

Running Head: MORAL INJURY, PTSD, AND COMPLEX PTSD

BRIEF REPORT

**Moral Injury and ICD-11 Complex PTSD (CPTSD) Symptoms
among Treatment-Seeking Veterans in the United Kingdom**

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Abstract

Military veterans often encounter events with chronic or repeated traumas of an interpersonal nature that might lead to emotional, relational, and spiritual suffering. Research is needed to assess whether and/or how emerging conceptions of moral injury (MI) align with existing trauma-related conditions. Focusing on 173 veterans from the United Kingdom who had recently pursued mental health treatment, we examined associations between self- and other-directed outcomes related to MI and World Health Organization International Classification System for Diseases, 11th version (ICD-11) criteria for posttraumatic stress disorder (PTSD) and Complex PTSD (CPTSD) in two ways. First, drawing on psychometrically validated tools for assessing MI (Currier et al., 2017) and PTSD/CPTSD (Cloitre et al., 2018), ANOVAs revealed the 57.2% of veterans in the sample who possibly met criteria for CPTSD reported greater MI related to both perpetration- and betrayal-based events compared to those with and without possible PTSD. Second, latent profile analysis revealed two distinct classes based on the symptom severity of MI and CPTSD. Specifically, when examining the six symptom clusters for CPTSD dimensionally, four in five of the veterans endorsed high levels of distress related to all indicators of MI and CPTSD symptoms compared to a group with consistently lower scores. Overall, the two sets of findings suggest the special relevance of MI among veterans who are struggling with CPTSD.

Clinical Impact Statement

Treatment-seeking veterans with probable ICD-11 CPTSD were particularly likely to report MI related to perpetration- and betrayal-based events compared to those with PTSD. Further, other findings indicated strong positive associations between symptom clusters of ICD-11 CPTSD and outcomes that align with emerging conceptions of MI. Overall, the present findings highlight the potential utility of assessing for MI among veterans seeking care for CPTSD and PTSD.

Moral injury (MI) has been defined as “disruption in an individual’s confidence and expectations about one’s own or others’ motivation to behave in a just and ethical manner brought about by perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations” (Litz et al., 2009, p. 700). Research has consistently linked exposure to potentially morally injurious events (PMIEs) with greater symptom severity of posttraumatic stress disorder (PTSD; for review, see Griffin et al., 2019). Although there is no paradigmatic definition of essential consequences stemming from PMIEs that might constitute MI as an outcome, there is agreement among many subject experts that morally injured veterans usually manifest certain painful moral emotions, beliefs and attitudes, and behaviors related to one’s morally transgressive behavior (e.g., shame, self-handicapping behaviors) and/or others’ transgressions or betrayals (e.g., anger, mistrust) that might hinder their recovery (Currier et al., 2017). At present, a top priority is to determine whether and/or how emerging conceptions of MI outcomes align with PTSD symptoms and other existing conditions.

Importantly, interest in the MI concept has proliferated alongside approval of criteria for Complex PTSD (CPTSD) in the World Health Organization International Classification System for Diseases, 11th version (ICD-11; for review, see Brewin et al., 2017). In keeping with earlier proposals for greater complexity in symptom profiles commonly emerging from events with chronic or repeated traumas that are interpersonal in nature (e.g., child abuse; Herman, 1992), ICD-11 includes two ‘sibling disorders’ that might develop following a highly threatening or horrific event or series of events. First, in keeping with DSM-IV PTSD, ICD-11 PTSD includes (1) re-experiencing of the trauma in the present, (2) avoidance of traumatic reminders, and (3) persistent sense of threat manifested by arousal and hypervigilance. Second, CPTSD includes the PTSD clusters and three sets of symptoms indicating disturbances in self-organization (DSO):

(1) affective dysregulation, (2) negative self-concept, and (3) disturbances in relationships. This factor structure of two higher-order clusters in CPTSD symptoms was supported across a number of studies (Brewin et al., 2017), and the International Trauma Questionnaire (ITQ; Cloitre et al., 2018) was recently developed and validated to provide a self-report tool for assessing CPTSD.

