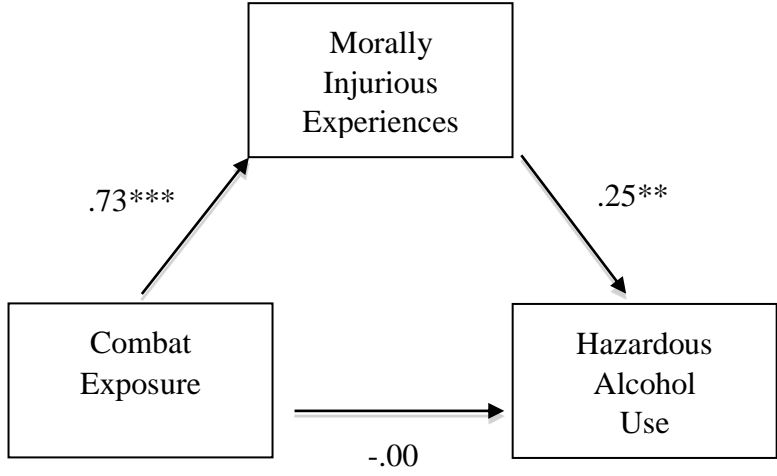


Figure 4. Direct effects of the mediation of the relations between combat exposure, morally injurious experiences, and alcohol use. Standardized path coefficients are shown.

Table 12

Model Predicting Hazardous Alcohol Use from Combat Exposure and Morally Injurious Experiences Controlling for Gender

Regression and Predictors	β	SE	t	p
<i>Hazardous Alcohol Use R² = .119</i>				
Combat Exposure	-0.00	0.07	-0.02	.979
Morally Injurious Experiences	0.25	0.04	3.13	.002**
Gender	-0.21	0.11	-4.93	.001***
<i>Morally Injurious Experiences R² = .543</i>				
Combat Exposure	0.73	0.05	14.01	.001***
Gender	1.92	0.60	3.22	.001***
<i>Combat Exposure R² = .099</i>				
Gender	-5.99	0.79	-7.56	.001***

Note. N = 380; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Hazardous Alcohol Use = Alcohol Use Identification Test; Gender was dummy coded (0 = men, 1 = women)
***p < .001.

Table 13

Indirect Effect of Combat Exposure on Hazardous Alcohol Use via Morally Injurious Experiences Controlling for Gender

Hazardous Alcohol Use	β	SE	t	p	CI
Total Effect	0.19	0.06	3.08	.002***	[0.04, 0.20]
Total Indirect	0.19	0.06	3.09	.002***	[0.05, 0.20]
Direct Effect	-0.01	0.07	-0.02	.979	[-0.09, 0.09]
Specific Indirect Effects					
Morally Injurious Experiences	0.18	0.06	3.09	.002**	[0.05, 0.20]

Note. N = 380; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version).

p < .01, *p < .001.

Hypothesis 5. Hypothesis 5, which stated that combat exposure would significantly relate to spiritual injury, was assessed via Pearson's r correlation and linear regression. Combat exposure scores were significantly positively correlated with spiritual injury scores, $r = 0.18$, $p = .01$. That is, higher rates of combat exposure were associated with higher levels of spiritual injury (as determined by the summed score of

items 6 and 7 of the Spiritual Injury Scale (SIS)). The relationship between combat exposure scores and spiritual injury scores were further assessed via linear regression. Spiritual injury scores were regressed on combat exposure scores controlling for gender. As predicted, spiritual injury scores were positively and significantly associated with combat exposure scores, $\beta = 0.21$, $t(376) = 4.02$, $p = .001$, partial $r^2 = .041$ after controlling for gender (see Table 14 for complete results).

Table 14

Results of Hierarchical Regression Examining the Association between Combat Exposure and Spiritual Injury Controlling for Gender

Spiritual Injury	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	R^2	ΔR^2
<i>Step 1</i>					0.01	0.01
Gender	0.08	0.14	0.03	.598		
<i>Step 2</i>					0.04	0.04***
Gender	0.27	0.15	0.09	.076		
Combat Exposure	0.03	0.01	0.21	.001***		

Note. N = 380; Combat Exposure = Combat Exposure Scale; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

*** $p < .001$.

Hypothesis 6. Hypothesis 6 examined the relationship between spiritual injury and hazardous alcohol use via Pearson's r correlation and linear regression. Spiritual injury scores were significantly and positively correlated to hazardous alcohol use scores, $r = 0.15$, $p = .01$, such that higher levels of spiritual injury were associated with more hazardous alcohol use. The relationship between hazardous alcohol use and spiritual injury was further assessed via linear regression. Spiritual injury scores were regressed on hazardous alcohol use scores and gender was controlled for across all variables. As predicted, spiritual injury scores were positively and significantly associated with

hazardous alcohol use scores, $\beta = 0.16$, $t(376) = 3.34$, $p = .001$, partial $r^2 = .028$ after controlling for gender (see Table 15 for complete results).

Table 15

Results of Hierarchical Regression Examining the Association between Spiritual Injury and Hazardous Alcohol Use Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	R^2	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.08	0.03***
Gender	-3.01	0.59	-0.25	.001***		
Spiritual Injury	0.71	0.21	0.16	.001***		

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

*** $p < .001$.

Hypothesis 7. Hypothesis 7 sought to determine whether spiritual injury mediates the relationship between combat exposure and hazardous alcohol use. First, the relationship between combat exposure, spiritual injury, and hazardous alcohol use scores were assessed via regression. Hazardous alcohol use scores were regressed on combat exposure scores and spiritual injury scores after controlling for gender. Consistent with the hypothesis, spiritual injury scores were positively associated with hazardous alcohol use scores, $\beta = 0.13$ $t(374) = 2.70$, $p = .007$, partial $r^2 = .019$ after controlling for gender (see Table 16).

Table 16

Results of the Hierarchical Regression Examining Associations between Hazardous Alcohol Use, Combat Exposure, and Spiritual Injury Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.09	0.03***
Gender	-2.25	0.62	-0.19	.001***		
Combat Exposure	0.12	0.03	0.18	.001***		
<i>Step 3</i>					0.11	0.02**
Gender	-2.40	0.62	-0.19	.001***		
Combat Exposure	-0.10	0.03	0.15	.003**		
Spiritual Injury	0.58	0.21	0.13	.007**		

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Combat Exposure = Combat Exposure Scale; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

p* < .01, *p* < .001.

To further ascertain whether spiritual injury scores mediate the relationship between combat exposure scores and hazardous alcohol use, a path analysis was conducted utilizing Mplus Version 7.0 (Muthén & Muthén, 2012). In this model, the number of free parameters exactly equaled the number of known values (i.e., just-identified model); thus, model fit estimates were not calculated (Kline, 2012). One covariate, gender, was included across all variables in the model.

Direct Effects. A series of significant direct effect pathways were detected within this model (see Table 17 for complete results; see Figure 5 for graphical representation). Of note, spiritual injury scores demonstrated a significant positive relationship with hazardous alcohol use scores ($\beta = 0.13$, $SE = 0.06$, $p = .035$). Combat exposure scores also demonstrated a significant positive relationship with hazardous alcohol use scores ($\beta = 0.16$, $SE = 0.06$, $p = .013$).

Indirect Effects. In order to assess Hypothesis 7, indirect effects were tested using bootstrapped standard errors. Results indicated that spiritual injury scores did not mediate the relationship between combat exposure scores and hazardous alcohol use scores, $\beta = 0.03$ $SE = 0.01$, $p = .057$, 95% CI [0.00, 0.04]. Results did not provide support for the hypothesis that spiritual injury was a mediator of the relationship between combat exposure and hazardous alcohol use (see Table 18).

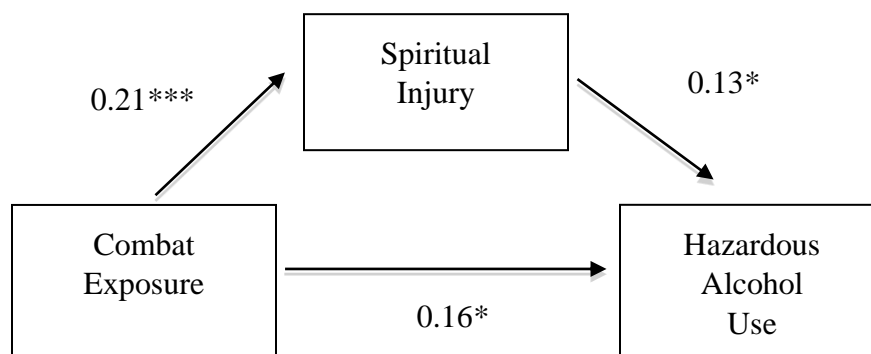


Figure 5. Direct effect of the mediation of the relations between combat exposure, spiritual injury, and alcohol use. Standardized path coefficients are shown.

