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## Distinguishing War-Related PTSD Resulting From Perpetration- and Betrayal-Based Morally Injurious Events

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# Distinguishing War-Related PTSD Resulting From Perpetration- and Betrayal-Based Morally Injurious Events

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**Objective:** We investigated whether potentially morally injurious events (PMIEs) during a combat deployment may lead to PTSD through distinct pathways from danger-based events. We also examined the prevalence of perpetration-based PMIEs, during which service members behaved in ways that violated their own moral values, and betrayal-based PMIEs, during which personal moral expectations were violated by trusted others. **Method:** Using a sample of 867 active duty Marines from a single infantry battalion that engaged in heavy ground combat while deployed to Afghanistan, a structural equation model was built to examine the relationships between perpetration- and betrayal-based PMIEs, combat experiences, and peritraumatic dissociation reported at 1 month postdeployment, and guilt/shame, anger, and PTSD symptoms reported at 8 months postdeployment. **Results:** The relationship between betrayal-based PMIEs and PTSD was mediated by anger ( $\beta = .14$ ). There was marginal evidence of mediation of the relationship between perpetration-based PMIEs and PTSD by shame and guilt ( $\beta = .09$ ), and of the relationship between danger-based combat events and PTSD by peritraumatic dissociation ( $\beta = .08$ ). No significant direct relationships were found between any of these 3 types of events and subsequent PTSD. Perceived perpetration and betrayal accounted for PTSD symptoms above and beyond combat exposure. Over a third of the sample reported experiencing perpetration- or betrayal-based PMIEs. **Conclusions:** The associations of perpetration and betrayal with PTSD, controlling for danger-based combat events, highlight the limitations of conceptualizations and treatments of PTSD based on fear or helplessness as sole etiologic factors.

**Keywords:** military, moral injury, posttraumatic stress disorder, service members, veterans

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Posttraumatic stress disorder (PTSD) is the most common serious postdeployment mental health problem among military personnel and veterans (Kok, Herrell, Thomas, & Hoge, 2012). PTSD among war veterans has been chiefly conceptualized to stem from experiences of victimization in the context of threats to life and safety (e.g., Friedman, Resick, Bryant, Strain, et al., 2011). However, not all events leading to PTSD involve danger and fear

(Weathers & Keane, 2007). In a clinical trial for treatment of PTSD in previously deployed service members, only 30% of traumatic events identified as currently most distressing involved a threat to personal life and safety (Stein et al., 2012). Other types of potentially traumatic warzone events theorized to correlate with subsequent PTSD are those involving violations of moral beliefs and expectations, or traumatic losses of cherished people or objects

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(Litz et al., 2009; Nash et al., 2010). The frequent and repeated exposure of deployed service members to potentially morally injurious events (PMIEs) and traumatic losses, instead of or in addition to life-threatening events, is postulated to be one of the reasons that war-related PTSD tends to be more severe and refractory to treatment than that in survivors of accidents or other civilian traumas (Litz et al., 2014; Steenkamp, Litz, Hoge, & Marmar, 2015).

In the present study, we investigated some of the correlates of war-related moral injury, which has been posited to be a syndrome with biological, psychological, social, spiritual, and behavioral components, resulting from exposure to one or more PMIEs (also called *transgressive acts*; Frankfurt & Frazier, 2016), each characterized by a transgression of deeply held beliefs and expectations about moral comportment (Litz et al., 2009). The symptoms of moral injury have been hypothesized to include the reexperiencing, avoiding, and numbing components of PTSD, as well as demoralization, self-handicapping, and self-harming behaviors (Litz et al., 2009). Shay (1994) was the first to use the term *moral injury* to refer to a potential consequence of warzone trauma; he focused on leaders' "betrayal of 'what's right'" (p. 3) as a cause of disorientation, despair, and loss of trust in others. In contrast, Litz et al.'s (2009) review of moral injury focused on acts of perpetration, such as committing or allowing disproportionate or inappropriate violence, rather than acts of betrayal by others. To date, most research on veterans who endorsed exposure to a PMIE has focused on *perpetration-based* events (Beckham, Feldman, & Kirby, 1998; Maguen et al., 2010), but a majority of the content experts interviewed by Drescher et al. (2011) recognized both perpetration and betrayal as important causes of moral injury in war. Nash et al. (2013) found that among deployed Marines, perpetration- and betrayal-based PMIEs were separable constructs.

