Indirect Relations Between Transgressive Acts and General Combat Exposure and Moral Injury

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ABSTRACT Introduction: Moral injury describes the deleterious effects of acts of commission (e.g., killing noncombatants), omission (e.g., failing to prevent a massacre), or betrayal (i.e., by a trusted authority figure) during military service that transgress accepted behavioral boundaries and norms. Transgressive acts are proposed to lead to a guilt- and shame-based syndrome consisting of post-traumatic stress disorder (PTSD) symptoms, demoralization, self-handicapping, and self-injury. In this study, we tested a frequently cited model of moral injury and assessed the associations between potentially transgressive acts, moral injury outcomes, and guilt and fear. Additionally, we sought to clarify the relative contribution of transgressive and nontransgressive/general combat exposure to moral injury. On the basis of previous research and theory, we anticipated that the transgressive acts would be related to outcomes through guilt and that nontransgressive combat exposure would be related to outcomes through fear. Materials and Methods: Secondary analysis was conducted on data from a sample of combat-exposed male veterans at a Midwestern Veterans Affairs (VA) medical center ($N = 190$) who participated in a larger parent study on postdeployment readjustment. Structural equation modeling was used to test the pathways from transgressive and nontransgressive combat exposure to PTSD symptoms and suicidality through combat-related guilt and combat-related fear. The institutional review boards of the Midwestern VA medical center and the university of the affiliated researchers approved the study. Results: In total, 38% ($n = 72$) of the sample reported a potentially transgressive act as one of their three worst traumatic events. The most common potentially transgressive act was killing an enemy combatant (17%; $n = 32$). In structural equation modeling analyses. potentially transgressive acts were indirectly related to both suicidality ($\beta = 0.09$, $p < 0.01$) and PTSD symptoms ($\beta = 0.06$, $p < 0.05$) through guilt. General combat exposure was indirectly related to PTSD through fear, $\beta = 0.19$, $p < 0.01$. Combat exposure was not directly or indirectly related to suicidality. Conclusion: Overall, these findings suggest that veterans with a history of potentially transgressive acts may present to the VA with a constellation of symptoms that are associated with combat-related guilt. Transgressive acts were identified using a qualitative approach, allowing a broader sampling of this domain. Results were limited by the use of self-report data and by gathering data from participants who were Veterans seeking compensation and pension evaluations for PTSD. The clinical implications suggest that focusing on fear-related outcomes and ignoring guilt- and shame-based reactions may lead to an incomplete case conceptualization. Clinicians working with veterans with moral injury are encouraged to prepare themselves for the discomfiting therapeutic experiences of bearing witness to and empathizing with clients' memories of their actions, which may include atrocities. Effective and empathic treatments that address the guilt and shame associated with transgressive acts are needed to adequately care for returning veterans.

INTRODUCTION

Clinicians[1] and researchers[2] have observed that veterans who report participating in violence, such as killing (justified or not) or atrocities, or who witnessed and were unable to prevent horrifying violence, appear to have much worse postdeployment functional and psychiatric outcomes than those veterans who have not committed or been exposed to such acts. The psycho-bio-socio-spiritual disturbance associated with these acts has been labeled moral injury. Moral injury is a transdiagnostic syndrome that describes the uniquely deleterious impact of committing or failing to prevent acts during warfare that involve violations, transgressions, or betrayals, of commonly accepted boundaries of behavior.[3–5] These transgressive acts were proposed to fundamentally insult veterans' beliefs in themselves as good and decent people and thus result in powerful cognitive dissonance between the veterans' self-identity and actions. This cognitive dissonance is thought to engender overwhelming shame, guilt, and rage that results in social withdrawal and existential/spiritual difficulties as well as psychological and behavioral consequences such as PTSD, demoralization, self-handicapping, and self-injury.[3,4] Importantly, the proposed mechanisms underlying moral injury are shame- and guilt-based negative self-appraisals, not the fear- and threat-based overgeneralized learning that form the basis of many theories of post-traumatic stress disorder (PTSD).[6]

Moral Injury Model

A frequently cited model by Litz et al described the moral injury syndrome as consisting of PTSD symptoms along with the collateral effects of self-injury, demoralization, and self-handicapping.[4] Self-injurious behaviors included

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substance abuse, risk-taking, and suicidality. Demoralization is an affective and cognitive phenomenon that manifests as despair, worthlessness, and meaninglessness. Self-handicapping involves shunning positive experiences, such as success or positive emotions. In this model, Litz et al also proposed a number of mechanisms of moral injury development following transgressive acts, particularly guilt and shame. We next review literature on the components of this moral injury model tested in this study.