Table 17

Model Predicting Hazardous Alcohol Use from Combat Exposure and Spiritual Injury Controlling for Gender

Hazardous Alcohol Use	β	SE	t	p
<i>Hazardous Alcohol Use $R^2 = .108$</i>				
Combat Exposure	0.16	0.06	2.11	.013*
Spiritual Injury	0.13	0.06	2.48	.035*
Gender	-0.19	0.04	-4.53	.001***
<i>Spiritual Injury $R^2 = .042$</i>				
Combat Exposure	0.21	0.06	3.57	.001***
Gender	0.09	0.05	1.76	.001***
<i>Combat Exposure $R^2 = .099$</i>				
Gender	-0.31	0.03	-8.11	.001***

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Combat Exposure = Combat Exposure Scale; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120); Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

* $p < .05$, *** $p < .001$.

Table 18

Indirect Effect Standardized Path Coefficients for Path Analysis of Relations between Combat and Spiritual Injury

Hazardous Alcohol Use	β	SE	t	p	95% CI
Total Effect	0.13	0.06	2.11	.035*	[0.04, 0.20]
Total Indirect	0.03	0.02	1.90	.057	[0.00, 0.04]
Direct Effect	0.16	0.06	2.48	.013*	[0.02, 0.18]
Specific Indirect Effects					
Spiritual Injury	0.03	0.01	1.90	.057	[0.00, 0.04]

Note. N = 380; Combat Exposure = Combat Exposure Scale; Spiritual Injury = Spiritual Injury Scale.

* $p < .05$

Hypothesis 8. Hypothesis 8, which stated that MIEs would significantly and positively relate to spiritual injury, was assessed via Pearson's r correlation and linear regression. MIEs scores were significantly positively correlated with spiritual injury scores, $r = 0.35$, $p = .01$, such that higher levels of MIEs were associated with greater spiritual injury. The relationship between moral injurious experiences and spiritual injury was further assessed via linear regression. Spiritual injury scores were regressed on MIEs scores and gender was controlled for across all variables. As predicted, spiritual injury scores were positively and significantly associated with MIEs scores, $\beta = 0.37$, $t(376) = 7.53$, $p = .001$, partial $r^2 = .130$ after controlling for gender (see Table 19 for complete results).

Table 19

Results of the Hierarchical Regression Examining Associations between Morally Injurious Experiences and Spiritual Injury Controlling for Gender

Spiritual Injury	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.01	0.01
Gender	0.08	0.14	0.02	.598		
<i>Step 2</i>					0.13	0.13***
Gender	0.22	0.13	0.07	.116		
Moral Injurious Experiences	0.06	0.01	0.37	.001***		

Note. N = 380; Spiritual Injury = Spiritual Injury Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120); Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

*** $p < .001$.

Hypothesis 9. Hypothesis 9 examined whether MIEs and spiritual injury mediate the relationship between combat exposure and hazardous alcohol use. First, the relationship between combat exposure, MIEs, spiritual injury, and hazardous alcohol use was assessed via regression. Hazardous alcohol use scores were regressed on combat exposure scores, MIEs scores, and spiritual injury scores. Gender was controlled for across all variables. MIEs scores were positively associated with hazardous alcohol use scores, $\beta = 0.20$ $t(374) = 2.71$, $p = .007$, partial $r^2 = .019$, however, both combat exposure scores and spiritual injury scores were not significantly associated with hazardous alcohol use scores (see Table 20 for complete results). Due to the nonsignificant findings regarding the path between spiritual injury and hazardous alcohol use within the previous regression analysis, the overall sequential mediation was not conducted.

Table 20

Results of Hierarchical Regression Examining the Associations between Hazardous Alcohol Use, Combat Exposure, Morally Injurious Experiences, and Spiritual Injury Controlling for Gender

Hazardous Alcohol Use	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²	ΔR^2
<i>Step 1</i>					0.06	0.06***
Gender	-2.95	0.60	-0.24	.001***		
<i>Step 2</i>					0.09	0.03***
Gender	-2.25	0.62	-0.18	.001***		
Combat Exposure	0.12	0.03	0.18	.001***		
<i>Step 3</i>					0.12	0.03***
Gender	-2.56	0.62	-0.21	.001***		
Combat Exposure	-0.00	0.04	-0.00	.979		
Spiritual Injury	0.16	0.04	0.24	.001***		
<i>Step 4</i>					0.12	0.01
Gender	-2.61	0.62	-0.21	.001***		
Combat Exposure	0.01	0.04	0.01	.890		
Morally Injurious Experience	0.14	0.05	0.20	.007**		
Spiritual Injury	0.38	0.22	0.08	.088		

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military version; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120); Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

p* < .01, *p* < .001.

Hypothesis 10. Hypothesis 10 examined whether gender moderated these associations. In other words, whether relationships differed as a function of gender. To ascertain whether gender served as a moderator of the mediated relationship between combat exposure, MIEs, and hazardous alcohol use, moderated mediation analyses were conducted utilizing Mplus Version 7.0 (Muthén & Muthén, 2012). In this model, the number of free parameters exactly equaled the number of known values (i.e., just-identified model); thus, model fit estimates were not calculated (Kline, 2012).

Direct effects. A series of significant direct effect pathways were detected within this model (see Table 21 for complete results; see Figure 6 and 7 for graphical representations). Of note, among men, MIEs scores demonstrated a positive relationship with hazardous alcohol use scores ($\beta = 0.31$, $SE = 0.08$, $p = .001$). However, among women, MIEs scores were not significantly related with hazardous alcohol use ($\beta = 0.03$, $SE = 0.21$, $p = 0.883$).

Indirect effects. In order to assess Hypothesis 10, indirect effects were tested using bootstrapped standard errors. Among men, the results indicated that gender did significantly moderate the relationship between combat exposure scores, MIEs scores, and hazardous alcohol use scores, $\beta = 0.21$ $SE = 0.06$, $p = .001$, 95% CI [0.09, 0.33] (see Table 22). Among women, MIEs did not significantly mediate the relationship between combat exposure and hazardous alcohol use, $\beta = 0.02$ $SE = 0.19$, $p = .896$, 95% CI [-0.33, 0.34]. The results of a nested chi-square test that compared the model for men and women revealed that model fit significantly differed as a function of gender, $\chi^2 = 17.68$, $p < .001$.

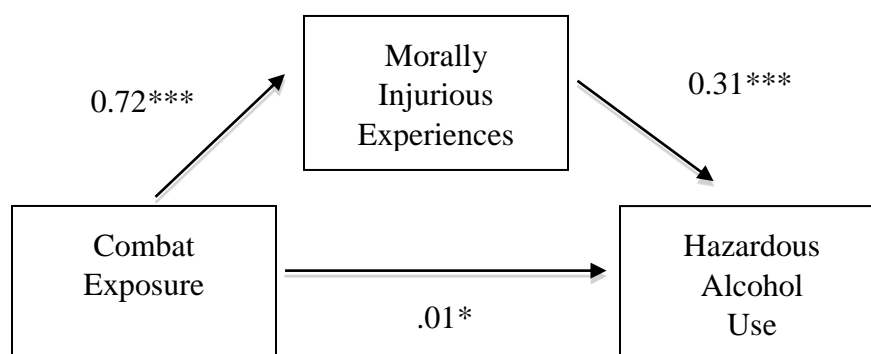


Figure 6. Direct effects of moderated-medication of the relations between combat exposure, morally injurious experiences, and hazardous alcohol use among men. Standardized path coefficients shown.