As is the case with threat- and loss-based PMIEs, we argue that perpetration- and betrayal-based PMIEs are not directly linked to PTSD. Rather, the effect of PMIEs on PTSD symptoms and other aspects of moral injury is, in part, mediated by the *unique event-specific meaning* of PMIEs to the persons who experienced them, shaped by their learning histories and cultural context, especially the degree to which such events contradict firmly established identities or worldviews (Litz et al., 2009), and the moral emotions arising from these meanings. Consistent with cognitive-constructivist models of adaptation to life stressors (e.g., Park, 2010), Litz et al. (2009) proposed that PMIEs lead to inner conflict and emotional turmoil as the service member tries to reconcile his or her actions or the actions of others with his or her worldview. Moral emotions, defined as those that are "linked to the interest or welfare of others" (Haidt, 2003, p. 853), were argued to accompany the service member's attempt to resolve the emotional and cognitive dissonance that arises from perpetration- and betrayal-based PMIEs. As perceived moral violations repeatedly intrude into service members' consciousness (reexperiencing), accompanying painful moral emotions and self- or other-condemnation may engender social withdrawal (avoidance) as well as a sense of distance or alienation from other people and an inability to experience love and other feelings tied to self- and other-esteem (numbing). We propose that what distinguishes perpetration- and betrayal-based PMIEs from each other, and from threat-based events, are the predominant moral emotions that arise from the unique meaning that each insult represents.

We hypothesized that perpetration-based PMIEs would precipitate guilt and shame because service members or veterans were the agents of the harm that conflicted with their own moral values. Guilt, in this context, refers to an emotion that results from a "negative valuation of a specific behavior," and shame refers to the "negative global evaluation of the core self" (Farnsworth, Drescher, Nieuwsma, Walser, & Currier, 2014, p. 251). Some emotion researchers have found shame to be associated more strongly than guilt with certain negative outcomes such as depressive symptoms (Kim, Thibodeau, & Jorgensen, 2011). However, guilt and shame have been found to follow from the same types of moral transgressions even if they differ phenomenologically (e.g., Tangney, Miller, Flicker, & Barlow, 1996), and both have been associated with negative behavioral, social, and psychological outcomes (Tangney & Dearing, 2003). Perpetration events can lead to guilt- or shame-laden memories of the PMIE (Fontana, Rosenheck, & Brett, 1992), emotions that in turn precipitate avoidance behaviors, similar to fear-based traumatic events (Lee, Scragg, & Turner, 2001). Combat-related guilt has been found to be a strong predictor of PTSD symptoms (e.g., Marx et al., 2010). Furthermore, in a study of civilian perpetrators of assault, nearly half reported experiencing intrusive memories, and 6% met full criteria for PTSD following their perpetrations (Evans, Ehlers, Mezey, & Clark, 2007). The relationships between perpetration, guilt, shame, and PTSD symptoms may be strong among war veterans, as service members are charged with the responsibility to act with exemplary moral character (Nash, 2007). One prior study failed to find an association between perceived perpetration and guilt and shame among Air Force personnel (Bryan, Graham, & Roberge, 2015). However, only one quarter of the sample reported having experienced any direct combat, and guilt and shame were assessed using a dispositional or trait measure, making this a weak test of the hypothesis that warzone perpetration may lead to perpetration-related guilt and shame, which in turn may form a pathway to PTSD.

Betrayal-based PMIEs, by definition, may be harmful because they involve a moral transgression by a trusted other, potentially contradicting moral expectations about the goodness and dependability of others. We argue that such betrayal may lead to anger, an other-condemning moral emotion that follows primarily from perceiving someone to have violated other people's rights or intentionally harmed them (Rozin, Lowery, Imada, & Haidt, 1999; Russell & Giner-Sorolla, 2011). Although many combat events involve harm, we argue that most such events are expected within the context of war and can be readily assimilated into service members' moral understanding; it is only betrayal by trusted others that should typically lead to lasting moral anger. Although excessive anger and associated aggressive behavior may, themselves, be considered negative outcomes, they likely also play an important role in the development and persistence of PTSD following betrayal. Dalgleish and Power (2004) argued that unresolved post-traumatic anger may lead to intrusive thoughts and consequent avoidance behavior. A meta-analysis of 39 studies found that high levels of anger were associated with PTSD among trauma-exposed individuals; the association was especially pronounced among combat veterans (Orth & Wieland, 2006). In one prospective study, anger was found to be a strong predictor of PTSD (Andrews, Brewin, Rose, & Kirk, 2000), whereas in another study veterans' levels of anger accounted for more than 40% of PTSD

