Traumatology

The Occupational Moral Injury Scale: Development and Validation in Frontline Health and First Responder Workers

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Moral injury is an emerging construct that has been primarily examined in military groups but is increasingly expanding to a broader range of nonmilitary occupational settings. A key barrier to this research on moral injury in broader occupational groups has been the lack of valid and reliable measures specifically developed for nonmilitary settings. The current article addresses this gap by developing the Occupational Moral Injury Scale (OMIS), a measure designed to capture both morally injurious events (MIEs) and primary markers of moral injury (guilt, shame, anger, loss of trust, existential conflict) in any occupational setting, without the need for modification. A combination of confirmatory factor analyses and item response theory analyses was used in scale development and refinement. Drawing upon a sample of 1,454 primarily frontline health and first responder workers across two studies, factor analytic results revealed an expected bifactor structure of five primary factors capturing exposure to MIEs (commission with agency, commission under duress, act of omission, witnessing, betrayal) and a general factor of moral injury. Subscales demonstrated excellent internal consistency, and when compared to theoretically relevant constructs OMIS scores demonstrated strong convergent and divergent validity. Differential validity was also observed among the OMIS subscales. The OMIS provides a psychometrically validated tool for assessing moral injury risk in any occupational setting. The OMIS will help facilitate further research and understanding of how moral injury presents in high-risk occupational settings beyond the military and allow for direct comparison between these groups for the first time.

Keywords: moral injury, psychometrics, frontline health, first responders, civilian

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Moral injury is an emerging construct that originally arose from research into military trauma but is increasingly expanding beyond this in recent years. Defined as symptoms that result from involvement in either perpetrating or witnessing actions that violate one's core beliefs in high stakes situations (Griffin et al., 2019; Litz et al., 2009) or betrayal by a leader or trusted authority (Shay, 2014), moral injury captures the profound suffering that may be caused by involvement in moral violations.

Conceptual Understanding of Moral Injury

Moral injury frequently overlaps with mental health diagnoses, in particular major depressive disorder (MDD) and posttraumatic stress disorder (PTSD). Nevertheless, although there is shared symptomology, it is also distinct from PTSD in both presentation and etiology (Barnes et al., 2019; Bryan et al., 2018; Currier et al., 2019). Unlike PTSD, moral injury does not typically display an exaggerated startle reflex, memory loss, nightmares, flashbacks, and insomnia (Bryan et al., 2018). Moral injury instead tends to manifest primarily as guilt, shame, anger, existential conflict, and loss of trust (Jinkerson, 2016; Yeterian et al., 2019), with secondary symptoms often including depression, anxiety, self-harm, suicidal ideation, substance use, and social problems (Currier et al., 2019; Frankfurt & Frazier, 2016; Griffin et al., 2019; Jinkerson, 2016). Although moral injury is contingent on a precipitating morally injurious event (MIE) in the same way PTSD development is contingent on exposure to Criterion A trauma, the nature of the event may also differ. The experience of mortal danger is central to the experience of PTSD, with Criterion A trauma exposure defined within the Diagnostic and Statistical Manual of Mental Disorders (DSM-5 TR; American Psychiatric Association, 2022) as exposure to actual or threatened death, serious injury, or sexual violence. MIEs differ in that mortal danger is not a key precipitating factor. MIEs are instead defined as situations in which one's core beliefs of what is right are violated in some way. Specifically, MIEs can be perpetration events in which the individual has acted in a way that goes against their values (or failed to act when they believe it was the right thing to do), situations

in which the individual witnesses morally violating acts committed by others, or betrayal events in which the individual is treated in a way that violates what's right (typically by a trusted leader or authority). There is an almost infinite possibility of variations in the specific circumstances of such situations, according to the context (Held et al., 2021), but the common themes of MIEs remain consistent.

Moral Injury Beyond the Military

Our understanding of moral injury was borne from military literature, and most research to date has explored it within this context (Griffin et al., 2019). However, an increasingly broad range of occupational settings are experiencing moral injury. The most common occupations are those in which the requirements of the job are frequently at odds with more widely held moral norms, often in high-stakes situations, resulting in more frequent or intense exposure to MIEs and subsequent risk of moral injury (Held et al., 2019; Williamson et al., 2018). Research also suggests that risk is greater when the above conditions are met, along with a lack of psychosocial safety or institutional support (Simmons-Beauchamp & Sharpe, 2022), which aligns with the "betrayal" form of MIE. The literature has begun to expand to capture this broadening of the construct, with research exploring moral injury in a range of high-risk occupations—particularly frontline health and first responder workers, including doctors, nurses, paramedics, and police, in addition to other occupations (Williamson et al., 2018). However, one of the consistent barriers to research on moral injury in nonmilitary occupations has been the lack of valid, reliable measures specifically developed for civilian groups.

Assessment of Civilian Moral Injury

Most extant psychometric measures designed to capture moral injury (MI) have also been tailored for military groups (Currier et al., 2015, 2018; Koenig et al., 2018; Litz et al., 2022; Nash et al., 2013). The dominant military-specific measure, the Moral Injury Events Scale (MIES; Nash et al., 2013) also assesses both MI exposure and symptomology separately, but pools responses into a total score—not discriminating between exposure to events that may lead to moral injury, and the symptoms of it. As previously noted, the conflation of exposure events and symptomatic outcomes in this way has contributed to conceptual confusion in the field.

Although some of these military-specific measures have been adapted and validated for generalized civilian use (Morriss & Berle, 2023; Thomas et al., 2023), there are limited measures available developed intentionally for civilian settings. More recently, measures designed for nonmilitary contexts have begun to emerge; however, this vein of research is in its infancy. Three measures that we are aware of have been published—one adaptation of an existing military measure tailored for health professionals (Mantri et al., 2020), a measure of MIEs developed for youth populations (Chaplo et al., 2019), and a preliminary measure of moral injury perpetration and betrayal events with a subscale exploring emotional sequelae, designed for public safety personnel (Roth et al., 2023). As yet, there are no existing measures that are (a) generalized enough for use across different occupational settings, allowing for effective comparison across groups, and (b) able to link the moral injury symptoms asked about to precipitating MIEs. The measures referenced above tend to either focus on one occupational group (meaning the measure is not transferable across other settings; Mantri et al., 2020),

or ask about MIEs or symptoms only, without linking the two in a meaningful way (Chaplo et al., 2019; Roth et al., 2023). Assessment of MI symptoms without also assessing MI exposure impairs the ability to tie MI symptoms which are often transdiagnostic to MIEs specifically, contributing to "concept creep" (N. Haslam, 2016) and reducing the utility of the assessment tool. The Moral Injury Assessment for Public Safety Personnel (Roth et al., 2023) proposes subscales of "exposure" and "symptoms" of MI, but this has not yet been subject to confirmatory factor analyses, limiting empiric confidence in whether it is meaningful to calculate scores on this measure in this way.