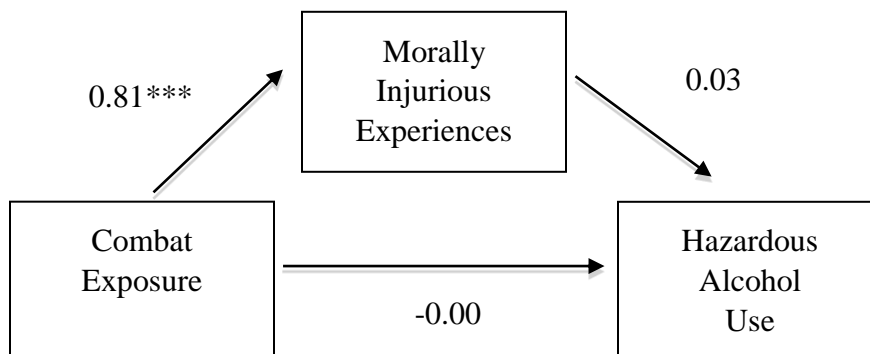


Figure 7. Direct effect of moderated-mediation of the relations between combat exposure, morally injurious experiences, and hazardous alcohol use among women. Standardized path coefficients shown.

Table 21

Model Predicting Effects of Gender on Hazardous Alcohol Use from Combat Exposure and Morally Injurious Experiences

Regression and Predictors	Men					Women				
	β	<i>SE</i>	<i>t</i>	<i>p</i>	R^2	β	<i>SE</i>	<i>t</i>	<i>p</i>	R^2
<i>Hazardous Alcohol Use</i>					0.09					0.00
Combat Exposure	-0.01	0.06	2.11	.013*		-0.00	0.21	-0.00	.996	
Morally Injurious Experiences	0.31	0.08	3.52	.001***		0.03	0.21	0.14	.883	
<i>Morally Injurious Experiences</i>					0.51					0.66
Combat Exposure	0.72	0.03	20.66	.001***		0.81	0.02	28.77	.001***	

Note. N = 380; Hazardous Alcohol Use = Alcohol Use Disorder Identification Test; Combat Exposure = Combat Exposure Scale; Spiritual Injury = Spiritual Injury Scale; Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120); Gender was dummy coded (Male = 0, n = 260; Female = 1, n = 120).

* $p < .05$, *** $p < .001$.

Table 22

Indirect Effect Standardized Path Coefficients of the Moderating Effect of Gender on Relations between Combat, Morally Injurious Experiences, and Hazardous Alcohol Use

Hazardous Alcohol Use	Men					Women				
	β	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	β	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Total Effect	0.21	0.07	2.25	.001***	[0.08,0.34]	0.02	0.20	0.12	.906	[-0.36, 0.43]
Total Indirect	0.22	0.07	3.43	.001***	[0.10, 0.36]	0.03	0.20	0.13	.896	[-0.33, 0.42]
Direct Effect	-0.01	0.08	-0.17	.865	[-0.18, 0.15]	-0.00	0.22	-0.01	.996	[-0.44, 0.42]
Specific Indirect Effect										
Morally Injurious Experiences	0.22	0.06	3.43	.001***	[0.09, 0.35]	0.02	0.19	0.13	.896	[-0.33, 0.42]

Note. N = 380; Combat Exposure = Combat Exposure Scale; Morally Injurious Experiences = Moral Injury Questionnaire – Military Version.

*** $p < .001$.

PART IV

DISCUSSION

The present study sought to (1) investigate the relationship between combat exposure, MIEs, spiritual injury, and hazardous alcohol use as well as (2) explore the mediating role of MIEs and spiritual injury in the relationship between combat exposure and hazardous alcohol use, and (3) explore the effects of gender on the mediated relationship between combat exposure, MIEs, and hazardous alcohol use. Although previous research has demonstrated a positive relationship between combat exposure and alcohol use among military members and veterans, no previous research has investigated the connection between MIEs and hazardous alcohol use. Further, although a few studies have investigated the relationship between spiritual distress and alcohol use, no previous research was identified that investigated the connections between spiritual injury and hazardous alcohol use. The current investigation provides the first empirical investigation into the relationships between combat exposure, MIEs, spiritual injury, and hazardous alcohol use. As hypothesized, when considered the total sample, exposure to MIEs was significantly associated with greater hazardous alcohol use and further mediated the relationship between combat exposure and hazardous alcohol use. Additionally, spiritual injury was significantly associated with hazardous alcohol use; however, it did not mediate the combat exposure-hazardous alcohol use relationship. Of note, the patterns of the mediational relationship between combat exposure, MIEs, and hazardous alcohol use differed for men and women. Specifically, MIEs mediated the association between combat exposure and hazardous alcohol use for men, but not for

women. In the following sections, the types of MIEs are considered followed by discussion of the study findings.

Morally Injurious Experiences

It is important to note that respondents had considerable combat exposure. Nearly half of all respondents endorsed seeing someone hit by incoming or outgoing rounds (49%; n = 189) and one-quarter indicated being under enemy fire (25%; n = 98). Also, roughly 45% (n = 189) of participants identified being in danger of being injured or killed at least once. In addition, approximately 50% (n = 196) of participants endorsed being betrayed by military or political leaders and 27% (n = 104) identified betraying their own personal values. Many also endorsed being involved in transgressions against others such as seeing or being involved in the death of an innocent of war (14%; n = 54) or seeing or being involved in the death of children (12%, n = 48). Several participants endorsed experiencing guilt as a result of failing to save a life (17%; n = 68) or guilt for surviving when others did not (23%; n = 91). While a notable portion of the sample endorsed experiencing MIEs, most participants were healthy in that they did not perceive their experiences as morally injurious. For more detailed information regarding combat exposure and MIEs, please see Tables 2 and 3. Notably, the types of combat experiences endorsed here are consistent with previous investigations of service members' experiences, including being attacked or ambushed, engaging in killing, and seeing others injured or killed (Wilk et al., 2010). Additionally, MIEs endorsed in the current study are congruent with previous research identifying betrayal (e.g., leadership failures and failure to act in accordance with one's values), incidents involving harm to civilians or their property, within-rank violence, inability to prevent death and suffering, and ethical

dilemmas/moral conflicts as common forms of MIEs (Drescher et al., 2011; Flipse Vargas et al., 2013).

Combat Exposure and Morally Injurious Experiences

The first aim of this study was to explore the relationship between combat exposure and MIEs. Consistent with expectations, combat exposure was positively associated with MIEs. This finding suggests that more exposure to combat is associated with more exposure to MIEs. Combat scenarios, particularly those involving unconventional tactics (e.g., ambiguous civilian threats and improvised explosive device), may expose military personnel to unpredicted and non-contingent violence and its aftermath which may fail to conform to individuals' established beliefs about warfare (Litz et al., 2009). These scenarios may involve civilian deaths, betrayal, or within-rank violence. Thus, recent military engagements are believed to have increased the number of military members exposed to morally ambiguous or ethically challenging situations. Morally injurious combat situations, such as those described as well as other more traditional combat experiences, may transgress deeply held moral and ethical belief systems and expectations. These potential MIEs have been suggested to include perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations as well as actions that are inhumane, cruel, depraved, or violent that bring about pain, suffering, or death of others (Drescher et al., 2011; Litz et al., 2009).

Experiencing morally questionable and ethically ambiguous combat situations may make it more difficult for service members to determine the most judicious course of action towards combatants and non-combatants. Although service members may act in

ways that are sanctioned, these actions, which often must be made quickly, may have a significant psycho-spiritual impact on the individual (Litz et al., 2009). Exposure to these potential MIEs are proposed to subsequently elicit cognitive dissonance for some military members because MIEs violate core assumptions and beliefs about right and wrong as well as personal goodness (Litz et al., 2009). If the dissonance is not resolved positively, guilt and shame may follow, which are thought to cause deleterious effects on the service members' psychological health through self-condemnation, alienation, self-punishment, including self-harm, and demoralization (Buechner, 2014; Drescher et al., 2011; Grossman, 2009; Jinkerson, 2014; Litz et al., 2009, 2013; Nash & Litz, 2013; Vargas et al., 2013). While the current study is unable to speak to the core symptoms of moral injury, support was found that service members and veterans who have experienced combat exposure report more MIEs.

The connection between combat exposure and moral injury can further be illuminated by the assumptive world model (Janoff-Bulman, 1989). The assumptive world model, which refers to individual's core assumptions about the world and self, asserts that unduly stressful or perceived traumatic events can shatter these fundamental assumptions and in turn elicit distress about vulnerability and safety. The shattering of an individual's assumptive world is theorized to be critical to post-trauma reactions in that the disintegration and subsequent reassembly of core belief systems are causally related to the nature of the post-trauma reaction, be it PTSD, resilience (Janoff-Bulman, 2006), or, as the current investigation implies, moral injury. In regards to moral injury, MIEs are occurrences that are discrepant with fundamental beliefs about how the world operates, how an individual or group should be treated, or is at odds with military training

and rules of combat engagement (Litz et al., 2009). Service members who experience MIEs may eventually experience internal conflict and face the task of reconciling their discomfort and expectations of social condemnation and rejection (Higgins, 1987; Litz et al., 2009) which may create emotional turmoil and distress. Consistent with the assumptive world model discussed above, the way moral conflict is addressed is a key determinant of the development of moral injury symptomatology (e.g., guilt, shame, withdrawal; Litz et al., 2009) such that individuals who are unable to positively assimilate or accommodate MIEs within existing self- and relational-schemas may experience the core symptoms of moral injury (i.e., guilt, shame, and loss in trust; Litz et al., 2009; Tangney et al., 2007).