symptom variance, after accounting for combat exposure (Novaco & Chemtob, 2002). A more recent study found that the severity of anger distinguished PTSD from subthreshold PTSD and non-PTSD cases among veterans of the wars in Iraq and Afghanistan (Jakupcak et al., 2007). Despite the indirect evidence for a pathway from betrayal to PTSD via anger, no research to date has examined this directly.

We argue that the pathway to psychopathology from danger-based warzone experiences is different from that involving PMIEs. Some studies have shown a direct association between combat exposure scores and PTSD, although this “direct” linkage may be attributable to untested third-variable mediators (distal and proximal causal mechanisms that trigger and maintain PTSD). The experience of fear during and immediately after a traumatic event has long been assumed to be a potent and even necessary trigger for PTSD, but the weak predictive power of peritraumatic fear, helplessness, or horror led to the removal of the A2 Criterion for PTSD from the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*; Friedman, Resick, Bryant, & Brewin, 2011). Among other possible mediators, peritraumatic dissociation has been found to have one of the highest effect sizes in many populations (Lensvelt-Mulders et al., 2008; Ozer, Best, Lipsey, & Weiss, 2003), including among highly combat-exposed service members (Nash et al., 2015). Questions about the nature of peritraumatic dissociation and the mechanisms by which it mediates PTSD remain unanswered, including whether peritraumatic dissociation may best be conceptualized as a normative (though extreme) self-protective defense mechanism, or as a symptom of failure of the severely stressed central nervous system to process information (Mattos, Pedrini, Fiks, & de Mello, 2016; Nash et al., 2015).

In this study, we investigated the relationships between betrayal-, perpetration-, and danger-based warzone events and subsequent PTSD in combat veterans. We used postdeployment data to test several predictions: (a) Service members will report perceived perpetration and betrayal following deployment to a warzone; (b) perceived perpetration will be associated with PTSD symptoms, and this relationship will be mediated by the experience of shame and guilt concurrent with PTSD; (c) perceived betrayal will be associated with PTSD symptoms, and this relationship will be mediated by the experience of anger concurrent with PTSD; (d) exposure to danger-based combat stressors will be directly and indirectly associated with PTSD, the latter through peritraumatic dissociation; and (e) perceived perpetration and betrayal will uniquely account for variance in PTSD symptoms above and beyond the variance accounted for by exposure to life-threatening events.

## Method

### Participants

We drew our sample from the Marine Resiliency Study (MRS), a prospective field study of correlates of PTSD in four cohorts of active duty Marines serving in infantry battalions that deployed to Iraq or Afghanistan between 2008 and 2011 (Baker et al., 2012). We evaluated our predictions with Cohort 4 ( $N = 867$ ) because this cohort had substantially higher combat exposure and unit losses during deployment than the other cohorts, placing them at

greater risk for combat-related PTSD. The Marines were assessed four times using a variety of psychological, biological, and social measures; those that are relevant to the current investigation are described below. On average, Marines in Cohort 4 were assessed at 1-month predeployment and 1-, 5-, and 8-months postdeployment. Written informed consent was obtained at baseline, before enrollment and after participants received a complete description of the study. Participation at each assessment interval was voluntary, with no senior unit leaders present.

### Measures

Note that in our analyses, we used the measures of perpetration, betrayal, combat exposure, and peritraumatic dissociation from 1 month postdeployment. Because we hypothesized that the impact of moral injury may depend on emotional processing that occurs for some time after a potentially morally injurious event, we used the measurements of negative affect (guilt/shame and anger) and PTSD occurring at 8 months postdeployment.