Furthermore, existing civilian measures of MI do not use advanced techniques such as item response theory (IRT) in their development. A new measure is required to facilitate the expansion of moral injury research across occupational settings, address inconsistencies in measurement, and address the frequent conflation of MIEs and moral injury outcomes whilst also limiting "concept creep" of moral injury (N. Haslam, 2016) by ensuring symptoms are linked to a precipitating MIE.

The Occupational Moral Injury Scale (OMIS)

We are introducing here the OMIS to fill the needs outlined above. Our aim was to develop a measure that effectively captures the full range of the moral injury construct, whilst also remaining generalized enough in its wording to allow it to be used across any occupational setting without ad hoc adaptation. We also aimed to address concerns with measures not adequately linking moral injury outcomes to precipitating MIEs, by ensuring each moral injury symptom explored was directly linked to a precipitating MIE type at the item level. We aimed to do this using advanced techniques in the form of a combination of IRT analysis and confirmatory factor analysis (CFA).

Construction of OMIS items was informed by empirical, clinical and theoretical sources. An a priori five-factor model of MIEs was chosen. In specifying this five-factor structure, we drew upon research (Chaplo et al., 2019; Nash et al., 2013) and mapped onto existing definitions of moral injury. In doing so, we built on the more common three-factor structure often seen in measures of MIEs (commission, witnessing and betrayal events) to add greater nuance around the forms MIEs may take. By adding greater theoretically informed a priori specification and clarity to the forms MIEs may take within the OMIS rather than relying on post hoc interpretation of the factor structure, we aimed to reduce conceptual confusion around the moral injury construct and advance the field of understanding by pinpointing which types of MIEs may (a) be most relevant to different occupational settings; (b) elicit the most distress and impairment; and (c) differentially relate to each other, and to moral injury outcomes. The five MIE factors chosen were: commission with agency, commission under duress, acts of omission, witnessing, and betrayal (see the online supplemental materials for operational definitions of each).

Initially delineated by Chaplo et al. (2019), this five-factor structure breaks down the usual perpetration factor often utilized into two different but related factors: commission with agency and commission under duress. These different but related factors are distinguished by the intrinsic motivation behind an individual's moral violation—either of their own volition without external pressure (commission with agency), or perhaps more commonly, due to an

experience of duress or external pressure to act in a way one believes to be wrong (commission under duress). The usual witnessing factor seen in moral injury research is also broken down further, into witnessing and acts of omission—to differentiate between the experience of simply witnessing a moral violation without a sense of personal culpability, versus witnessing a violation and feeling a sense of personal culpability through a failure to step up and intervene even if the individual has agency to do so. These two related but different aspects of moral injury are often referred to in definitions of the construct, but rarely distinctly specified within scale construction efforts.

Within each factor, five primary markers of moral injury were also explored: guilt, shame, anger, loss of trust, and existential conflict (see the online supplemental materials for operational definitions of each). These primary markers were informed by clinical expertise and existing literature (Jinkerson, 2016; Yeterian et al., 2019), and aimed to capture the most pertinent manifestations of moral injury as an outcome. A range of secondary behavioral outcomes are also linked to moral injury (Jinkerson, 2016). Nevertheless, given the greater variability in how these may manifest according to individual difference and circumstance, we instead chose to focus on the primary markers of moral injury which capture the key emotional symptoms (guilt, shame, anger) and alterations in beliefs (loss of trust, existential crisis) that are hallmarks of the condition.

When writing items, it was a priority to ensure each symptom explored was also linked to a precipitating moral injury event at the item level. Without symptoms being linked to precipitating MIEs in this way, there is a risk of "concept creep" (N. Haslam, 2016) due to the strong overlap of moral injury with many other mental health conditions such as PTSD, depression, and anxiety (Hall et al., 2022). We anticipated higher levels of interfactor correlation due to this overlap of shared symptomology among factors, and therefore planned to confirm the a priori factor structure of the model with a bifactor confirmatory factor analysis (BCFA). A bifactor model hypothesizes a general (G) factor onto which all items load, and a series of factors orthogonal to the G factor (Reise, 2012). In the case of the OMIS, our general factor accounted for the shared variance of the common moral injury symptoms in the form of a general moral injury factor (G factor), and our orthogonal factors were specified by the five dimensions of different MIEs.

Overview of OMIS Development

The OMIS was developed via two sequential investigations that followed rigorous scale development guidelines (DeVellis, 2012). Study 1 focused on the initial construction of the OMIS and was tested on a pool of 744 workers primarily from frontline health and first responder occupations, supported as high risk by the literature. IRT analyses in addition to BCFA were used to identify the superior-performing items that should be retained, examine the factor structure of the shortlist and assess individual item performance, before additional analyses were performed to assess internal consistency, convergent and divergent validity. We hypothesized that the OMIS would correlate strongly with other theoretically supported constructs, anticipating positive associations with PTSD symptoms (reexperiencing, avoidance, negative cognition and mood, hyperarousal), MIE exposure (perpetration, witnessing, and betrayal), burnout, and secondary traumatic stress. We also anticipated significant negative correlations with well-being, compassion satisfaction,

and aspects of workplace psychosocial safety including organization and management commitment, management priority, and organization participation, offering support for divergent validity.

Study 1—Method

Participants and Procedure

The initial sample consisted of 748 frontline health and first responders. Data from four participants were excluded due to requesting to withdraw their data. The final sample therefore consisted of 744 participants, who were primarily health and first responder occupations. All participants were preselected on Prolific because they indicated they worked in frontline health and first responder fields. Nonetheless, when completing the survey, a subset of 73 participants left their occupations unspecified or stated they did not fit these occupational categories. Primary analyses were run both with and without these participants included (see the online supplemental materials for a comparison of results). Given that excluding these participants did not alter the results in any meaningful way, their data was retained.

A total of 479 participants identified as women, 260 as men, four as nonbinary, and one identified as a transgender man. The mean age of the sample was 33.48 ($SD = 10.61$, 18–72). In the sample, 321 (43.14%) identified their country of origin as the United Kingdom; 180 (24.19%) as the United States; 143 (19.22%) from a range of other European countries; 43 (5.77%) as South Africa; 24 (3.22%) as South American countries; 23 (3.09%) as Canada; and eight (1.07%) from Australia and New Zealand.