Moral Injury and Hazardous Alcohol Use

The second aim of the study was to investigate the relationship between MIEs and hazardous alcohol use among military members. Specifically, it was expected that MIEs would be positively related to hazardous alcohol use. This hypothesis was based on recent theoretical and empirical research on moral injury. Several authors, most notably, Litz et al. (2009) and Shay (2003), have written about the symptomology and development of moral injury and argue that moral injury is a distinct syndrome that develops from violations in an individual's moral and ethical belief system (Drescher et al., 2011; Litz et al., 2009; Shay, 2003). When military members are unable to assimilate or accommodate morally challenging events within their personal belief systems, it is this unresolved moral dissonance that theoretically leads to the core symptoms of moral injury symptoms (Drescher et al., 2011; Litz et al., 2009; Nash & Litz, 2013). Per Litz et al.'s (2009) theoretical model, the core symptoms of moral injury, which consist of guilt,

shame, and anxiety, are the theoretical pathways to withdrawal, self-condemnation, loss of subjective meaning in life, loss of trust in self/others, and interpersonal problems (Currier, Holland, & Malott, 2015; Currier et al., 2013; Drescher et al., 2011; Litz et al., 2009; Nash & Litz, 2013; Shay, 2003). In particular, the pathway of self-condemnation contributes to a host of other problems, including re-experiencing of moral conflicts, avoidance, self-punishment, and self-harm behaviors, including substance abuse (Litz et al., 2009). Psychological problems (i.e., depression, anxiety, re-experiencing, suicidal ideation, and substance abuse) and social problems (e.g., alienation, interpersonal difficulty) are construed as secondary symptoms of moral injury. More recently, Jinkerson (2016) posited that moral injury is comprised of several core symptoms (i.e., guilt, shame, spiritual/existential conflict, and loss of trust in self, others, and/or deity) which may catalyze or contribute to the development of secondary symptoms, or, the broader constellation of co-morbid symptoms associated with moral injury.

In the present study, the second model tested the relationship between MIEs and hazardous alcohol use and hypothesized that MIEs would be associated with hazardous alcohol use. Specifically, it was expected that MIEs would be positively related to hazardous alcohol use. MIEs were found to be positively associated with hazardous alcohol use. Although it is not possible to determine causality, these findings support the argument that moral injury may precede hazardous alcohol use. Research has shown that stressors associated with military service (e.g., frequent deployments, combat exposure, and operational pressures) are associated with increased substance misuse (Bray, Brown, & Lane, 2013; Bray et al., 2010; Burnett-Zeigler et al., 2011; Clarke-Walper, Riviere, & Wilk, 2013; Institute of Medicine, 2012). In particular, degree of combat exposure has

been shown to impact hazardous alcohol use as those with greater combat exposure report significantly higher rates of heavy (26.8%) and binge (54.8%) drinking (Bray et al., 2013). Consistent with previous research demonstrating that combat exposure is associated with increases in heavy drinking (Bray et al., 2013; Jacobson et al., 2008), it is plausible that moral injury may also precede hazardous alcohol use. Further, this finding provides empirical support for Litz et al.'s (2009) conceptual model that links moral injury to mental health and substance use problems. This finding also supports the recent syndrome model proposed by Jinkerson (2016), that substance abuse may be understood as a secondary symptom of moral injury.

Mediating Role of Morally Injurious Experiences

Exposure to MIEs was further demonstrated to mediate the relationship between combat exposure and hazardous alcohol use. This finding suggests that exposure to MIEs may be a mechanism through which combat exposure may be associated with hazardous alcohol use among military members and veterans. As hypothesized, the association between the predictor (i.e., combat exposure) and the criterion (i.e., hazardous alcohol use) was reduced and in fact, was no longer significant when MIEs were included in the model. Although researchers have argued that substance use related to MIEs is the result of self-condemnation, at present there is no empirical research demonstrating that self-condemnation and other primary components of moral injury (e.g., shame, guilt) lead to hazardous alcohol use. Clearly, additional research examining the theorized underlying mechanisms linking moral injury to hazardous alcohol and potential other secondary outcomes (e.g., drug use, depression) are needed. However, the present results show that service members and veterans that have experienced exposure to MIEs report greater

hazardous alcohol use and further that exposure to MIEs mediates the combat-alcohol use relationship.

Many theories of substance use postulate that stress and trauma play an important role in motivating addictive substance abuse (Koob & Le Moal, 1997; Leventhal & Cleary, 1980; Marlatt & Gordon, 1985; Russell & Mehrabian, 1975; Shiffman, 1982; Wills & Shiffman, 1985). Models, including the motivational model of substance use (Cox & Klinger, 1988), the self-medication hypothesis (Khantzian, 1985), and tension-reduction model (Conger, 1956), emphasize the role of alleviating negative emotions and distress in influencing alcohol and drug consumption and the development of substance-related problems. Specifically, exposure to stressful or traumatic circumstances may contribute to substance use, as individuals seek relief from negative affect/distress (Park, Armeli, & Tennen, 2004; Perkins, 1999). Although alcohol and drug use may initially temper distress and enhance mood, as the behavior is reinforced, it becomes ubiquitous and it is less instrumentally successful (Sinha, 2001). Over time this form of coping become habit-forming and maladaptive (Dass-Brailsford & Myrick, 2010; Khantzian, 1985; Wills & Shiffman, 1985). Relying on substances to cope may also result in declining adaptive coping and increasing psychological dependence (Cooper, 1994; Cooper et al., 1988).

Stressors associated with military service (e.g., frequent deployments, combat exposure, and operational pressures) may also significantly impact service members by increasing stress and negative mood states, which may contribute to substance misuse risk (Prigerson et al., 2002; Shipherd et al., 2005). Consistent with models of the stress-alcohol use relationship, researchers believe that military members use alcohol to provide

relief from the psychological and physiological symptoms of warzone trauma (Al'Absi, 2007; Dixon et al., 2009; Hoge et al., 2004; Jacobsen et al., 2001; Schumm & Chard, 2012). Indeed, military deployments and combat exposure have been correlated with increased substance use in service members (Bray et al., 2013; Bray et al., 2010; Burnett; Clarke-Walper et al., 2013; Institute of Medicine, 2012), with those who experience multiple deployments at greater risk for substance use problems (Browne et al., 2008; Hooper et al., 2008; Kelley et al., 2013; Kelley et al., 2015; Maguen et al., 2010a; Wilk et al., 2010). Given what we know about combat exposure and hazardous alcohol use and to a lesser extent, drug use, a complex relationship is believed to exist between combat exposure, MIEs, and substance use. Specifically, it is possible that some service members and veterans may utilize alcohol and drugs to attempt to ameliorate distress associated with moral conflict elicited by exposure to MIEs. As discussed above, higher levels of combat experiences are associated with increased risk of exposure to potentially MIEs (Litz et al., 2009) and higher reports of alcohol use (Browne et al., 2008; Hooper et al., 2008; Kelley et al., 2013; Maguen et al., 2010a; Wilk et al., 2010). If, as argued by Litz and others, exposure to MIEs elicit the core symptoms of moral injury (e.g., guilt and shame), these symptoms may increase motivation to use substances to cope with or alleviate moral conflict and distress.

The current investigation supports that exposure to MIEs is associated with greater hazardous alcohol use and further completely mediated the relationship between combat and alcohol use. Although clearly, additional research is needed to examine these associations, I would like to encourage investigators to think about MI as a potential factor that may contribute to problematic substance use. Further, addition research is

needed to determine whether MI-related alcohol or drug use may be phenomenologically distinct from non-MI related hazardous alcohol or drug use. Considering the etiological model of moral injury developed by Litz' and colleagues (2009), a plausible difference is that MIEs may produce shame and guilt which are conceptualized as core characteristic of moral injury. It is possible, for instance, that individuals with greater levels of MIE exposure may be motivated to misuse substances to decrease shame and guilt associated with moral conflict.