Potentially Transgressive Acts and PTSD

A growing body of empirical evidence points to the association between potentially transgressive acts and PTSD symptoms. For example, a number of studies have found a significant relation between killing in combat and PTSD symptoms, after controlling for combat exposure, in samples of Vietnam and Iraq War veterans.[2,7–9] Committing atrocities was also associated with more severe PTSD in Vietnam veterans.[2,8,10] Being directly responsible for the deaths of enemy combatants, Vietnamese citizens, or Vietnamese prisoners of war, or being involved in situations wherein women, elderly people, and children were killed, were all associated with more severe PTSD symptoms.[2]

Potentially Transgressive Acts and Self-Injury

Data on the collateral effects of moral injury (self-injury, demoralization, self-handicapping) are mixed, and the availability of data varies greatly across the collateral effects.[11] The association between potentially transgressive acts and self-injury has received the most attention. Overall, available data suggest that potentially transgressive acts have a small but significant association with increased suicidality—a potentially lethal form of self-injury.[12–15] A meta-analysis of the relation between combat exposure and risk for suicide found a small but significant correlation between specific potentially transgressive combat experiences (e.g., killing in combat) and suicide attempts ($r = 0.11$) and suicidal ideation ($r = 0.14$), with significant heterogeneity among the effects.[16]

Mechanisms of Moral Injury

According to the moral injury model,[4] potentially transgressive acts are associated with guilt and shame, which are in turn associated with a greater risk of PTSD and other collateral effects of moral injury. A handful of studies have examined the associations between potentially transgressive acts, guilt and shame, and moral injury outcomes. Combat-related guilt and shame were moderately correlated with committing atrocities and with suicidality in one study.[17] Additionally, guilt and shame have been associated with more severe PTSD symptoms among other combat-exposed samples.[10,17,18]

Two studies have used structural equation modeling (SEM) to test key arms of the moral injury model and have found mixed results. In one of the most comprehensive studies,[19] the pathways from potentially transgressive combat exposure (i.e., exposure to abusive violence) and nontransgressive/general combat exposure to PTSD and major depressive disorder (MDD) through combat-related guilt were examined. Both transgressive and nontransgressive combat exposure was associated with guilt, and guilt partially accounted for the associations between both types of combat exposure and PTSD and MDD. However, the indirect effects of potentially transgressive exposure on PTSD and MDD through guilt were stronger than the indirect effects associated with general combat exposure. In another study of active duty Marines, perpetration-based potentially transgressive acts were directly related to guilt/shame, and guilt/shame was directly related to PTSD but the indirect path from transgressive acts through guilt/shame to PTSD was not significant.[20]

Summary and This Study

Overall, the current body of literature on moral injury is limited by the dearth of empirical data. Specifically, few studies are available on the prevalence of a wide range of potentially transgressive acts apart from killing or harming noncombatants, or on moral injury outcomes (e.g., PTSD and suicide) following potentially transgressive acts. Few studies have assessed combat-related guilt, a mechanism of moral injury, in relation to potentially transgressive acts. Finally, few studies have examined the relations among potentially transgressive acts, moral injury outcomes (e.g., PTSD) and proposed mechanisms (e.g., guilt) simultaneously in one model.

This study addressed these limitations by testing some of the key assertions of the most frequently cited moral injury model using secondary data analysis on previously collected data.[4,21] Although the Litz et al model focused on guilt and shame as mechanisms, we also included combat-related fear as a mechanism, given its relation with PTSD.[22,23] Specifically, we assessed the associations between potentially transgressive acts, moral injury outcomes, and guilt and fear using SEM in a sample of male combat-exposed veterans at a Midwestern Veterans Affairs (VA) medical center. We hypothesized that (1) potentially transgressive acts would be directly related to guilt (a key moral injury mechanism) and outcomes (i.e., PTSD symptoms and suicidality) and (2) the indirect relation between transgressive acts and outcomes through guilt would be significant. Because transgressive acts typically take place in the context of combat exposure, and because combat exposure is associated with PTSD, fear, and suicidality, combat exposure was also included in the model.[16,22] We hypothesized that (3) combat exposure would be directly related to fear and PTSD,[22] and the (4) indirect relation between combat exposure and PTSD through fear would be significant.[22] On the basis of previous literature, we predicted that (5) combat exposure would be directly related to suicidality;[16] however, few studies were available on which to base hypotheses related to the indirect relations between combat exposure and suicidality through fear or guilt. We anticipated that the primary pathway from

transgressive acts to moral injury (i.e., PTSD and suicidality) would be via combat-related guilt, and that the primary pathway from general combat exposure to outcomes would be via combat-related fear. We also sought to distinguish the relative contributions of potentially transgressive and nontransgressive/general combat exposure to moral injury outcomes.