Of the occupations, 199 participants (26.74%) worked in law enforcement (55.77% sworn police, 33.66% unsworn police, 8.54% unspecified police, 1% prison officers); 171 participants (22.98%) were frontline health workers (62.94% nurses, 32.94% doctors, 2.94% dentists); 90 participants (12.09%) were additional first responders separate from law enforcement (53.33% emergency medical services, 31.11% paramedics, 15.55% fire and other emergency services); and 114 participants were allied health professionals (15.32%). Additional health professionals who did not fall into any primary category accounted for 64 participants (8.60%), and 33 (4.43%) participants were medical administrative and hospital support staff. A total of 73 participants (9.81%) had unspecified or other occupations. Participants' years of service ranged from 1 to 44, with an average of 8.59 years.

Participants were recruited via the online recruitment platform Prolific. Participants were remunerated 6 GBP p/h (£2.30 for an estimated 23-min study). Participants were prescreened/selected as those indicating they worked within health and first responder fields, with more specific occupational information being sought within the survey. After reading a participant information sheet and providing consent, participants were redirected to the Qualtrics platform where they completed a battery of measures, comprising the OMIS item pool and additional related constructs. Participants also answered demographic questions and were given the option to request their data be deleted after submission. All ethical aspects of this study were approved by the relevant human research ethics committee and were in line with the Helsinki Declaration on Human Research.

Generation of Candidate Items

The initial item pool of the OMIS included 146 candidate items, developed over a rational, iterative process and informed by the literature and expert feedback. Each symptom (guilt, shame, anger,

loss of trust, existential conflict) was also linked to a precipitating MIE (commission with agency, commission under duress, act of omission, witnessing, betrayal) at the item level. Items were written to be comprehensible at a fifth-grade reading level, according to the Flesch–Kincaid Grade Level Formula. Items were pilot tested in a small group (18) of first responder and frontline health workers, with feedback used to further refine items. This item pool then underwent a rigorous expert-rater process (DeVellis, 2012). With the assistance of these experts critiquing, suggesting alternate wording, and providing ratings on each item ("excellent"/"good"/"poor"), the item pool was narrowed down to 73 items. Items were retained if all raters selected a "good" or "excellent" rating, while also paying attention to ensure even coverage of factor structure and symptom content domains. The final pool of 73 items was then evaluated and further refined within the study, utilizing psychometric data to inform development of the final 25-item shortlist.

Measures Used in Construct Validity Analyses

Demographic Questions

Participants were asked to indicate their age, gender, country of residence, occupation, years of service, and, if police, whether they are sworn or unsworn members of their policing organization.

Posttraumatic Stress

The PTSD Checklist for DSM-5 (PCL-5) is a 20-item self-report measure that captures PTSD symptoms experienced during the past month in accordance with DSM-5 criteria (Blevins et al., 2015; Wortmann et al., 2016). Respondents indicate on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*) how much they have been bothered in the past month by each item. Examples of some of the items are: "feeling very upset when something reminded you of the stressful experience"; "trouble remembering important parts of the stressful experience"; and "being superalert or watchful or on guard." Cronbach's alpha of the PCL-5 was .95 in this sample.

Professional Quality of Life

The Professional Quality of Life Scale (ProQOL-5) is a 30-item self-report measure of the positive and negative effects of working in helping professions (Stamm, 2010). It differentiates between compassion satisfaction (the pleasure you derive from being able to do your work well) and two elements of compassion fatigue: burnout (feelings of hopelessness and difficulties in dealing with work or in doing your job effectively) and secondary traumatic stress (work-related, secondary exposure to stressful events). Participants rate how frequently they experienced each item on a 5-point Likert scale (ranging from 1 = *never* to 5 = *very often*) in the past 30 days. Example items include: "I am not as productive at work as I am losing sleep over traumatic experiences of a person I [help]"; "I feel invigorated after working with those I [help]"; and "I feel overwhelmed because my case [work] load seems endless." Cronbach's alpha of the ProQOL was .83 in this sample.

Psychosocial Safety

The Psychosocial Safety Climate Scale (PSC-12) is a 12-item self-report measure of the PSC of a workplace, comprising four subscales: management commitment, management priority, organizational communication, and organizational participation (Hall et al., 2010). Participants indicate how strongly they agree or disagree with how each item reflects the psychological health and safety of their workplace on a 5-point Likert scale (ranging from *strongly disagree* to *strongly agree*). Example items include: "Psychological well-being of staff is a priority for this organization"; "there is good communication here about psychological safety issues which affect me"; and "in my workplace senior management acts quickly to correct problems/issues that affect employee's psychological health." Cronbach's alpha of the PSC-12 was .96 in this sample.

Moral Injury Events Scale (MIES)

The MIES (Nash et al., 2013) is a nine-item self-report measure of potentially morally injurious events, exploring exposure to perceived transgressions committed by the respondent and/or others, and perceived betrayals by other military and nonmilitary individuals. Respondents indicate how much they agree with each statement on a scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*), with higher scores indicating greater moral injury. Examples of items are: "I am troubled by having witnessed others immoral acts," "I violated my own morals by failing to do something I felt I should have done," and "I feel betrayed by leaders who I once trusted." Cronbach's alpha of the MIES was .92 in this sample.