Alternatively, however, and paradoxically, it is possible that service members and veterans who experience combat-related moral injury have personal motivations that are not supported by common theories of substance use (e.g., stress-coping and tension reductions models; Greeley & Oei, 1999; Khantzian, 1985; Wills & Shiffman, 1985). Because substance abuse can be viewed as means of self-handicapping or self-punishing in those with moral injury (Litz et al., 2009), hazardous alcohol or drug use may be a means of inducing negative mood states and negative consequences rather than alleviating them. Although I know of no empirical research that has tested the self-handicapping or self-punishing idea, it is possible that military members and veterans who experience moral injury may believe they deserve punishment for their participation in MIEs. By using substances, they may receive disapproval or scorn from their families or society that they believe that they deserve. Clearly, additional research is needed to test the self-handicapping model among recent-era military members.

Role of Gender

The mediating role of MIEs on the relationship between combat exposure and hazardous alcohol use differed by gender. Specifically, MIEs mediated the association

between combat exposure and hazardous alcohol use for men, but not women. Although MIEs did not mediate the association between combat and hazardous alcohol use for women, a significant relationship was found between combat exposure and MIEs suggesting that women's exposure to combat is associated with exposure to MIEs.

Results suggest that the association between these variables differ by gender. For men, MIEs may be a mechanism for explain the association between combat exposure and hazardous alcohol use. However, this may not be the case for women. Current findings appear consistent with available research on gender differences in the association of combat exposure and mental health outcomes. Several investigations show that PTSD, depression, and suicidality are more common problems among women service members and veterans (Foster & Vince, 2009; Luxton et al., 2010; Vogt et al., 2011), whereas substance use disorders appear more common among male veterans (Riddle et al., 2007). Specifically, in a large sample of Iraq and Afghanistan veterans, baseline rates of PTSD and other anxiety disorders were higher in women than in men, whereas substance use disorders were more prevalent in men (Riddle et al., 2007). Another study of OEF/OIF veterans enrolled in VA care found that female veterans received depression diagnoses more frequently than male veterans, who were more frequently diagnosed with PTSD and alcohol use disorders (Maguen, Ren et al., 2010). Findings from the present study suggest that among male military members, MIEs may be associated with hazardous alcohol use. Although associations between combat exposure, MIEs, and depression were not examined in the present study, it is possible women who experience moral injury may experience more internalizing difficulties (i.e.,

depression). Clearly, research is needed to better understand outcomes associated with MIEs, particularly for women.

It is also possible that the association between combat exposure and hazardous alcohol use may be curvilinear. If this is the case, it is possible that combat exposure is associated with hazardous alcohol use; however, when combat exposure is especially high, the association between combat exposure and hazardous alcohol use is present for both men and women. In fact, extrapolating from other research, this may be the case. Specifically, women veterans who experienced low levels of combat were more likely to screen positive for PTSD and depression than their male counterparts with low combat exposure (MHAT-IV, 2006). Interestingly, no gender differences in mental health outcomes were found between men and women with medium levels of exposure to combat. These findings showcase that women who are exposed to lower levels of combat are at a greater risk of depression and PTSD than their male peers exposed to comparable levels of combat. However, when medium or potentially high levels of combat exposure, gender was no longer associated with mental health outcomes. Another avenue for future research is whether over time the impact of MIEs compound and elicit greater impairment. Again, future research is recommended to understand the impact of degrees of MIEs on mental health outcomes including moral injury symptoms, PTSD, depression, and substance use disorders.

Although previous research shows gender differences in the relationship between combat exposure and mental health concerns (e.g., alcohol use, depression, PTSD; Kelley et al., 2013; Maguen et al., 2010c; Riddle et al., 2007; Vogt et al., 2011), no previous empirical investigation had examined the influence of gender on MIEs. The present

results provide preliminary support that male, but not female, service members and veterans that have experienced exposure to MIEs report greater hazardous alcohol use and further that exposure to MIEs mediates the combat exposure-alcohol use relationship. Additional research is greatly needed to further understand the influence of gender on the association between exposure to MIEs and mental health outcomes. Specifically, it would be beneficial for researchers to examine gender differences associated with level of exposure to MIEs, reaction patterns to MIEs, and the core and secondary symptoms of moral injury (e.g., depression, suicidality, substance use). Further it is possible that gender may be a moderator of the relationship between MIEs and mental health outcomes and research is recommended to investigate the possible moderating role of gender.

Spiritual Injury and Combat Exposure

A third aim of the current investigation was to explore the relationship between combat exposure and spiritual injury. Specifically, it was expected that spiritual injury would positively relate to combat exposure. This hypothesis was supported such that spiritual injury was positively associated with combat exposure. This finding suggests that being exposed to combat influences levels of spiritual injury, such that greater combat exposure is associated with greater spiritual injury. Previous investigations have demonstrated the psycho-spiritual impact of trauma and more specifically combat exposure. For instance, when confronted with stressful events, individuals appraise these experiences in ways that are either consistent or inconsistent with their larger meaning-making systems (e.g., spiritual and existential beliefs; Park, 2005). If the situational meaning derived from the stressful or traumatic experience (e.g., “My Higher Power has abandoned me and my unit”) is at odds with global meanings (e.g., “Higher Power is

omnipotent and benevolent”), significant spiritual injury and distress may result (Harris et al., 2015). Given the meaning making capacities of spirituality, it is important to consider specific aspects of spiritual functioning with respect to coping with traumatic events (Currier, Drescher, & Harris, 2014). In regards to combat exposure, military combat and other traumatic events may precipitate a spiritual injury or other negative spiritual changes. Examination of survivors of the 9/11 attacks (Seirmarco et al., 2012) and other traumatic experiences (Falsetti, Resick, & Davis, 2003) revealed that 10% to 16.7% of individuals experienced a loss of spirituality. Findings from the current investigation provide additional support that combat exposure may have associations for spiritual injury.

Spiritual Injury and Hazardous Alcohol Use

Spiritual injury was further investigated to explore its relationship with hazardous alcohol use. Specifically, it was expected that spiritual injury would be positively associated with hazardous alcohol use. Evidence was found for this relationship such that spiritual injury was positively associated with hazardous alcohol use. This finding suggests experiencing spiritual injury is associated with individual differences in levels of hazardous drinking among military members, such that higher spiritual injury is associated with more hazardous alcohol use. Support for the relationship between spiritual injury and hazardous alcohol use is consistent with a long history of research demonstrating that religious beliefs and spirituality are inversely associated with alcohol use and alcohol-related problems (Gorsuch, 1995; Humphries & Gifford, 2006; Koenig, McCollough, & Larson, 2001; Miller, 1998). While research has examined the connection between spirituality and alcohol use, limited research is available that speaks

to the specific relationship between spiritual injury and alcohol use. Although limited explicit information is available about this relationship, the association between spiritual injury and alcohol use may be understood through similar motivational or stress-coping mechanisms as discussed with moral injury. As discussed previously, exposure to traumatic events may come into conflict with individuals spiritual and existential beliefs and may subsequently result in spiritual injury or distress. To cope with or ameliorate the symptoms of spiritual injury (e.g., guilt, anger/resentment, lack of meaning), individuals may be more motivated to use alcohol and drugs (see motivational model and stress-coping model).

Spiritual injury was further investigated to see if it was a mediator of the relationship between combat exposure and hazardous alcohol use. Given the established inverse relationship between levels of spirituality and alcohol use, the current investigation posited that the association between combat experiences and hazardous alcohol use would be partially mediated by spiritual injury. That is, higher spiritual injury would reduce the association between combat experiences and alcohol use. However, the findings did not support this hypothesis. There are several potential reasons why this mediation may not have been supported. First, while the Spiritual Injury Scale provides an assessment of spiritual injury symptoms (e.g., guilt, anger/resentment, religious doubts), it does not tie these symptoms to a preceding spiritually distressing event. Due to this limitation, it is not possible to determine if spiritual injury symptoms occurred because of exposure to a spiritually injurious experience (i.e., combat experiences). Additionally, several of the proposed symptoms of spiritual injury appear to have significant construct overlap with other mental health

concerns (e.g., depression and moral injury). For this reason, the researcher decided to only use two items from the SIS pertaining to feeling that God/life has been unfair (“Do you feel that God/Life has treated you unfairly?”) and religious doubts of disbelief (“Do you worry about your doubt/disbelief in God?”). The use of only two items to assess spiritual injury does not provide a comprehensive assessment of spiritual injury. It is possible that a different method of assessing spiritual injury may have resulted in mediation.