**Moral Injury Event Scale (MIES).** The MIES (Nash et al., 2013) is a self-report measure on which service members indicated their agreement or disagreement with nine statements about PMIE exposure since joining the military (e.g., “I acted in ways that violated my own moral code or values”), using a 1 (*strongly disagree*) to 6 (*strongly agree*) scale. This scale was administered at each of the three postdeployment time points. Nash et al. (2013), in an analysis also drawing from the MRS data set, found that a two-factor solution best fit the data, with six items loading on a “transgression” factor, and three on a “betrayal” factor. Included among the “transgression” items are four items focused on perpetration as we have defined it above (i.e., transgressions by the self), whereas the other two items measure witnessed transgressions. The latter two items had the weakest factor loadings in Nash et al. (2013), and were found by other investigators to constitute a “transgression by others” construct separate from perpetration by the self (Bryan, Bryan, Morrow, Etienne, & Ray-Sannerud, 2014). We therefore included only seven items in our analyses: perpetration was measured by four items, and betrayal was measured by three items. Internal consistency was good for the subscales of perpetration ( $\alpha = .93$ ) and betrayal ( $\alpha = .84$ ).

**Deployment Risk and Resilience Inventory—Combat Experiences Scale (CES).** A modified version of the 16-item CES (King, King, Vogt, Knight, & Samper, 2006) was administered at 1 month postdeployment to assess exposure to danger-based events. Participants indicated their frequency of exposure to each experience during combat and support convoys, ranging from 0 (*never*) to 4 (*daily or almost daily*). Because the measure assessed discrete and possibly uncorrelated experiences, we included it in our models as a single observed variable in which the items were summed. Because some items on the CES did not directly measure danger-based combat stressors, we present in an Online Supplement an alternative analysis using only those CES items that unequivocally probed danger-based life-threat events, which yielded results that were substantively nearly identical to those we discuss below.

**Peritraumatic Dissociative Experiences Questionnaire (PDEQ).** The PDEQ (Marmar, Weiss, & Metzler, 1997) is a self-report questionnaire that was used to assess dissociative experiences that occurred during or immediately following stressful

events. Participants indicated at one month postdeployment the degree to which each of 10 statements were true of their experiences, using a Likert scale ranging from 1 (*not true at all*) to 5 (*extremely true*). The MRS version asked Marines to report dissociative experiences that occurred during the worst event from their most recent deployment. In order to model this construct as a latent variable, the items were parceled into the two latent factors defined by Brooks et al. (2009).

**Positive and Negative Affect Schedule (PANAS).** The PANAS (Watson, Clark, & Tellegen, 1988) is a self-report measure designed to assess participants' experiences of positive and negative emotions. This scale was administered at each of the three postdeployment time points. Participants rated the degree to which they had felt 20 different emotions over the past week, using a 1 (*very slightly or not at all*) to 5 (*extremely*) scale. To create guilt/shame and anger variables for our models, we asked a panel of three PTSD experts to select the items related to these constructs. "Ashamed" and "guilty" were selected as the two indicators of guilt/shame and were positively associated, as expected, in our sample ( $r = .45$ ). "Hostile" and "irritable" were selected as the two indicators of anger ( $r = .57$ ). Each of these two indices of negative affect had a possible range of 2 to 10.

**Posttraumatic Stress Disorder Checklist (PCL).** The PCL (Weathers, Litz, Herman, Huska, & Keane, 1993) is a self-report questionnaire assessing PTSD symptom severity. Participants rated how much they had been bothered by 17 PTSD symptoms in the last month, on a 1 (*not at all*) to 5 (*extremely*) scale; the possible range was 17 to 85. The version used in MRS (PCL-S) instructed participants to link their responses to a specific stressful experience, and it was administered at all four time points (see Dickstein et al., 2015, for psychometric characteristics of the PCL-S in this population). The PCL data collected at 8 months postdeployment were used in the present analyses.

## Overview of Analyses

We used structural equation modeling to examine the relationships between perceived perpetration and betrayal, guilt/shame, anger, combat experiences, peritraumatic dissociation, and PTSD symptoms. First, we tested a measurement model that included only the effect indicators for each of the six latent variables: perpetration, betrayal, guilt/shame, anger, peritraumatic dissociation, and PTSD symptoms. We then constructed a structural model that included these paths as well as several paths between the observed and latent variables. Specifically, we regressed PTSD on anger, guilt/shame, dissociation, be-

trayal, perpetration, and combat. In addition, we regressed anger on betrayal and combat, guilt/shame on perpetration and combat, and dissociation on combat. Our structural model thus permitted us to examine our hypothesized effects: the indirect effect of perpetration on PTSD through guilt/shame; the indirect effect of betrayal on PTSD through anger; the indirect effect of combat exposure on PTSD through peritraumatic dissociation; and the direct effect of combat exposure on PTSD. The model's inclusion of paths from combat to guilt/shame and anger allowed us to test whether perpetration and betrayal had associations with these constructs—and indirect effects on PTSD, in turn—that went beyond any possible effects of combat exposure. Our model also allowed us to test for any possible direct effects of perpetration and betrayal on PTSD.