Well-being

The Warwick Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007) is a 14-item scale designed to capture a broad conception of well-being, including affective–emotional aspects, cognitive–evaluative dimensions and psychological functioning. Items are scored on a 5-point Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*). Examples of some of the items are: "I've been feeling optimistic about the future" and "I've been feeling close to other people." Cronbach's alpha of the WEMWBS was .94 in this sample.
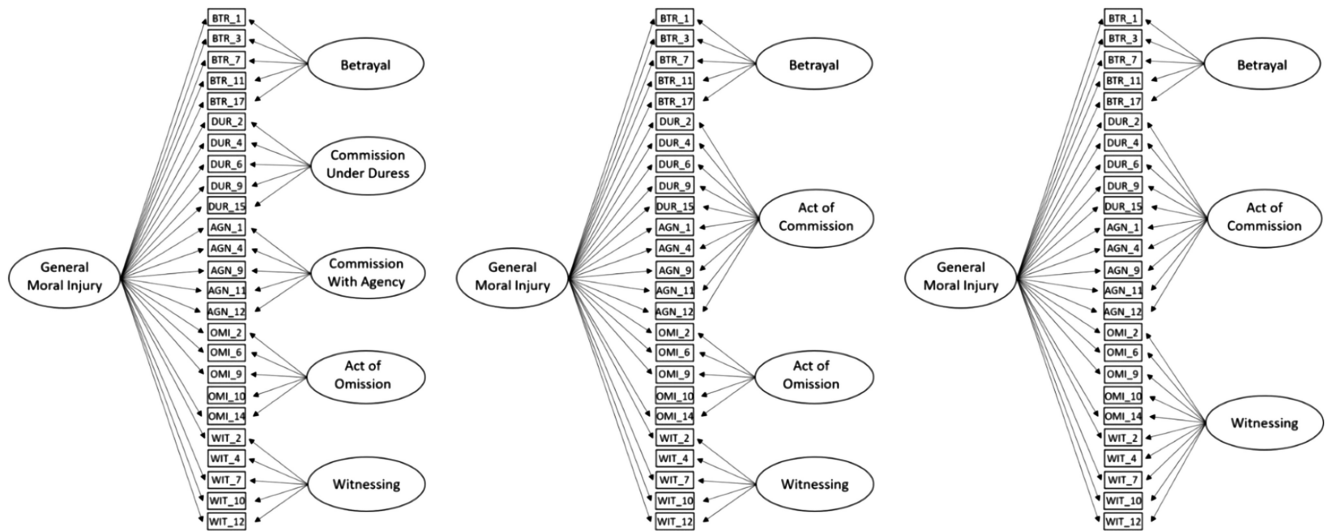
OMIS Initial Item Pool

The pool of 73 test items developed to form a new measure of occupational moral injury were also included in the study. Participants rated how much they agree with each item on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Examples of some items are: "I feel guilty over things I've had to do at work that I don't morally agree with," "Ignoring my conscience in order to do my job has made it hard for me to trust myself," and "I'm ashamed of the unethical behavior I've seen from others in my workplace."

Analytic Plan

The initial design of the item pool was undertaken with a bifactor model in mind, with items including both MIE exposure and an associated primary marker within the one item. We anticipated higher levels of interfactor correlation due to this overlap of shared symptomology among factors, and therefore intended to run a BCFA to account for this shared variance in the form of a general moral injury factor (G factor), in addition to the five separate MIE dimensions (Figure 1).

Figure 1

Five-, Four-, and Three-Factor OMIS Models Compared in Study 1

Note. OMIS = Occupational Moral Injury Scale.

In the case where there is sufficient empirical and theoretical evidence for an a priori/anticipated factor structure, proceeding directly to CFA rather than running exploratory factor analysis (EFA) is recommended (Hurley et al., 1997). A recent example is the new Nationalism Scale (Sheppard et al., 2023), which was developed based on theory and CFA. This approach produced a scale of nationalism that had better incremental validity than another widely used measure of nationalism, developed on the basis of EFA (Kosterman & Feshbach, 1989). Our decision to proceed directly to BCFA was based on the theoretically informed, a priori structure of our model. Our goal was to reduce conceptual confusion around the moral injury construct and advance the field of understanding. Specifically, we intended to pinpoint which types of MIEs may (a) be most relevant to different occupational settings; (b) elicit the most distress and impairment; and (c) differentially relate to each other and to moral injury outcomes. Utilizing BCFA in this way rather than relying on post hoc interpretation to establish the factor structure provides a more robust test of our theory, allowing us to confirm the construct validity of our proposed scale. Although EFA is useful when the structure of the constructs is not well known, it may also capitalize on chance and characteristics unique to a particular sample, leading to identified factors that may not be theoretically meaningful or replicable.

Therefore, we ran an initial BCFA based on the hypothesized five-factor structure to assess the item loadings using lavaan package in R (Rosseel, 2012), using a maximum likelihood estimator robust to nonnormality. Based on initial BCFA results, we chose five of the best-performing items for each subscale—one item tapping each of the five primary markers of MI within each subscale, thus ensuring even content coverage. We then reran factor analyses to compare and confirm the hypothesized factor structure, before running IRT analyses to assess the item performance of the shortlisted scale. IRT analyses were run using the R package mirt (Chalmers, 2012), to determine individual item functioning using a graded response model (GRM) due to polytomous items. Analyses for each subscale were run separately due to assumption of unidimensionality (Reise & Revicki, 2015). Lastly, correlational analyses were run to assess construct validity by determining the correlations between the final scale and our external validity constructs. When interpreting correlation coefficients, interpretation guidelines by Dancey and Reidy (2007) were observed (.01–.03 indicating a weak relationship; .04–.06 indicating a moderate relationship; .07–.09 indicating a strong relationship). Internal consistency was assessed using Cronbach's alpha and McDonalds omega. Although Cronbach's alpha is the more widely reported measure of reliability, it has more restrictive assumptions. McDonalds omega relies on fewer assumptions and is therefore the more robust measure of reliability. For ease of interpretation, both are reported here.

The general moral injury (G) factor of the BCFA was specified as being orthogonal to the MIE factors, as is required in a bifactor model (Reise, 2012). Fit indices were assessed using the recommended cutoff (Kline, 2016): Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI; values close to .95 indicate a good fit for both CFI and TLI); and root-mean-square error of approximation (RMSEA) with 90% confidence intervals (values of .06 or less indicate a good fit), and standardized root-mean-square residual (SRMR; values of .08 or less indicate a good fit). The chi-square test statistic was also reported (a nonsignificant value indicates good fit to the data); however, it was interpreted with caution due to large sample size and sensitivity to nonnormal data (Kline, 2016). We also reported the χ^2/df value, which is robust to sample size (although still sensitive to normality of data). In the case of χ^2/df, lower values indicate a better fit, with values of less than three indicating good fit (Schermelleh-Engel et al., 2003). After assessing model fit, we calculated ancillary bifactor indices of model reliability and dimensionality recommended by Rodriguez et al. (2016) using an Excel tool developed by Dueber (2017): explained common variance (ECV), individual ECV, omega (ω), omega hierarchical (ωH), and omega hierarchical subscale (ωHS).

Study 1—Results

CFAs

We examined the factor structure of the OMIS shortlist using a BCFA. Specifically, we tested differences in model fit between the hypothesized five-factor structure and two alternative models: a three- and four-factor bifactor specification. In each model, all items loaded simultaneously on a general MI factor for bifactor specification along with MIE group factors (see Figure 1 for a graphical representation of each model). Alternate models were tested due to the anticipated higher than usual correlation between certain pairs of associated latent factors (see Table 3). Additional statistical approaches of regular CFA and hierarchical CFA were also compared for each model (see the online supplemental materials), with the bifactor approach providing the best fit to the data. Bifactor fit statistics for each model tested are provided in Table 1.