Spiritual Injury and Moral Injury

An additional aim of the current investigation was to explore the relationship between moral injury and spiritual injury. Moral injury was proposed to positively relate to spiritual injury. As expected, moral injury was positively associated with spiritual injury. This finding suggests that exposure to MIEs is associated with greater spiritual injury. Although literature with military samples has shown higher levels of spirituality or spiritual well-being are associated with lower rates of negative mental health outcomes, including depression, anxiety, and alcohol and drug use (Hourani et al., 2012; Pargament & Sweeney, 2011), no empirical investigation was found that examined the possible associations between moral injury and spiritual injury. However, the predominance of religiosity and spirituality in the general American population and in U.S. military members, as well as the links between morality and spirituality (Baumsteiger, Chenneville, & McGuire, 2013), provide support for considering whether MIEs may be associated with spiritual injury. Changes in or loss of spiritual or religious beliefs, difficulty forgiving self or others, difficulty trusting self or others, loss of a sense of meaning or purpose, fatalism, difficulties in relationship with a relevant community of

faith, and negative changes in attributions about or relationship with Higher Power are identified as potential spiritual consequences of MIEs (Drescher et al., 2011; Nash et al., 2013; Ogden et al., 2011). Specific MIEs, such as killing, death of close service unit member, or betrayal by trusted authorities or service unit members, are suggested to result in significant spiritual injury or distress (Currier et al., 2015; Drescher et al., 2011; Litz et al., 2009; Nash et al., 2013). If MIEs challenge the concept of a Higher Power or spiritual worldview, questions about deeply held beliefs may spur continued doubts about values, purpose, meaning, and the worthiness of the Higher Power itself. Serious existential questions about personal faith, vocation, meaning, and worth can also result from MIEs (Currier et al., 2015; Drescher et al., 2011; Fontana & Rosenheck, 2004; Litz et al., 2009; Nash et al., 2013). The current investigation provides empirical support for the relationship between MIEs and spiritual injury. Although not every individual has an explicit spiritual identity or will experience moral injury as spiritual distress, researchers have argued that understanding the spiritual perspective is critical to providing necessary clinical attention to the potential spiritual or religious needs (Harris et al., 2015).

Future Research

The current academic literature on moral injury is limited. As the idea of being morally affected by warfare is not a new concept, it is surprising that academic research has not progressed at a more rapid pace (Nash et al., 2013). However, considering the recent conflicts in Afghanistan and Iraq, there is a renewed interest in the area as a topic of research. Accordingly, there are four areas wherein it is necessary for the literature to expand to facilitate a better conceptualization of moral injury. These include: (1) assessment, (2) construct validation and clarification of symptomology, (3) identification

of protective and risk factors, (4) development of treatment to assess both the core symptoms and proposed secondary symptoms, and (5) evaluation of therapy approaches.

Assessment development initiatives, particularly those focused on symptomatology, are critical to the advancement of moral injury research. Regarding current assessments of moral injury, I am aware of only two published self-report instruments that assess MIEs exposure, the 11-item Moral Injury Exposure Scale (MIES; Nash et al., 2013) and the 20-item Moral Injury Questionnaire – Military version (MIQ-M; Currier et al., 2013). Both measures assess exposure to MIEs; however, neither measures assess the core symptoms of moral injury (i.e., guilt, shame, trust impairment). Currently, there is no measure of moral injury outcomes (Kraus, 2014). The lack of a validated measure of moral injury symptoms makes it more challenging for researchers, as well as clinicians, to accurately assess for moral injury. However, one challenge to the development of an accurate assessment of moral injury symptoms is that the construct of moral injury needs to be further validated. While there is some preliminary support that exposure to MIEs is predictive of symptoms of trauma-related guilt, loss of subjective meaning in life, and decreased searching for meaning in life (Jinkerson, 2016), few other investigations have empirically examined this relationship. Future research is needed both to validate the construct of moral injury and on develop an assessment of the symptoms of moral injury. Given that moral injury is the response to a triggering event (i.e., morally injurious event), it would be advantageous to develop a measure that collectively examines both the trigger and the response of moral injury.

Presently, there is no available information on risk and resiliency factors of individuals who have experienced morally injurious events (Farnsworth et al., 2014).

Determining who is more likely to develop a moral injury, and who is not, is essential. Such research would be likely to assist in providing advantageous treatment and training, both for helping professionals in addressing moral injury and for military personnel in pre- and post-deployment education. To facilitate better comprehension of the factors that go into the development, maintenance, and recovery from moral injury, both personal and military factors should be systematically investigated in terms of their morally injurious contexts. Influences of the military context such as leadership, unit cohesion, morale, operational rules of engagement, and deployment lengths should be studied in relation to environmental factors. Also, determining the specific aspects of military training strategies (e.g., preventative) that could best assist service members in coping with morally difficult situations would be pertinent. Relevant personal factors worth investigating may include personality traits such as adaptability (i.e., assimilation and accommodation), trauma history, learning history, spirituality, family perspectives, religious beliefs, and cultural variables (Litz et al., 2009). This research would be best served to be approached from an interdisciplinary lens.

The last crucial area for future moral injury investigative work encompasses the therapeutic approach. When the field has the appropriate foundational understanding of moral injury and MIEs to support this research, randomized control trials of Adaptive Disclosure, Impact of Killing Module (IOK), and potentially additional empirically supportable interventions are needed (Litz et al., 2009; Maguen et al., 2010a; Steenkamp, Nash, Lebowitz, & Litz, 2013). The scientific understanding of moral injury is currently insufficient to support condition-specific randomized control trial work. Furthermore, a shift away from treatment packages and towards empirically supported, principle-based

techniques may be more appropriate when dealing with dimensional concerns such as moral injury (Rosen & Davison, 2003).

Finally, it should be noted that most the moral injury research to date has focused on white, American male veterans who hold Christian religious beliefs. Moral injury is fundamentally tied to individuals' beliefs about morality, right and wrong, and personal goodness which are heavily influenced by cultural and environmental factors. Given the influence of culture on moral beliefs and values, people's perceptions of MIEs and presentations of moral injury symptoms may dramatically differ across cultures and individual experiences and religious or spiritual beliefs. Therefore, in order to understand moral injury more comprehensively, research needs to focus on recruiting more demographically diverse research participants. Female veterans, non-heterosexual populations, and those from assorted cultural, racial and/or spiritual backgrounds are important to include in future investigations.

Clinical Implications

Despite the emergence of moral injury as a timely and critical topic in warrior science, many mental health providers, particularly those who work outside of the VA and DoD, may be unaware of moral injury. While aware of the concept, other providers may not know how to assess for moral injury. Consistent with the definition of moral injury provided by Litz and colleagues' (2009) and Jinkerson's (2016) syndrome definition update, multiple authors have proposed that identifying moral injury requires both 1) assessing history for potential MIEs and 2) assessing for current moral injury symptoms (Currier, 2014; Jinkerson, 2016). Given that combat exposure and MIEs were correlated in the present study, it is imperative that military members and veterans be

screened for exposure to potential MIEs by using one of the available self-report instruments. Further, as suggested by Currier et al. (2013), for those who screen positive to one or more MIEs, a clinical interview is recommended to gather additional information on the nature of MIE experiences and subsequent symptomatology.

To adequately assess for these issues, it is imperative that clinicians be familiar with moral injury themes (e.g., post-combat guilt or shame, spiritual crises, demoralization, interpersonal/social dysfunction, viewing actions as unforgiveable) so they can be recognized in the clinical interview (Currier et al., 2013). I believe it is important for mental health providers who work with military personnel and veterans to understand both the core symptoms that have been proposed as key components of moral injury (Jinkerson, 2016; Litz et al., 2009) and the possible spiritual or religious consequences as well as the secondary symptoms, including hazardous alcohol use. Preferably, moral injury would be assessed with instruments that have additional psychometric validation. Therefore, proposed core and secondary symptoms may be measured individually, which can collectively provide an indirect picture of moral injury. A list of instruments for conducting such an assessment at the present time can be found in Jinkerson (2016). In the future, developing valid measures of proposed moral injury core and secondary symptomatology are critical in ensuring efficient and accurate moral injury assessment.