To our knowledge, one study has examined CPTSD with treatment-seeking military service members or veterans. Focusing on 177 veterans from the United Kingdom (UK) who pursued mental health treatment in the recent past, Murphy et al. (2020b) supported the validity (convergent and factorial) of the ITQ in this population. Of the 70% of the sample who endorsed symptoms consistent with a CPTSD or PTSD diagnosis, four in five veterans possibly met criteria for CPTSD rather than PTSD. Further, using Currier et al.'s (2017) Expressions of Moral Injury Scale – Military version (EMIS-M) for assessing outcomes related to MI, Murphy et al. (2020a) documented veterans with probable CPTSD had higher overall scores than those with or without PTSD. In combination, findings indicate CPTSD might be more prevalent than PTSD among treatment-seeking veterans and MI-related problems could be particularly relevant among veterans with complex emotional responses to their traumas that warrant a diagnosis of CPTSD.

The purpose of this brief report was to enhance knowledge regarding associations between MI and ICD-11 CPTSD symptoms. Building on Murphy et al.'s (2020a, 2020b) work, the first aim was to conduct a more granular test of differences in outcomes across perpetration- and betrayal-based forms of MI for veterans with probable CPTSD and PTSD. Second, we sought to clarify the most prominent profiles of MI, PTSD, and DSO symptoms. In tandem, addressing these aims will provide the most comprehensive examination MI and CPTSD to date.

Method

Participants and Procedures

Participants were recruited from a national charity in the UK that offers mental health services to veterans (for more details of the larger study, see Murphy et al., 2020a, 2020b). In addition to serving with British military, veterans need to have a clinical diagnosis of a mental health condition and reside in UK. Exclusion criteria for this charity include active psychotic symptoms, suicide ideation, or primary diagnosis of a personality disorder. Initially, a nationally representative group of 600 veterans was randomly selected among all recipients of services from this charity in 2016-17. In turn, 403 (67.2% response rate) agreed to participate in a project about health and well-being of veterans. Of this baseline sample, 334 were invited to complete a follow-up survey via postal mail including the EMIS-M and 177 did so between 2018-19 (43.9% of baseline sample). Of this follow-up sample, this brief report focuses on the 173 veterans who provided complete responses across the subscales on the EMIS-M and ITQ.

The average age in this sample was 52.64 years ($SD = 11.34$) and 95% were men. In total, 60% of the sample were married and 28% were employed, 21% retired, and 49.2% not working due to ill health or other reasons. Participants served in the Army (86.5%), Royal Navy (6.7%), or Royal Air Force (6.9%) for an average of 14.6 years ($SD = 9.00$). Numbers of deployments ranged from zero = 9.3%, one = 54.4%, two = 19.6%, to three or more = 16.7%. Over half of the sample (60.8%) was the recipient of a war pension for financial support.

Measures

MI outcomes were assessed with the Expressions of Moral Injury Scale – Military version (EMIS-M; for more details, see Currier et al., 2017). Although there is no consensus definition of MI at present (Griffin et al., 2019), this self-report instrument captures prominent emotions, beliefs/attitudes, and behaviors that might reflect a MI directed at self (9 items) or others (8 items). Items are rated on a five-point scale in which 1 = *Strongly disagree* to 5 =

Strongly agree, such that responses reflect worse MI outcomes at the time of completing the measure. Internal consistencies were .92 for Self-Directed MI and .89 for Other-Directed MI.

ICD-11 PTSD and Complex PTSD were assessed with the International Trauma Questionnaire (ITQ; for more details, see Cloitre et al., 2018). The ITQ was not designed to diagnose PTSD or CPTSD without a clinical interview. This 18-item questionnaire captures distress over the past month associated with symptoms of PTSD (two-item subscales assessing Re-experiencing, Avoidance, Sense of Threat) and DSO (two-item subscales assessing Affective Dysregulation, Negative Self-Concept, Disturbances in Relationships) and functional impairments related to these two general domains (six items in total). Items are rated on a five-point scale in which 0 = *Not at all* to 4 = *Extremely* and can be scored to identify probable cases of PTSD or Complex PTSD or symptom-focused subscales can be summed to offer dimensional estimates of symptom severity across the PTSD and DSO clusters. Internal consistencies for the six two-item symptom clusters ranged from .72 to .93 in this sample.