The five-factor model displayed superior model fit when compared to the four- and three-factor models. The five-factor solution was ultimately retained due to superior fit and the a priori development of items designed with the five-factor structure in mind.

The five-factor chi square was significant, $\chi^2(241) = 699.30$, $p < .001$; however, all alternative fit indices (CFI, TLI, SRMR, and RMSEA) showed that the model fitted the data well, and the χ^2/df value was below three (2.90) indicating good model fit. We used the five-factor bifactor model to calculate several diagnostic indices to analyze the dimensionality and reliability of the OMIS in more detail (Rodriguez et al., 2016). These indices suggested that the general MI factor explained 37% of the common variance overall (ECV = .37; see the online supplemental materials for individual ECV values for each item). Furthermore, the model-based omega reliability (interpreted similar to a Cronbach's α; Rodriguez et al., 2016) was excellent for the general factor (ω = .97), betrayal (ω = .90), commission under duress (ω = .94), commission with agency (ω = .94), act of omission (ω = .92) and witnessing (ω = .91). The percent of reliable total score variance attributable to the general factor (ωH/ω = .72), suggested that 72% of reliable (systematic) variance in the multidimensional OMIS model was explained by the general factor. Likewise, the ωHS values suggested that the percent of reliable subscale score variance attributable to the specific factors was 61% for betrayal, 52% for commission under duress, 56% commission with agency, 60% for act of omission and 63% witnessing.

The factor loadings for each of the five MIE factors were higher than the recommended level of .32 (Tabachnick & Fidell, 2013; see the online supplemental materials for a full table of standardized factor loadings for the model). All items also loaded onto the generalized MI factor, with all but two items (Btr_7 and Wit_7) exceeding this cutoff. The two items that fell short did so due to loading very strongly on their own MIE factor, and less strongly on the G factor, and are assessed not to be of concern.

IRT: Shortlisted Model Characteristics

We conducted IRT analyses, with a GRM on each subscale of the shortlisted OMIS model to assess individual item performance. There were no violations to unidimensionality based on principal component analyses. While a number of items were locally dependent based on Yen's Q3 index > |0.3| (Yen, 1984), this is to be expected in shorter scales—with Type I error rates occurring significantly more in scales with 10 items or less (Houts & Edwards, 2013). All items (Figure 2) and factors (Figure 3) had peaked information curves in the −1 to +2 logit range, indicating that the OMIS provides higher measurement precision from 1 SD below the mean up to 2.5 SD above average scores of the latent trait. Full parameter estimates for the GRM of each subscale may be viewed in the online supplemental materials.

Descriptive Statistics, Reliability, and Validity

Descriptive statistics for the shortlisted OMIS are presented in Table 2. Mean scores for each factor of the OMIS trended higher in women over men, and also tended to increase with years of service (see the online supplemental materials for mean scores according to gender, each occupational group, and years of service). Total scores ranged from 5 to 35 for each subscale, with the full range utilized. Reliability indices for each subscale and the total measure were all in the excellent range.

Correlations among the latent factors were estimated for the five-factor model and may be seen in Table 3. Correlations among the OMIS factors ranged from .32 to .85. The weakest correlations were between the betrayal subscale and other four subscales, suggesting that the betrayal factor is the most distinct of the moral injury construct. The strongest correlations were observed between related factors—commission with agency and commission under duress (.85), and witnessing and act of omission (.78), indicating that these represent unique but highly associated elements of MI. It was anticipated that there would be high correlations between these pairs due to highly related operational definitions and shared symptoms; however, the correlation values between these two pairs were still higher than is optimal.

As expected, the overall OMIS scale and its subscales illustrated significant positive correlations with additional measures of MIEs (capturing witnessing-based, perpetration-based and betrayal-based events), PTSD symptoms, burnout and secondary traumatic stress (see Table 4). There was a consistent pattern of significant negative

Table 1
Bifactor Fit Indices for the Five-, Four- and Three-Factor Models of the OMIS in Study 1

Model	df	χ^2	χ^2/df	p-Value	RMSEA	95% CI	CFI	TLI	SRMR	AIC	BIC
Five-factor	241	699.30	2.90	<.001	.05	[.046–.055]	.97	.97	.03	60,125.85	60,513.53
Four-factor	294	1,444.07	4.91	<.001	.07	[.069–.073]	.94	.93	.04	65,079.18	65,466.59
Three-factor	297	1,682.90	5.66	<.001	.08	[.076–.083]	.93	.91	.04	65,312.01	65,685.58

Note. OMIS = Occupational Moral Injury Scale; RMSEA = root-mean-square error of approximation; CI = confidence interval; CFI = Comparative Fit Index; TLI = Tucker–Lewis Index; SRMR = standardized root-mean-square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

Figure 2

Item Information Curves for Items Within Each OMIS Factor in Study 1

Note. The graphs are truncated along θ (−3, +3). OMIS = Occupational Moral Injury Scale. See the online article for the color version of this figure.
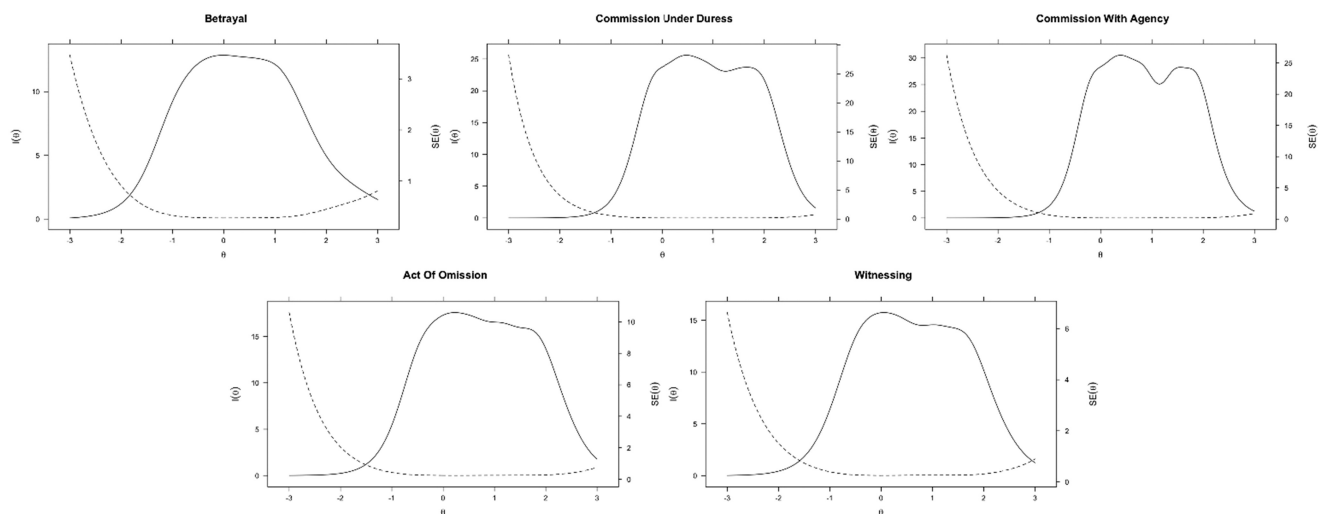
correlation of the OMIS with compassion satisfaction, well-being, and all aspects of psychosocial safety, including management commitment and priority, and organization commitment and participation. The betrayal subscale of the OMIS displayed significantly stronger correlations with burnout and all aspects of psychosocial safety, compared to any other OMIS subscale (see Table 4 for significance comparisons).