METHOD

Procedure and Sample

Veterans who were recruited for a PTSD study from 2007 to 2014 at the Minneapolis VA Health Care System (MVAHCS) (N = 616) were eligible for inclusion in this study, which involved secondary data analysis.[21] Participants completed the Deployment Risk and Resilience Inventory (DRRI)[24] and the Posttraumatic Stress Disorder Checklist-Military (PCL-M)[25] as part of the parent study. We selected those who were male, reported exposure to combat trauma, completed a Compensation and Pension (C and P) examination at the MVAHCS between 2003 and 2014, and had a valid Minnesota Multiphasic Personality Inventory-Second edition (MMPI-2)[26] profile as part of their C and P examination. C and P examinations are part of the claims process for service-related disability compensation, and thus serve as gatekeepers for access to health care, and financial and academic support. The MMPI-2 has scales that detect response invalidity, and potential participants with elevated response invalidity scales were excluded. Generally, the C and P examinations were conducted before participation in the research study; study personnel recommended participants who had not undergone a PTSD disability examination to do so when appropriate. We used these inclusion criteria because C and P examination procedures are not uniform across different VA health care centers and so only participants who did their C and P examination at the MVAHCS completed the Mississippi Scale for Combat-Related PTSD (M-PTSD).[27] We included only male veterans because the most frequent trauma among female veterans was military sexual trauma, which may be morally injurious but is qualitatively different than combat-related potentially transgressive acts. This resulted in a final sample of 190 male combat-exposure veterans who had completed the M-PTSD and thus had measures of key constructs in the model. The sample was primarily white (n = 183, 96%) and middle aged (M = 55.07, SD = 15.30). Most participants served in either the Vietnam (58%) or Operation Iraqi Freedom/Operation Enduring Freedom (31%) theaters. This subsample did not significantly differ from the larger sample in terms of average age, t (606) = −1.45, p = 0.15. However, the distribution of race categories differed across the subsample and the larger sample, χ^2 (5, N = 608) = 11.56, $p < 0.05$, with the subsample having a smaller percentage of African American veterans (1%) than the larger sample (5%). The subsample also differed from the larger sample in terms of war era, χ^2 (8, N = 608) = 26.86, $p < 0.05$. Specifically, the subsample had a larger proportion of veterans who served in the Korean War (2% vs. 0.5%) and the Vietnam War (58% vs. 48%), and a smaller proportion who served in peacetime/post-Korea (1% vs. 8%). The study was approved by the institutional review boards at the MVAHCS and the University of Minnesota. Participants provided written informed consent, including permission to review disability claims, before the parent study.

Measures

"Transgressive acts" were assessed using narratives for participants' three worst traumatic events, which were elicited during the C and P examination using the Clinician Administered PTSD Scale–IV.[28] Trauma narratives were coded for 8 transgressive acts by a team of three licensed and one supervised mental health professional with expertise in PTSD and diagnostic interviewing. The transgressive acts coded were witnessing/learning about suicide of a comrade, witnessing/failing to prevent harm to a noncombatant, killing an enemy combatant, injuring/killing a noncombatant, committing a massacre of civilians, failing to prevent/witnessing atrocities/massacre, friendly fire (weapon fire or attack from friendly forces on friendly forces), and vague statement of commission (e.g., "I've done terrible things"). These events were derived from prior empirical and clinical literature on the antecedents of moral injury.[3–5] The interrater agreement for the transgressive acts ranged from 0.71 (friendly fire) to 1.0 (killing enemy combatant). The average Fleiss' κ was 0.72.[29] If veterans reported any one of these events, they were coded as having a transgressive act.

"Combat-related guilt" was assessed using the item "I do not feel guilt over things I did in the military" on the 35-item M-PTSD.[27] This item was rated on a 0 ("not at all/never") to 5 ("very true") scale. This was derived from the C and P examination data.