Given the high level of hazardous alcohol use among military members and veterans (Institute of Medicine, 2012) and the current findings of the mediating role of MIEs on the relationship between combat exposure and hazardous alcohol use, it is important to 1) screen for MIEs and alcohol and drug use among all military members

and veterans, but particularly men, who present for mental health and/or substance use treatment, 2) examine whether post-deployment increases in alcohol and drug use may be in response to moral injury, 3) assess whether hazardous alcohol or drug use may occur in response to triggers such as reliving MIEs or questioning prior military actions/decisions; and 4) understand motivations for hazardous alcohol or drug use (e.g., to alleviate negative affect stemming from guilt or shame or self-punishment for having witnessed or taken part in MIEs (i.e., feeling alienated from or judged by others or deity may result in individuals feeling as though they should be punished for their actions). Identifying reasons for hazardous alcohol or drug use may help establish whether substance use is in fact a secondary symptom of moral injury.

It is likewise possible that veterans with moral injury may initially present for substance abuse treatment rather than mental health treatment and this may be especially likely among male veterans (Fox, Meyer, & Vogt, 2015). For this reason, it is important that substance abuse treatment providers screen for exposure to perceived traumatic events and patterns of traumatic responses (i.e., PTSD, PTG, or moral injury) in military personnel. In terms of moral injury, constructs, such as self-punishment, diminishment of shame/guilt, are proposed to be possible substance use motivations. For those substance abuse programs that are equipped to provide full mental health assessment and treatment, additional assessment of moral injury symptoms is recommended. Whether moral injury with co-morbid substance abuse is treated within a specialty substance abuse program or its identification necessitates a referral to a mental health clinic, the presence of moral injury implicates several potentially appropriate treatments, including Adaptive Disclosure (Litz et al., 2009) and Cognitive Therapy (Button, Jinkerson, & Bryan, 2016).

Should PTSD present an additional co-morbidity, Prolonged Exposure (Foa, Hembree, & Rothbaum, 2007), Cognitive Processing Therapy (Monson et al., 2006; Schumm, Monson, O'Farrell, Gustin, & Chard, 2015), or Seeking Safety (Najavits, 2002) may be alternatively appropriate. If an evidence-based treatment for PTSD is used, it is recommended that veterans work towards discontinuing or minimizing their substance use during the treatment to allow for full emotional engagement.

Limitations

Certain limitations need to be accounted for when interpreting these results. Primarily, the operational definition of moral injury as exposure to MIEs limits the ability to interpret these findings. Future research to develop an outcome measure of moral injury is recommended to allow researchers to utilize a more stringent, experimental approach to this subject to clarify the relationship between moral injury and secondary symptomatology. Additionally, the study used a two-item measure of spiritual injury which may have impacted study results. An additional limitation is that the current investigation is a correlational study and therefore cannot imply causation. Although the validity and reliability of these measures were assessed, it is possible that the observed effects were strengthened by shared method variance. Additionally, all military members retrospectively reported on combat exposure, moral injury, and alcohol use, which may be subject to memory biases. Future research assessing these variables utilizing different methods and experimental designs would increase confidence in these findings as well as increase the ability to make causal conclusions.

CHAPTER V

CONCLUSIONS

The current investigation provides empirical support to existing theories that alcohol use is a potential secondary outcome of exposure to MIEs and spiritual injury. Most notably, MIEs fully mediated the relationship between combat exposure and hazardous alcohol use. Further, spiritual injury was significantly and positively related to hazardous alcohol use; however, spiritual injury did not mediate the combat exposure-hazardous alcohol use relationship. Finally, the mediated relationship between combat exposure, MIEs, and hazardous alcohol use was found to only be significant among men.

Existing research on underlying mechanisms of hazardous alcohol use provides additional conceptual support for substance use motivation in service members and veterans with exposure to MIEs and/or experience spiritual injury symptoms. Given the observed relationships between MIEs and hazardous alcohol use, combat exposure and moral injury should be considered as possible contributors to hazardous alcohol use among military men in particular. Although additional research is needed, the current investigation emphasizes the potential impact of MIEs and spiritual injury on military members' hazardous alcohol use and further suggests that MIEs-related alcohol use is phenomenologically distinct from general alcohol abuse.

Research is only beginning to understand the associations between moral injury, spiritual injury, and mental health symptoms, thus, additional research into the relationships between moral injury, spiritual injury, and its sequelae, including substance abuse, is imperative. In understanding these relationships, it may be possible to provide more tailored treatment for psychospiritual concerns. More so, it may be possible to

understand our nation's military members and veterans from an increasingly holistic perspective, as we acknowledge the additional moral and spiritual dimensions that contribute to psychological and behavioral disturbances in these brave warriors.

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APPENDIX A

NOTIFICATION STATEMENT

PROJECT TITLE: Investigation of Military Trauma and Effects of Combat on Veterans, Active Duty Members, and National Guard or Reservists

The purposes of this form are to give you information that may affect your decision whether to say YES or NO to participation in this research, and to record the consent of those who say YES.

RESEARCHERS

Brittany Hollis, B.S., Old Dominion University, Psychology Department
Principal Investigator, Michelle L. Kelley, Ph.D, Old Dominion University, Psychology Department

Allison Robbins, B.S., Old Dominion University, Psychology Department

DESCRIPTION OF RESEARCH STUDY

This study is interested in learning more about the experiences of military members before, during, and after military service. Some of the questions ask you about combat experiences and other trauma experiences that you may have had prior to, during, or after the military.

EXCLUSIONARY CRITERIA

To be eligible for this study you must be at least 18 years of age or older and be a Veteran//National Guard/Reservist or an active duty military member.

RISKS AND BENEFITS

RISKS: Some of the questions ask about sensitive experiences that you may have had prior to, doing, or after the military. These include questions about exposure to family violence, child abuse, or sexual assault. In addition, you were asked whether you experienced combat and beliefs about their combat experiences and your alcohol use. It is possible that you may become emotionally upset by some questions. Some people find that thinking about past experiences can cause negative feelings. You may be uncomfortable answering some of the sensitive questions. If you feel discomfort you may take a break and come back to the survey or choose not to answer any questions. The researchers keep your responses and results separate from your name, ensuring that all of your answers are confidential.

Additionally, in the unlikely event that you call a student investigator and appear upset, we ask you to discontinue the survey. We ask if it is okay to have Dr. Kelley call you. Dr. Kelley call you. If you appear more than mildly upset (defined as distressed, crying), Dr. Kelley ask if you would like to have someone to talk with. If you are a student veteran, with your permission, she contact the ODU student counseling center and ask that they contact you to set up an appointment. If you are a veteran in the Hampton Roads area, she ask if they would like to receive a phone call from one of three psychologists that she works closely with at the Hampton VAMC (Drs. Marinell Miller, Hilary Harding, and John Mason). In the event that you appear distressed and do not live in the area, she ask if it is okay to put you on hold and call a veteran's crisis line and ask them to call you. Again, if you contact Dr. Kelley or the doctoral students, we make every effort to talk with you and ask if you would like to receive a phone call from a mental health clinician who specializes in working with students and/or veterans. Safety is our primary concern. We follow-up with any referrals.

BENEFITS

There are no benefits to you directly, however, your participation may help increase our understanding of recent-era military members/veterans and potentially contribute to our understanding of military mental health. This study **IS NOT** being conducted as part of the Department of Defense (DoD) or the Department of Veteran's Affairs (VA). The information gathered from this study were reported in summarized form so no individual were identified.

COSTS AND PAYMENTS

There are no costs in participating in this study. Upon completion, if you are a Psychology student in the Psychology Research Pool, you receive SONA credit; all other participants are eligible to be entered into a lottery to win one of twenty \$20 online gift certificates.

NEW INFORMATION

If the researchers find new information during this study that would reasonably change your decision about participating, then they give it to you.

CONFIDENTIALITY

All information obtained about you in this study is strictly confidential unless disclosure is required by law. The researchers take reasonable steps to keep your information confidential. The researcher remove identifiers from all responses. The results of this study may be used in reports, presentations and publications, but the researchers not identify you.

WITHDRAWAL PRIVILEGE

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdrawal from the study – at any time. Your decision not affect your relationship with Old Dominion University, or otherwise cause a loss of benefits to which you might otherwise be entitled.