Study 1—Discussion

Results from Study 1 indicate that the factor structure of the shortlisted model performed well. Correlations with external validity criteria

occurred in predicted ways, offering strong convergent and divergent validity support for the OMIS shortlist. Some interesting differential relationships between OMIS factors and external criteria were also noted, particularly with the betrayal factor, which showed a significantly stronger negative relationship with compassion satisfaction, burnout and secondary traumatic stress compared with any other factor. The commission under duress and commission with agency factors both showed the strongest relationships with PTSD symptomology, including reexperiencing, avoidance, negative cognition and mood, and hyperarousal—although these relationships did not tend to be significantly stronger than those of the other factors. As mentioned, two latent factor correlations of the OMIS were higher than optimal,

Figure 3

Test Information and SE Curves for Each OMIS Factor in Study 1

Note. The *SE* is illustrated by the dotted line.

Table 2

Descriptive Statistics for the Occupational Moral Injury Scale—Study 1

Study 1	*M*	*SD*	Range	Cronbach's α	McDonald's ω
Total score	3.25	1.49	1–7	.97	.97
Betrayal	3.41	1.64	1–7	.89	.89
Commission under duress	3.18	1.52	1–7	.94	.94
Commission with agency	2.99	1.45	1–7	.94	.94
Act of omission	3.28	1.58	1–7	.91	.91
Witnessing	3.41	1.63	1–7	.90	.90

Note. $N = 744$.

suggesting further refinement of the OMIS measure in the form of a second study is required. As can be seen in the results, we examined three different models to explore whether collapsing factors provided a better fit. The three- and four-factor models demonstrated a poorer fit—suggesting that although the latent variables of the OMIS are highly related, they are still distinct enough to support a five-factor model. However, given the high nature of these latent intercorrelations, further refinement of the measure is recommended—in particular, adjustments of the operational definitions and item content to emphasize the conceptual and theoretical distinctiveness of the five dimensions and minimize any unnecessary overlap between these dimensions.

Study 2—Introduction

Correlations between latent factors in Study 1 were much higher than is optimal. Upon reflection, it was noted this may be caused by a lack of specificity on the differences between each of these five related factors. In response, we slightly reconceptualized the five MIE factors. Minor revisions were made to operational definitions and associated test items to fit this reconceptualization in response to findings from Study 1, with the goal of reducing correlational values between latent factors. An independent group of 710 high-risk frontline health and first-responder workers then completed this revised shortlist of OMIS items in Study 2, along with assessments of MI symptomology, psychopathology and several theoretically relevant constructs that were not included in Study 1. The main goal of Study 2 was to assess the effectiveness of

modifications made in response to Study 1 in reducing latent factor correlations; utilize BCFA and IRT analyses to cull any remaining poorer performing items; confirm the factor structure of the finalized version of the OMIS; and assess construct validity and internal consistency of the final measure.

We anticipated that the item revisions applied would reduce latent factor correlations to acceptable levels, while retaining excellent model fit. We hypothesized that the finalized OMIS would correlate positively with external measures of primary symptoms (guilt, shame, anger, loss of trust, existential conflict), in addition to related psychopathology (depression and PTSD symptoms). In extending the nomological network of MI, we also anticipated some differential relationships among the factors of the OMIS and associated outcomes of MI, predicting stronger relationships of externally attributed factors (betrayal and witnessing) with anger, and weaker relationships with guilt and shame. The inverse was anticipated with internally attributed subscales (commission with agency, under duress, and act of omission)—weaker relationships with anger, and stronger relationships with guilt and shame. To further extend the nomological network of the MI construct, we also examined some personality traits and their relationship to MI outcomes. We chose to measure neuroticism, and subclinical levels of the three dark triad personality traits (Machiavellianism, narcissism, and psychopathy). While little is known regarding the relationship of these traits with experiences of MI, based on existing literature and understanding we anticipated a positive relationship of MI with neuroticism due to known increased vulnerability to PTSD (Jakšić et al., 2012; Litz et al., 2009; Voecks, 2018), and a negative relationship with subclinical dark triad personality traits due to the reduced empathy and indifference to morality often associated with these characteristics (Heym et al., 2019; ter Heide, 2020)— offering support for discriminant validity.

Study 2—Method

Participants and Procedure

Study 2 focused on a second sample of 713 primarily frontline health, first responder and emergency services workers. As in Study 1, although all participants were preselected on Prolific as indicating they worked in frontline health and first responder fields, a subset of 71 participants stated they did not fit the specified occupational categories when completing the survey. Primary analyses were run both with and without these participants included (see the online supplemental materials for a comparison of results). Given that excluding these participants did not alter the results in

Table 3

Correlations Between the OMIS Latent Factors in Study 1 and Study 2

Latent factor	OMIS betrayal	OMIS commission	OMIS duress	OMIS omission
Study 1				
OMIS commission	.32*	—		
OMIS duress	.45*	.85*	—	
OMIS omission	.38*	.78*	.71*	—
OMIS witnessing	.44*	.69*	.65*	.81*
Study 2				
OMIS commission	.16**	—		
OMIS duress	.15**	.69*	—	
OMIS omission	.11	.61*	.70*	—
OMIS witnessing	.32*	.47*	.37*	.42*

Note. Study 1 $N = 744$. Study 2 $N = 710$. OMIS = Occupational Moral Injury Scale; commission = commission with agency; duress = commission under duress; omission = act of omission.
* $p < .001$. ** $p < .05$.