The analyses were conducted using Mplus (version 7.11) maximum likelihood estimation with robust standard errors (MLR) to obtain robust estimates with missing data and to address the positive skew of reports of distress likely attributable to the majority of participants adapting well postdeployment. Missing data were assumed to be missing at random. We examined a number of fit indices to determine the goodness of fit. We used the following indications: for the CFI and TLI, values above .95 are considered to be a good fit and values above .90 are adequate (Hu & Bentler, 1999); RMSEA values less than .06 and SRMR values less than .08 indicate good fit (Hu & Bentler, 1999); and values of SRMR up to .10 are considered to be within the upper limit of acceptability (Vandenberg & Lance, 2000).

## Results

Table 1 displays the means and standard deviations for all study measures, as well as the correlations between measures. Perpetration and betrayal were highly correlated, and there were also positive associations between PTSD and anger, PTSD and dissociation, combat exposure and dissociation, and feelings of guilt/shame and anger.

### Prevalence of Perpetration and Betrayal Among Combat-Deployed Marines

Table 2 lists the percentage of participants who "slightly agreed," "agreed," or "strongly agreed" with each of the perpetration and betrayal items on the MIES. The most commonly endorsed items—each endorsed by about one fifth of the participants at the "slightly agree" or higher level—were "I acted in ways that violated my own moral code or values" and "I feel betrayed by

Table 1  
Means, Standard Deviations, and Correlations Among Measures

Measure	Mean	SD	1	2	3	4	5	6
1. Perpetration	1.87	1.17						
2. Betrayal	2.00	1.23	.70**					
3. Combat exposure	22.62	13.78	.12**	.09*				
4. Dissociation	1.64	.75	.25**	.21**	.33**			
5. Guilt/shame	2.94	1.50	.24**	.25**	.16*	.22**		
6. Anger	4.35	2.17	.34**	.32**	.18**	.33**	.41**	
7. PTSD	25.50	10.73	.29**	.32**	.28**	.41**	.44**	.51**

\*  $p < .05$ . \*\*  $p < .01$ .



Table 2

Percentage of Participants Endorsing MIES Items at a “Slightly Agree” or Higher Level

I acted in ways that violated my own moral code or values	18.6%
I am troubled by having acted in ways that violated my own morals or values.	10.0%
I violated my own morals by failing to do something that I felt I should have done.	14.4%
I am troubled because I violated my morals by failing to do something that I felt I should have done.	11.6%
I feel betrayed by leaders who I once trusted.	20.2%
I feel betrayed by fellow service members who I once trusted.	15.0%
I feel betrayed by others outside the U.S military who I once trusted.	14.9%

leaders who I once trusted.” Of the Marines, 24.1% endorsed at least one of the perpetration items, 28.4% endorsed at least one of the betrayal items, and 37.5% endorsed at least one of the perpetration or betrayal items at the “slightly agree” or higher level.

### Associations of Perpetration, Betrayal, and Combat Exposure With PTSD

The measurement model demonstrated a good fit,  $\chi^2(213, 609) = 452.29, p < .001$ ; CFI = .94; TLI = .92; RMSEA = .043 (90% CI: .037–.048); SRMR = .052. Next, we tested the structural model, which provided a good overall fit to the data,  $\chi^2(239, 526) = 538.55, p < .001$ ; CFI = .92; TLI = .91; RMSEA = .049 (90% CI: .043–.054); SRMR = .105. As shown in Figure 1, there were moderate and significant associations between perpetration and guilt/shame, betrayal and anger, combat exposure and peritraumatic dissociation, combat and anger, guilt/shame and PTSD, anger and PTSD, and peritraumatic dissociation and PTSD. There were no significant direct effects of perpetration, betrayal, or combat exposure on PTSD. The hypothesized indirect effects were quite small, and in two out of three cases, were only marginally statistically significant. Specifically, the indirect effect of perpetration on PTSD through guilt/shame was  $\beta = .09, S.E. = .05, p = .08$ . The indirect effect of betrayal on PTSD through anger was