Data Analytic Plan

Drawing on Murphy et al.'s (2020a, 2020b) earlier coding of for possible PTSD and CPTSD cases, we first examined differences on the two EMIS-M subscales for these diagnostic groups. Next, using dimensional scoring procedures for PTSD and DSO symptom clusters, a latent profile analysis (LPA) was conducted in which MI outcomes were indicated by the two EMIS-M subscales (Self-Directed MI, Other-Directed MI) and PTSD/DSO symptoms were indicated by the six ITQ clusters (Re-experiencing, Avoidance, Sense of Threat, Affective Dysregulation, Negative Self-Concept, Disturbances in Relationship). To help with visualizing the profiles, variables were first standardized via z-scores to put indicators on the same metric.

Results

Forms of Moral Injury and Possible PTSD and CPTSD Cases

In total, 57.2% of this brief report sample possibly met criteria for CPTSD, 13.3% for PTSD, and 29.5% did not meet criteria for PTSD. Drawing on this diagnostic factor, results of two ANOVAs revealed main effects for MI outcomes related to self, $F(2, 172) = 28.45, p < .001$, and others, $F(2, 172) = 15.51, p < .001$. When focusing on the CPTSD Group (Mean Self-Directed MI = 31.12, Mean Other-Directed MI = 29.34), Fisher's LSD test revealed they had more severe MI outcomes across both self- and other-directed forms than those in the PTSD Group (Mean Self-Directed MI = 23.04, Mean Other-Directed MI = 22.65) and No PTSD Group (Mean Self-Directed MI = 20.42, Mean Other-Directed MI = 22.57), $ps < .001$. When comparing MI outcomes in these latter two groups, veterans with probable PTSD endorsed worse Self-Directed MI, $p < .001$, but differences did not emerge for Other-Directed MI in this sample.

Profiles of Moral Injury, PTSD, and DSO Symptoms

When scoring the ITQ symptom clusters dimensionally per Cloitre et al (2018), positive bivariate associations emerged with MI outcomes ranging in magnitude from moderate to strong ($r_s = .33$ to $.60$). Descriptively, of the two categories of MI, Self-Directed MI yielded stronger effects on PTSD and DSO symptoms ($r_s = .44$ to $.60$) than Other-Directed MI ($r_s = .33$ to $.38$). The two EMIS-M subscales were also strongly positively correlated with one another ($r = .76$).

The eight indicators from the ITQ and EMIS-M were then used in their observed form and permitted to correlate within clusters in the LPA. Profile solutions ranging from one to four profiles were tested. When considering these profile solutions, BIC reduced from one to two and from two to three, but increased from three to four (see Table 1). This specific test favored the three-profile solution. However, likelihood ratio tests showed improvement in model fit between the two- and three-profile solutions was statistically non-significant. Finally, examination of the

profile plots revealed the two-profile plot contained two groups that differed in symptom severity levels across indicators of MI and CPTSD. As such, the three-profile solution merely added a group that fell between the two groups contained in the two-profile solution. Therefore, based on a preference for parsimony and likelihood ratio tests, the two-profile solution was selected.

The profile plot from the two-profile solution is depicted in Figure 2. Based on their posterior probabilities, most veterans ($n = 139$; 80.3%) were classified as members of a “high distress group” characterized by consistently high scores on all indicators of MI, PTSD, and DSO symptoms; the remaining veterans were classified as members of a “low distress group” ($n = 34$; 19.7%) who consistently scored lower on indicators of interest in this brief report.

Discussion

The purpose of this brief report was to examine associations between ICD-11 PTSD, CPTSD, and moral injury (MI) related to self and others in a sample of treatment-seeking veterans from the UK. In keeping with Murphy et al.’s (2020a, 2020b) reports, roughly two-thirds of this sample possibly met criteria for ICD-11 PTSD or CPTSD. When compared to counterparts with or without PTSD, veterans who satisfied Cloitre et al.’s (2018) criteria for CPTSD reported greater MI related to both perpetration- and betrayal-based events. Although veterans with PTSD reported worse self-directed MI than those without PTSD, this same difference did not emerge between these groups for other-directed MI. Consistent with the documented overlap between MI and DSM-5 PTSD symptoms (Griffin et al., 2019; Litz et al., 2009), bivariate results revealed MI directed at self and others were moderately to strongly linked with worse severity of both ICD-11 PTSD and DSO symptoms. Further, LPA results suggested two distinct constellations of MI, PTSD, and DSO symptoms. Specifically, when scoring the ITQ symptom clusters in a dimensional manner, four in five of the veterans endorsed

high distress symptoms across the three sets of indicators compared to a group with lower scores.