Table 4

Correlations Between OMIS Subscales and Validity Criteria Subscales in Study 1

Subscale	OMIS total	OMIS betrayal	OMIS duress	OMIS commission	OMIS omission	OMIS witnessing
OMIS betrayal	.74*	—				
OMIS duress	.91*	.59*	—			
OMIS commission	.91*	.52*	.86*	—		
OMIS omission	.90*	.52*	.77*	.81*	—	
OMIS witnessing	.88*	.56*	.72*	.74*	.80*	—
MIES total	.81*	.56*	.72*	.73*	.73*	**.76***
MIES other	.67*	.44*	.59*	.60*	.61*	**.68***
MIES self	.73*	.41*	.69*	**.71***	.70*	.65*
MIES betrayal	.68*	.61*	.56*	.56*	.57*	**.65***
PCL-5 total	.38*	.28*	**.35***	**.35***	.34*	.33*
PCL-5 reexperiencing	.35*	.23*[1]	**.33***[1]	.32*	.32*	.31*
PCL-5 avoidance	.29*	.18*	.27*	**.28***	.25*	.25*
PCL-5 negative cog/mood	.35*	.28*	**.32***	**.32***	.31*	.29*
PCL-5 hyperarousal	.35*	.27*	**.32***	**.32***	.31*	.29*
ProQOL total	.33*	.29*	.29*	.28*	.26*	**.31***
ProQOL compas. satisfact	−.28*	**−.37***[2,3,4]	−.27*[4]	−.22*[3]	−.22*[3]	−.14*[2]
ProQOL burnout	.45*	**.53***[5,6,7]	.40*[7]	.35*[6]	.35*[6]	.32*[5]
ProQOL second. traum strs	.40*	.36*	**.38***	−.34*	.31*	.34*
PSC-12 total	−.42*	**−.67***[8,9,10]	−.32*[10]	−.26*[8]	−.28*[9]	−.28*[9]
PSC-12 mgmt commitment	−.41*	**−.64***[11,12,13,14]	−.31*[14]	−.26*[11]	−.27*[12]	−.28*[13]
PSC-12 mgmt Priority	−.41*	**−.65***[15,16,17]	−.31*[17]	−.26*[15]	−.28*[16]	−.28*[16]
PSC-12 org commitment	−.38*	**−.63***[18,19,20]	−.28*[20]	−.23*[18]	−.25*[19]	−.25*[19]
PSC-12 org participation	−.35*	**−.55***[21,22,23,24]	−.28*[24]	−.22*[22]	−.24*[23]	−.21*[21]
Well-being	−.32*	**−.38***[25,26,27]	−.27*[27]	−.25*[26]	−.25*[26]	−.24*[25]

Note. $N = 744$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. OMIS = Occupational Moral Injury Scale; MIES = Moral Injury Events Scale; PCL-5 = PTSD Checklist for DSM-5; ProQOL = Professional Quality of Life Scale; PSC-12 = Psychosocial Safety Climate-12.

Significant differences in correlation values between OMIS factors are marked with superscript—*p* values as follows: 1 = .04; 2 = <.001; 3 = .002; 4 = .04; 5 = <.001; 6 = <.001; 7 = .002; 8 = <.001; 9 = <.001; 10 = <.001; 11 = <.001; 12 = <.001; 13 = <.001; 14 = <.001; 15 = <.001; 16 = <.001; 17 = <.001; 18 = <.001; 19 = <.001; 20 < .001; 21 = <.001; 22 = <.001; 23 = <.001; 24 = <.001; 25 = .003; 26 = .007; 27 = .02.

* Significant at Bonferroni-corrected $p < .0003$.

any meaningful way, their data was retained. All other recruitment platform, remuneration and ethical approval details remained the same as described in Study 1. Data from three participants were excluded due to requesting to withdraw their data. The final sample, therefore, consisted of 710 participants. A total of 456 identified as women, 245 as men, two as nonbinary and three identified as transgender men, three as transgender women and one preferred not to disclose gender. The mean age of the sample was 36.23 ($SD = 10.93$, range = 18–68). The sample focused primarily on the United Kingdom and United States, with 563 (79.30%) identifying their country of citizenship as the United Kingdom and 86 (12.11%) as the United States. An additional 53 (7.46%) participants held citizenship in a range of different countries. Most participants resided within the United Kingdom and United States.

Occupational demographics mirrored those seen in Study 1. Of the occupations, 148 (20.84%) were police (86 sworn, 33 unsworn, 29 unspecified); 147 (20.70%) frontline health (107 nurses, 40 doctors, 21 other frontline health professionals); 109 (15.35%) were other first responders (17 emergency medical services, 26 paramedics, 16 fire fighters, 24 Emergency 911 dispatchers, 26 other emergency services); and allied health comprised 145 (20.42%). Additional health professionals who did not fall into any primary category made up 44 (6.20%). Medical administrative and hospital support staff numbered 25 (3.52%). 71 (10.00%) were unspecified or other occupations. Years of occupational service ranged from <1 to 48, with an average of 9.72 years. Participants were

predominantly White (83.52%; 593), followed by Asian (8.16%; 58), Black/African (4.36%; 31), multiracial (1.69%; 12), Hispanic (0.98%; seven), and other (0.98%; seven). The majority were of average socioeconomic status (SES; 60.84%; 432), with 167 (23.52%) indicating higher than average SES, 91 (12.81%) lower than average SES, and 16 (2.25%) much lower than average SES. The majority of participants were college/university graduates (44.64%; 317), followed by higher degree graduates (24.22%; 172), some college/university (17.46%; 124), high school graduates (9.29%; 66), vocational/technical school (3.80%; 27), and grammar/ primary school only (0.42%; three).

Revision of OMIS Items

In response to the higher than optimal correlation values between latent factors noted in Study 1, operational definitions of each factor underwent minor revisions to clarify conceptual distinctiveness, and items of each factor were also adjusted accordingly. To further contribute to factor distinctiveness, six new items were also drafted to be included in the final item pool (see the online supplemental materials for full changes made). One final question assessing functional impairment was also included at the conclusion of the scale ("Do the feelings you indicated above cause you significant distress, or make it hard for you to function in relationships, at work, at home, or other areas of your life important to you?"). This functional impairment assessment question was adapted from prior research

(Mantri et al., 2020). It was ancillary to the primary OMIS scale and did not contribute to the overall score, but rather provided supplemental information to assess the level of functional impairment caused by primary moral injury markers. The inclusion of this functional impairment assessment was in response to recent research suggesting the defining characteristic distinguishing moral distress versus injury is the level of functional impairment caused by the symptoms (Litz et al., 2022; Litz & Kerig, 2019). It was therefore important to capture functional impairment in order to distinguish between moral injury risk and moral distress. The revised operational definitions for each factor and final pool of 31 items then underwent a second expert rater process, utilizing the same method and expert raters employed within Study 1. In response to feedback, one item with a "poor" rating was deleted, resulting in a final shortlist of 30 items which underwent data collection.