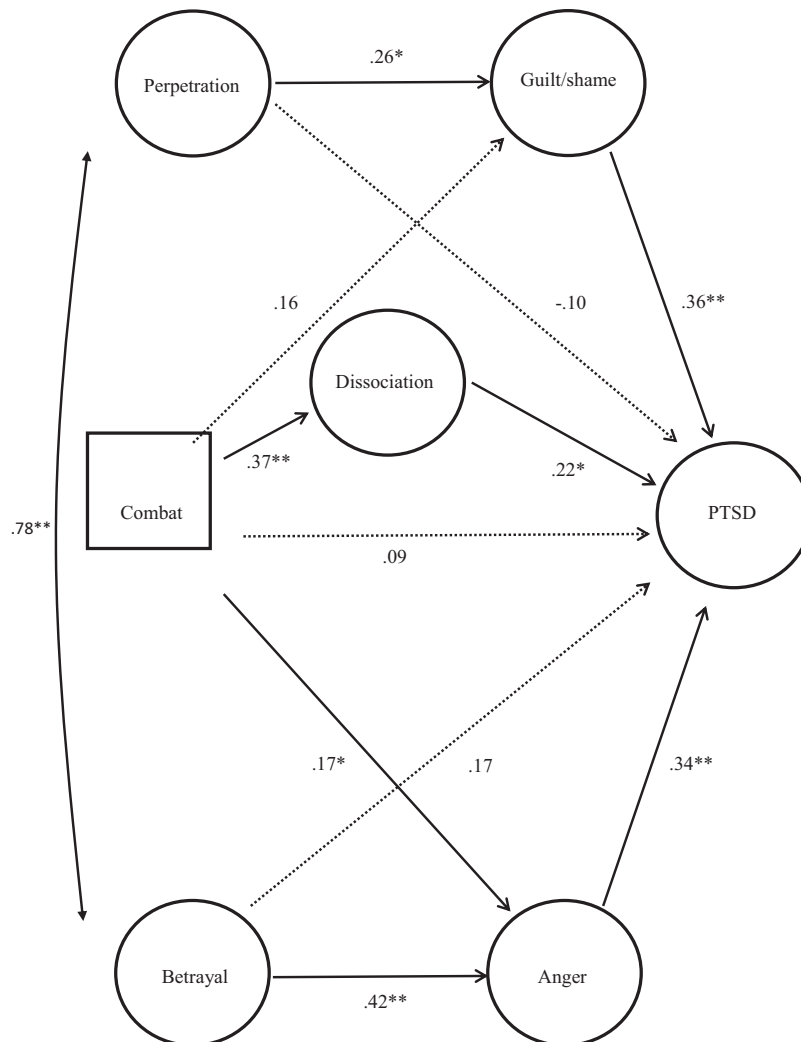


Figure 1. Unidirectional arrows are standardized path coefficients. \*  $p < .05$ , \*\*  $p < .01$ .

$\beta = .14$ ,  $S.E. = .06$ ,  $p = .01$ . The indirect effect of combat on PTSD through dissociation was  $\beta = .08$ ,  $S.E. = .04$ ,  $p = .06$ .

## Discussion

This study was the first to investigate the prevalence of perpetration- and betrayal-based PMIEs among combat-deployed service members, as well as the pathways through which exposure to these types of PMIEs was associated with PTSD symptoms. Our analyses using a highly combat-exposed cohort of service members provided mixed support for our key predictions: More than one third of the Marines reported experiences of perpetration or betrayal; perceived perpetration was associated with PTSD symptoms, a relationship marginally mediated by guilt/shame; perceived betrayal was associated with PTSD symptoms, a relationship mediated by anger; combat exposure was associated with PTSD symptoms, a relationship marginally mediated by peritraumatic dissociation; and perceived perpetration and betrayal accounted for PTSD symptoms above and beyond the direct and indirect effects of danger-based combat exposure. Contrary to expectation, there was no significant direct effect of combat exposure on PTSD in this model. The absence of a significant direct effect of combat exposure on PTSD suggests that such a link may be attenuated when the impacts of perpetration and betrayal are accounted for. The separate paths through which perceived perpetration and betrayal were associated with PTSD symptoms provide support for the distinction between the experiences and outcomes of these two types of PMIE. This study suggests that betrayal-based PMIEs have a separate phenomenology and pathway to PTSD among combat veterans and may explain the consistently strong relationship between anger and PTSD among war veterans (Orth & Wieland, 2006).