"Combat-related fear" was assessed using seven items from the DRRI-Deployment Concerns subscale,[24] which was completed during the parent study. These items were: "I thought I would never survive," "I felt safe" (reverse coded), "I felt that I was in great danger of being killed or wounded," "I was concerned that my unit would be attacked by the enemy," "I was worried about the possibility of accidents (e.g., friendly fire or training injuries in my unit)," "I was afraid I would encounter a mine or a booby trap," and "I felt secure that I would be coming home after the war" (reverse coded). These items were scored on a 1 ("strongly disagree") to 5 ("strongly agree") scale. The subset of "combat-related fear" items was identified using principal axis factor analysis with direct oblimin rotation of the 15 items from the Deployment Concerns subscale. These seven items loaded on one factor with factor loadings ranging from 0.43 to 0.87. These items were used to create a combat-related fear latent variable in the SEM. The α coefficient for these

7 items was 0.82. These data were collected in the parent research study.

"Non-transgressive combat exposure" was assessed using 14 items from the 15-item DRRI-Combat Exposure subscale (e.g., "I was part of an assault on an entrenched or fortified position").[24] The DRRI-Combat Exposure subscale used the same 5-point Likert scale as the DRRI-Deployments Concerns subscale. One item that assessed potentially transgressive combat exposure (e.g., killing) was removed. Cronbach's α was 0.85 in this sample for the 14-item version of the DRRI combat exposure scale. These data were derived from the parent research study.

"PTSD" symptoms were assessed using the PCL-M.[25] The PCL-M is a 17-item checklist that assesses symptoms in the Diagnostic and Statistical Manual-IV PTSD diagnostic criteria. Items were rated on a 1 ("not at all") to 5 ("extremely") scale (possible range = 17–85). Cronbach's α was 0.94 for the total symptom severity score. The PCL-M was completed during the parent research study.

"Suicidality" was assessed using the item, "Lately, I have felt like killing myself" on the M-PTSD. This item was rated on a 0 ("not at all/never") to 5 ("very true") scale. The M-PTSD was completed during the C and P examination.

Data Analysis

To test our hypotheses, we identified participants with a history of combat exposure, and examined correlations among all variables in this sample. We then conducted SEM in two steps. We first tested the measurement model and then tested the structural model assessing the direct and indirect pathways to moral injury outcomes from transgressive acts through guilt and fear. In our structural model, the two exogenous variables (i.e., transgressive acts and combat exposure) were correlated. Model fit was determined using four indices: χ^2 test of model fit, comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). CFI values >0.90 and RMSEA and SRMR values of ≤ 0.08 are considered indices of adequate fit.[30] SEM was conducted in Mplus, Version 7.3 (Muthén & Muthén, Los Angeles, California), which handled missing data by estimating models using maximum likelihood with robust standard errors. Before running analyses, the data were examined for missingness. Data were missing on <5% of the variables except for the DRRI variables: 19 participants were missing more than two items on the combat exposure and deployment concerns subscales and were retained in the analyses using full information maximum likelihood estimation.

RESULTS

In total, 38% (n = 72) of the sample reported a potentially transgressive act as one of their three worst traumatic events. The most common potentially transgressive act was killing an enemy combatant (17%; n = 32). Witnessing/failing to prevent injuries/harm to a noncombatant was reported by 14% (n = 26). Injuring/killing a noncombatant and friendly fire were both reported by 5% (n = 9). Six participants (3%) reported witnessing/failing to prevent atrocities/ massacre of civilians, five (3%) reported witnessing a comrade's suicide, and three (2%) reported vague statements of commission. No one reported participating in a massacre. See Table I for descriptive statistics and a correlation matrix of study variables.

We first tested the measurement model. The factor loadings from the indicators to the latent variables are shown in Figure 1. The indicators for the combat-related fear latent variable were seven items from the DRRI-Deployment Concerns scale (see "Measures" for items). The indicators for the PTSD latent variable were Criterion B average symptom scores, Criterion C average symptom scores, and Criterion D average symptoms scores. All standardized loadings were 0.49 or greater. The fit statistics for the measurement model indicate adequate fit; χ^2 (34) = 77.03, $p < 0.01$; CFI = 0.95; RMSEA = 0.08; SRMR = 0.05.