VOLUNTARY PARTICIPATION

By participating in this research study, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. If you have any questions later on, then the researchers should be able to answer them:

Brittany Hollis at bholl019@odu.edu or 757-683-4209

Dr. Michelle L. Kelley at mkelley@odu.edu or 757-683-4459

Allison Robbins at arobb010@odu.edu or 757-683-4209

If you have any questions about your rights as a participant in this research project, you should contact (anonymously, if you wish) Old Dominion University Office of Research Protection at 757-683-3460

APPENDIX B

COMBAT EXPOSURE SCALE

Please indicate the answer that best describes your experience?

		0 No	1 1-3 times	2 4-12 times	3 13-50 times	4 51+ times
1	Did you ever go on combat patrols or have other very dangerous duty?					
2	Were you ever under enemy fire?					
3	Were you ever surrounded by the enemy?					
4	How often did you fire rounds at the enemy?					
5	How often did you see someone hit by incoming or outgoing rounds?					
6	How often were you in danger of being injured or killed (e.g., pinned down, overrun, ambushed, near miss, etc.)?					
		0 None	1 1-25%	2 26-50%	3 51-75%	4 76% or more
7	What percentage of the individuals in your unit were killed (KIA), wounded, or missing in action (MIA)?					

APPENDIX C

MORAL INJURY QUESTIONNAIRE – MILITARY VERSION

Instructions: Considering your active duty service including warzone deployment, circle the number that indicates how frequently you experienced the following.

		Never	Seldom	Sometimes	Often
1	Things I saw/experienced in war left me feeling betrayed or let-down by military/ political leaders	1	2	3	4
2	I did things in the war that betrayed my personal values	1	2	3	4
3	There were times in the war that I saw/ engaged in revenge/ retribution for things that happened.	1	2	3	4
4	I had an encounter(s) with the enemy that made him/her seem more “human” and made my job more difficult	1	2	3	4
5	I saw/was involved in violations of rules of engagement	1	2	3	4
6	I saw/ was involved in the death(s) of an innocent in the war	1	2	3	4
7	I feel guilt over failing to save the life of someone in war	1	2	3	4
8	I had to make decisions in the war at times when I didn’t know the right thing to do	1	2	3	4
9	I feel guilt for surviving when others didn’t	1	2	3	4
10	I saw/ was involved in violence that was out or proportion to the event	1	2	3	4
11	I saw/ was involved in the death(s) of children	1	2	3	4
12	I experienced tragic warzone events that were chaotic and beyond my control	1	2	3	4

13	I was sexually assaulted	1	2	3	4
14	I sometimes treated civilian more harshly than was necessary	1	2	3	4
15	I felt betrayed or let-down by trusted civilians during the war	1	2	3	4
16	I saw/ was involved in a "friendly-fire" incident	1	2	3	4
17	I destroyed civilian property unnecessarily during the war	1	2	3	4
18	Seeing so much death has changed me	1	2	3	4
19	I made mistakes in the warzone that led to injury or death	1	2	3	4
20	I came to realize during the war that I enjoyed violence	1	2	3	4

APPENDIX D**SPIRITUAL INJURY SCALE**

1. How often do you feel guilty over past behaviors?

- Never
- Sometimes
- Often
- Very Often

2. Does anger or resentment block your peace of mind?

- Never
- Sometimes
- Often
- Very Often

3. How often do you feel sad or experience grief?

- Never
- Sometimes
- Often
- Very Often

4. Do you feel that life has no meaning or purpose?

- Never
- Sometimes
- Often
- Very Often

5. How often do you feel despair or hopeless?

- Never
- Sometimes
- Often
- Very Often

6. Do you feel that God/Life has treated you unfairly?

- Never
- Sometimes
- Often
- Very Often

7. Do you worry about your doubts/disbelief in God?

- Never

- Sometimes
- Often
- Very Often

8. How often do you think about death?

- Never
- Sometimes
- Often
- Very Often

APPENDIX E

THE ALCOHOL USE DISORDERS IDENTIFICATION TEST: SELF-REPORT VERSION

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.

Place an X in one box that best describes your answer to each question

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
3. How often do you have six or more drinks on one occasion?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	

7. How often during the last year have you has a feeling of guilt or remorse after drinking?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
9. Have you or someone else been injured by your drinking?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
					Total	

APPENDIX F
DEMOGRAPHICS QUESTIONNAIRE

What is your gender?

1. Male
2. Female
3. Transgender

What is your age in years?

What is your sexual orientation?

1. Heterosexual
2. Mostly heterosexual but I am also attracted to those of the same sex
3. Bi-sexual
4. Mostly homosexual but I am also attracted to those of the opposite sex
5. Homosexual

What is your education level (pick one)?:

1. Some high school
2. High school
3. Some college
5. 4-year college degree (B.S./B.A.)
6. Graduate degree

What is your ethnicity (choose all that apply)

1. African American
2. Asian American
3. Caucasian
4. Caribbean American
5. Hispanic and/or Latino(a)
6. Pacific Islander
7. Native American
8. Other

What is your marital status?

1. Single, never been married
2. Married
3. Divorced
4. Widowed
5. Separated
6. Cohabiting

What is your employment status?

1. Unemployed

2. Part-time
3. Full-time
4. Student

How much are finances an issue for you or your immediate family?

1. Difficulty meeting my/my family's basic needs
2. Barely able to meet my/my family's needs
3. Once-in-a-while have difficulty covering my/my family's basic needs
4. No difficulty covering basic needs
5. Have extra money each month

Do you currently have health insurance?

What is your current military status?

1. Veteran
2. National Guard/Reserve
3. Active duty
4. Never been in the military

How many years were/have you been in the military?

In what year did you enter the military?

What was/is your job in the military-please be specific?

Did you serve in a region that supported Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn initiatives (OEF/OIF/OND)?

If yes, for how long?

How many deployments (90 days or more) since you joined the military in support of?

0 1 2 3 4 5 or more

1. Operation Iraqi Freedom (OIF)
2. Operation Enduring Freedom (OEF)
3. Humanitarian mission (non-OIF/OEF)
4. Other (non-OIF/OEF)

What was your reason for entering the military?

1. Desire to serve my country
2. For educational benefits
3. To leave a bad home or neighborhood/community
4. Other

What branch of the military did you serve/are you serving in?

1. Army
2. Navy
3. Air Force
4. Marines
5. National Guard
6. Reserves (Army, Air Force, Navy, National Guard, Marines)

How did you hear about this survey?

1. Via email
2. From a Friend
3. From a family member
4. ODU SONA
5. Saw it online
6. Other:

VITA
ALLISON T. ROBBINS

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EDUCATION

Virginia Consortium Program for Clinical Psychology *Norfolk, VA*
Ph.D Clinical Psychology expected 2019

Old Dominion University *Norfolk, VA*
M.S. Experimental Psychology expected 2016

CLINICAL EXPERIENCE

8/16-Present **Advanced Clinical Practicum Training – Individual and Group Therapy**
Old Dominion University Counseling Center, Norfolk, VA
Assess mental health needs of college-age adults in a university counseling setting; Conduct client-centered, evidenced based individual therapy utilizing cognitive-behavioral and interpersonal modalities as well as adjunctive approaches including acceptance and commitment, mindfulness, and dialectical behavioral; Co-facilitate group therapy following an interpersonal process paradigm

RESEARCH EXPERIENCE

8/14–Present **Graduate Research Assistant**
Old Dominion University, Norfolk, VA
Serve as a primary investigator and co-investigator on studies investigating the impact of traumatic experiences, combat, moral injury, substance abuse on military service members and veterans; Conduct and interpret data analysis using SPSS, M Plus and other statistical software; Produce manuscript, book chapters, posters, and other presentations.

JOURNAL PUBLICATIONS

Kelley, M. L., Millettich, R. J., Hollis, B. F., Veprinski, A., **Robbins, A. T.**, & Snell, A. K. (2016). *Social support and relationship satisfaction as moderators of the stress-mood-alcohol link association in U.S. navy members*. *Journal of Nervous and Mental Disease*.

BOOK CHAPTERS

Robbins, A. T., Jinkerson, J. D., & Kelley, M. L. (*In Press*). Theoretical Pathways to Substance Abuse through Moral Injury in Combat Veterans. In R. MacNair (Ed.), *Perpetration-Induced Traumatic Stress: The Psychological Consequences of Killing* (2nd ed.).

POSTERS AND PRESENTATIONS

Robbins, A. T. (2016, September). Theoretical Pathways to Substance Abuse through Moral Injury. In B. Buechner (Chair), *Moral injury in combat veterans*. Symposium presented the annual summit of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury, Washington, DC.