Our finding that perpetration- and betrayal-based PMIEs accounted for unique variance in PTSD symptoms (beyond the effect of combat exposure) is consistent with prior research (e.g., Stein et al., 2012) and has important implications for how PTSD should be understood, screened for, and treated among service members and veterans. Although PTSD is no longer officially classified as an anxiety disorder in the latest edition of the *Diagnostic and Statistical Manual* (American Psychiatric Association, 2013), its diagnosis still hinges on an originating danger-based stressor—specifically, actual or threatened death, serious injury, or sexual violence. Our findings suggest that for a substantial proportion of service members and veterans, PTSD symptoms may be attributable to morally injurious experiences of perpetration or betrayal rather than danger-based events. A number of first line psychotherapies for war-related PTSD are founded on the assumption that war traumas are characterized by high levels of fear or helplessness (Foa, Keane, Friedman, & Cohen, 2008), but these therapies provide little guidance for treating PTSD resulting from PMIEs, and what guidance they do provide assumes that moral emotions such as guilt and shame are mere byproducts of cognitive distortions (Finlay, 2015). The development of new psychotherapies aimed explicitly at facilitating *moral repair* may help alleviate the guilt, shame, and anger that appear to be driving PTSD symptoms, among other difficulties (e.g., Litz, Lebowitz, Nash, & Gray, 2015). For the morally injured, treatment strategies that facilitate forgiveness of self or others, making amends, or engagement in the reexperiencing of the inherent goodness in humanity may be more

helpful than repeated emotional processing of one's own or others' perceived moral failings, or minimizing perceived culpabilities as distortions caused by hindsight bias. Our findings may inform selective and indicated prevention programs in the military by highlighting the greater importance of responses to potentially traumatic events—including guilt/shame, anger, and dissociation—than the events themselves as markers of risk for PTSD in individuals and groups.

Five key limitations in this research point to fruitful future directions for investigation. First, to bolster causal inferences and to determine the direction of the associations we identified, future research is needed that examines carefully the temporal progression of moral injury from peri-event reactions to subsequent cognitive and emotional interpretations of the event and long-term outcomes such as PTSD. Second, the instrument used to measure exposure to PMIEs—the MIES—was designed to broadly capture the degree to which service members report having experienced events that they perceive as constituting perpetration or betrayal, but it does not assess the specific details of such events (e.g., a prescribed killing vs. a careless operational mistake leading to losses), and some items arguably conflate the events themselves with subjective appraisals or effects of the events (Frankfurt & Frazier, 2016). Developing an inventory of specific warzone-related stressors that may engender perceptions of perpetration or betrayal would permit research to deepen our understanding of the roots of moral injury in war veterans. Third, conceptual models of moral injury have pointed to a variety of possible behavioral, social, spiritual, and biological outcomes that extend beyond the diagnostic construct of PTSD, our primary outcome in this study (Farnsworth et al., 2014; Frankfurt & Frazier, 2016; Litz et al., 2009). For example, greater perceived perpetration has been associated with a history of suicide attempts in service members (Bryan et al., 2014). Developing an inventory of the broad array of sequelae that may be associated with PMIEs would facilitate research to better define the syndrome of moral injury, including its relationship with PTSD. Fourth, future research will benefit from more precise measurement of deployment-related moral emotions than that provided by the PANAS. In particular, we recommend developing and incorporating measures that might distinguish the roles of guilt and shame in perpetration-based moral injury, and that might illuminate the possible roles of contempt and disgust in betrayal-based moral injury (Farnsworth et al., 2014). Finally, we did not examine possible risk and protective factors related to distress following exposure to PMIEs. Because past research on predeployment, deployment-related, and postdeployment risk factors associated with PTSD has not disentangled the various types of warzone stressors that may precipitate PTSD symptoms, it is unknown whether different factors may sensitize service members to, or inoculate them against, the adverse consequences of exposure to potentially morally injurious experiences, compared with those that moderate the adverse consequences of exposure to experiences of extreme danger.

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