The structural model tested the pathways from potentially transgressive acts and combat exposure through guilt and fear to moral injury outcomes (see Fig. 1). Overall, the structural model provided adequate fit to the data, χ^2 (67) = 127.67, $p < 0.01$; CFI = 0.94; RMSEA = 0.07; SRMR = 0.05. Results provided mixed support for our hypotheses. Transgressive acts were significantly related to guilt but the direct paths to PTSD symptoms and suicidality were not significant (see Fig. 1). The indirect effect of potentially transgressive acts through guilt to suicidality was significant (β = 0.09, $p < 0.01$) as was the indirect effect of potentially transgressive acts through guilt to PTSD (β = 0.06,

TABLE I. Descriptive Statistics and Correlations

	M (SD)	1	2	3	4	5
1. Transgressive Acts[a]		—				
2. Combat Exposure	8.62 (3.59)	0.22**	—			
3. Guilt	2.88 (1.34)	0.28**	0.08	—		
4. Fear	3.80 (.86)	0.12	0.55**	0.06	—	
5. PTSD Symptoms	48.79 (14.68)	0.04	0.07	0.21**	0.21**	—
6. Suicidality	1.47 (.95)	0.13	–0.05	0.34**	0.05	0.31**

N = 171 to 189 because of missing data on some variables. [a]0 = no; 1 = yes. *$p < 0.05$, ** $p < 0.001$.

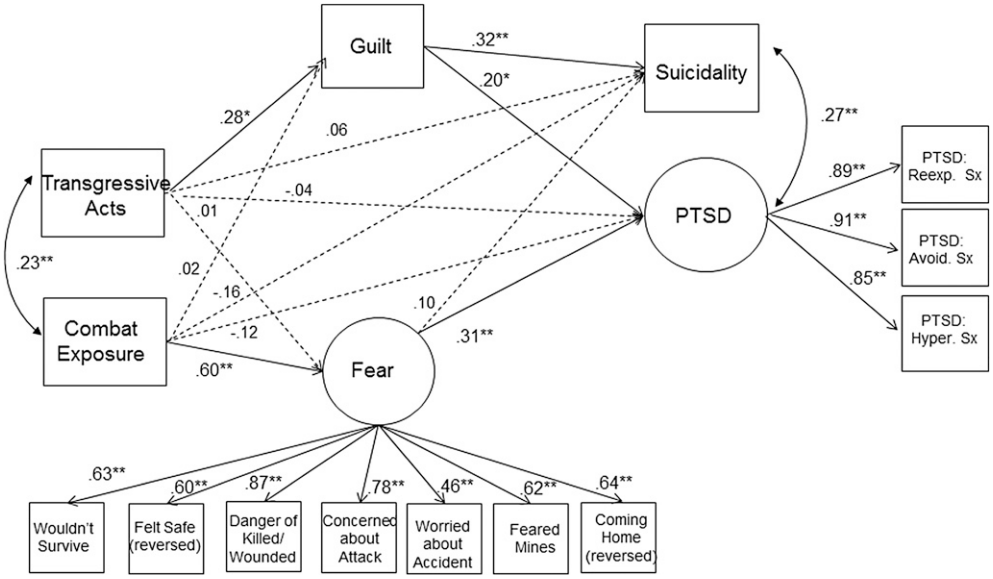

FIGURE 1. Moral Injury Model with Standardized Coefficients $N = 190$. PTSD Reexp. Sx, Reexperiencing symptom cluster; PTSD Avoid. Sx, Avoidance symptom cluster; PTSD: Hyper. Sx, Hyperarousal symptoms cluster. $^{*}p < 0.05$, $^{**}p < 0.001$. Dashed lines indicate nonsignificant paths.

$p < 0.05$). Combat exposure did not have a direct effect on PTSD. However, combat exposure had a direct effect on fear, and an indirect effect on PTSD through fear, $\beta = 0.19$, $p < 0.01$. Combat exposure did not have a direct effect on suicidality.

DISCUSSION

The purpose of this study was to assess the pathways from potentially transgressive acts to moral injury outcomes through a proposed mechanism of moral injury (e.g., guilt). We included multiple components of the most frequently cited model of moral injury[4] and thus were able to more comprehensively assess the model. We sought to distinguish the pathways from transgressive acts to outcomes via combat-related guilt from the pathways from general combat exposure to outcomes via combat-related fear. Additionally, we sought to clarify the relative contribution of potentially transgressive and nontransgressive/general combat exposure to moral injury outcomes. A qualitative approach was used to identify a variety of transgressive acts, allowing a broader sampling of this domain than in previous studies. Because participants' worst traumas were used to identify transgressive acts, we have greater confidence that these events may have been experienced as transgressive. Key findings are discussed, along with limitations and future directions.