This pattern raises a number of possibilities regarding associations between MI, PTSD and CPTSD that might guide future work. Namely, findings indicate veterans who meet ICD-11 criteria for CPTSD could be uniquely at risk for MI related to their own morally transgressive acts/decisions and/or those of others. Whether focusing on self- or other-directed outcomes of MI, correlations with PTSD and DSO symptom clusters were below a threshold for gauging multicollinearity ($r_s \leq .6$). However, when relying on ITQ dimensional scoring procedures, LPA findings simply further underscored a pattern for veterans in this sample who reported worse MI outcomes to endorse CPTSD symptoms across the six clusters as well. Sample size and relative proportion of ICD-11 CPTSD compared to PTSD among the treatment-seeking veterans possibly limited an ability to detect other profiles (e.g., MI and PTSD symptoms only). However, perhaps these findings also suggest conceptual overlap between CPTSD and MI. For example, Litz et al. (2009) suggested MI will likely entail re-experiencing of traumatic memories, avoidance of trauma-related reminders, and hyper-arousal symptomatology. Emerging understandings of MI as an outcome (e.g., Griffin et al., 2019) also usually emphasize disturbances in identity and self-organization that represent core features of CPTSD (Brewin et al., 2017; Cloitre et al., 2018).

Other limitations of the study include reliance on self-report tools and assessments from a single time point and recruitment source. Although we utilized validated measures, clinical interviews would have been needed to diagnose ICD-11 CPTSD or PTSD. Also, longitudinal research among veterans with more diversity in geography and gender is needed to clarify the temporal associations between MI and CPTSD symptoms. Given the increasing popularity of the ICD-11 across the world, research will ideally build on these findings to further disentangle the interplay between MI and CPTSD in a manner that may advance conceptual and applied work.

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Table 1

Fit Statistics for One- to Four-Profile Solutions

| Fit statistics | 1 Profile | 2 Profile | 3 Profile | 4 Profile |
|---------------------------------|-----------|-----------|-----------|-----------|
| Estimator | MLR | MLR | MLR | MLR |
| Random starts | 500 | 500 | 500 | 500 |
| Final stage optimizations | 200 | 200 | 200 | 200 |
| Best log-likelihood | -1548 | -1514 | -1485 | -1466 |
| Best log-likelihood replicated? | Yes | Yes | Yes | No |
| Error message? | No | No | No | No |
| Free parameters | 44 | 53 | 62 | 71 |
| AIC | 3185 | 3134 | 3095 | 3074 |
| BIC | 3324 | 3301 | 3290 | 3298 |
| SABIC | 3184 | 3134 | 3094 | 3073 |
| Entropy | N/A | 93% | 93% | 93% |
| LMR-aLRT H0 value | N/A | -1548 | -1514 | -1485 |
| LMR-aLRT value | N/A | 67.01 | 56.22 | 38.3 |
| Difference in free parameters | N/A | 9 | 9 | 9 |
| LMR-aLRT p-value | N/A | p = .03 | p = .10 | p = .26 |
| Profile #1 | 100% | 80% | 67% | 59% |
| Profile #2 | | 20% | 16% | 16% |
| Profile #3 | | | 17% | 10% |
| Profile #4 | | | | 16% |

Notes. Models were estimated using maximum likelihood with robust standard errors (MLR); 500 random starts and 200 final stage optimizations were used to arrive at best log-likelihood values; all best log-likelihood values were replicated; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SABIC = Sample-Size Adjusted Bayesian Information Criteria; LMR-aLRT = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test.

Figure 1. Profile plot depicting means and standard deviations of eight indicators of moral injury, posttraumatic stress disorder, and disturbances in self-organization symptoms for two latent distress groups; error bars = +1 SD (upper error bars shown for clarity).