This sample endorsed a similar rate of potentially transgressive acts (38%) as samples in previous studies.[2,31] Killing in combat was the most commonly reported transgressive act; however, this was reported less frequently in our sample than in previous studies.[2,31] Our study design likely contributed to the lower reporting of killing. In our study, transgressive acts were coded from responses to a question about participants' worst traumatic events on the C and P examination, rather than on a self-report combat exposure scale as in previous studies.[31] There are a few reasons why people would not report killing as their worst traumatic act during a C and P evaluation: killing was not traumatizing for them (i.e., suggesting they may not be at risk for moral injury), killing was too shameful or painful to discuss,[4] or killing was outside of the response set for trauma history in a structured PTSD interview (i.e., respondents are more likely to think of frightening or life-threatening events in response to interviewers' prompts), or respondents feared repercussions from admission of killing. These potential explanations suggest that participants in our study were distressed by their episodes of combat-related killing.

Findings supported our hypothesis that guilt and fear were pathways to different outcomes following potentially transgressive acts. The only significant indirect effects in the model suggested that potentially transgressive acts were associated with both suicidality and PTSD through guilt, whereas combat exposure was associated with PTSD symptoms only through fear. In contrast to previous literature,[2] potentially transgressive acts were not directly associated with suicidality in the SEM model or in bivariate correlations. However, the size of the bivariate relation was similar to that found in a previous meta-analysis.[16] Although fear partially accounted for the association between nontransgressive combat exposure and PTSD symptoms, nontransgressive combat exposure was not associated with combat-related guilt. Contrary to previous research, combat exposure was not directly associated with suicidality; however, again, in previous studies these effects were small and heterogeneous.[16]

These conclusions should be tempered by the limitations of the data. First, two sources of data were combined for this project. Although significant associations between variables across the datasets were found, lack of shared measurement procedures and contextual differences may have artificially attenuated the direct and indirect pathways between variables. Second, the reliance on self-report data likely resulted in an underestimation of the prevalence of transgressive acts that violate the rules of engagement (e.g., atrocities). Third, secondary data analysis limited the range of moral injury outcomes assessed. Additional outcomes include demoralization, substance abuse, and spiritual decline. Fourth, participants were veterans seeking PTSD C and P examinations, limiting generalizability to male veterans with combat exposure seeking VA benefits for PTSD. This may have increased reports of PTSD symptom severity and combat traumas; however, only participants with valid MMPI-2 profiles were included in the sample. Additionally, PTSD symptom scores were gathered during the parent research study and not the C and P examination, which minimized some of the risk of symptom amplification. Fifth, although military sexual trauma can be a morally injurious event (via betrayal by a trusted authority), military sexual trauma was not examined because of small numbers of women in the parent study sample. Sixth, only single items were available to assess some of the key constructs (e.g., guilt). Finally, the study data were cross sectional and not designed to test causal relations between transgressive acts and moral injury outcomes.

Future research should continue expanding the assessment of the moral injury domain and defining the boundaries of the construct. For example, future studies of moral injury should include more indicators of mechanisms (e.g., disgust and moral outrage) and outcomes (e.g., substance abuse). Potential risk factors (e.g., prior trauma exposure and neuroticism) and protective factors (e.g., social support and unit support) need to be tested in a more comprehensive model. The nature of the association between combat exposure and potentially transgressive acts also bears further examination. It may be that opportunities for transgressive acts are increased with more combat exposure or that increased combat exposure heightens the likelihood of witnessing the death of a close comrade which in turn increases the risk of transgressive acts. More complex designs and larger samples are needed to test for mediation and moderation effects. Longitudinal studies are needed to more fully understand the causal outcomes of transgressive acts.

Overall, these findings suggest that veterans with a history of potentially transgressive acts may present to the VA with a constellation of symptoms that are associated with combat-related guilt. Focusing solely on fear-related outcomes and ignoring guilt- and shame-based reactions may lead to an incomplete clinical conceptualization.[32,33] Clinicians working with moral injury are encouraged to prepare themselves for the discomfiting therapeutic experiences of bearing witness to and empathizing with clients' memories of their actions, which may include atrocities.[1] Effective and empathic treatments that address the guilt and shame associated with transgressive acts are needed to adequately care for returning veterans.

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