Measures

In addition to the 30 items of the revised OMIS shortlist, participants completed a range of additional measures designed to capture relevant aspects of MI and provide support for convergent and divergent validity.

Demographic Questions

Participants were asked to indicate their age, gender, occupation, years of service, education level, ethnicity, country of citizenship and residence, economic situation, and, if police, whether they are sworn or unsworn members of their policing organization.

Guilt and Shame

The State Guilt and Shame Scale (SGSS-8; Cavalera et al., 2017) is an eight-item measure of state guilt and shame. Participants endorse items on a 5-point scale (1 = *not feeling this way at all* to 5 = *feeling this way very strongly*). Item responses were summed to create a total score for state guilt and shame. Examples of some of the items are: "I feel like I am a bad person," "I feel like apologizing, confessing," and "I want to sink into the floor and disappear." Cronbach's alpha of the SGSS-8 was .95 in this sample.s

Anger

The Dimensions of Anger Reactions Scale 5 (DAR-5; Forbes et al., 2014) is a five-item self-report measure that assesses anger experiences over the prior 4 weeks. Items are rated on a 5-point Likert scale (ranging from 1 = *none or almost none of the time* to 5 = *all or almost all of the time*). Examples of some of the items include: "When I got angry, I stayed angry," "I found myself getting angry at people or situations," and "When I got angry, I got really mad." Cronbach's alpha of the DAR-5 was .88 in this sample.

Loss of Trust

The General Trust Scale (GTS; Yamagishi & Yamagishi, 1994) measures general level of trust in the form of expectation of trustworthiness of others. It consists of six items, which assess belief about people's trustworthiness, such as "Most people are basically honest." Participants responded using 5-point Likert scale from 1

(*completely disagree*) to 5 (*completely agree*). Cronbach's alpha of the GTS was .85 in this sample.

Existential Conflict

The Meaning in Life Questionnaire (MLQ) is a 10-item self-report inventory (Steger et al., 2006), which captures subjective presence of meaning in life and search for meaning in life. Items are rated on a 7-point Likert scale (ranging from 1 = *absolutely untrue* to 10 = *absolutely true*). Examples of some of the items are: "My life has a clear sense of purpose," "I am searching for meaning in my life," and "I am seeking a purpose or mission for my life." Cronbach's alpha of the MLQ was .87 in this sample.

Depression

The Patient Health Questionnaire (Spitzer et al., 1999) is a nine-item measure of depression symptom severity. Participants endorse items on a 4-point frequency scale (ranging from 0 = *not at all* to 3 = *nearly every day*) about their depressive symptoms in the last 14 days. Item responses were summed, with higher scores reflecting greater severity of depression symptoms. Examples of some of the items are: "little interest or pleasure in doing things," "trouble falling asleep or staying asleep, or sleeping too much," and "feeling down, depressed or hopeless." Cronbach's alpha of the PHQ was .90 in this sample.

Moral Injury

The Moral Injury Outcome Scale (MIOS; Litz et al., 2022) is a 14-item measure of military moral injury which captures the shame and trust violation-related outcomes of moral injury. The MIOS comprises two pages—the first page entails an assessment of exposure to three types of MIEs, defined as events that went against the person's moral code or values (doing something or failing to do something, observing someone else acting or failing to act, or being directly impacted by someone else [or people] acting or failing to act). Following this, DSM-5 PTSD Criterion A trauma exposure and symptoms of PTSD are assessed via the Primary Care PTSD Screener (Prins et al., 2016), which comprises five items which ask about DSM-5 PTSD symptomology. The second page of the MIOS comprises a 14-item measure of moral injury outcomes, all indexed to the MIE that is the participant rated as the worst and most currently distressing. The time frame for ratings is the last month. At the end of the MIOS, the Brief Inventory of Psychosocial Functioning (Kleiman et al., 2020) is included to assess the functional impact of the MIOS symptoms endorsed across seven domains (romantic relationships, relationships with children, family relationships, friendships, work, training/education, and day-to-day activities). Participants are asked to rate the degree they are impacted on a 7-point Likert scale (ranging from 0 = *not at all* to 6 = *extremely*). Cronbach's alpha of the MIOS was .89 in this sample.

Neuroticism

The Mini International Personal Item Pool (Mini-IPIP; Donnellan et al., 2006) is a 20-item measure that captures the Big Five personality traits, namely extraversion, neuroticism, agreeableness, openness to experience, and conscientiousness. These items are scored on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly*

disagree). We used only the five-item neuroticism scale for the purposes of predictive validity in our study, anticipating that neuroticism would correlate positively with the OMIS. Examples of some of the items are: "I have frequent mood swings," and "I seldom feel blue." Cronbach's alpha of the Mini-IPIP neuroticism subscale was .92 in this sample.

Dark Triad Personality Traits

The Short Dark Triad (SD3; Jones & Paulhus, 2014) is a 27-item measure which measure three dark personality traits—psychopathy, Machiavellianism and narcissism. The measure was utilized for divergent validity purposes as a negative predictor of the OMIS to further support construct validity. In the SD3, participants are asked to rate how much they agree with a series of statements on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). Examples of test items include: "It's not wise to tell your secrets," "people see me as a natural leader," and "I insist on getting the respect I deserve." Cronbach's alpha of the SD3 was .86 in this sample.

Analytic Plan

Analyses from Study 1 were repeated on the new sample and revised OMIS shortlist. Based on the BCFA results, we eliminated 10 of the poorest-performing items, and arrived at a finalized OMIS measure of 20 items. Analyses described below assess this finalized item pool. We then reran the BCFA to confirm the hypothesized factor structure, and ran IRT analyses to assess individual item performance of the items within the final scale. Reliability, validity, and internal consistency of the final model were also assessed using analyses described in Study 1.

Study 2—Results

BCFAs

The five-factor chi square was significant, $\chi^2(141) = 421.411$, $p < .001$; however, all alternative fit indices showed that the model fitted the data well: CFI = .98, TLI = .97, SRMS = .06, RMSEA = .05 (95% confidence interval [.047–.059]), Akaike information criterion = 45,263.51, BIC = 45,578.51. The χ^2/df value was below 3 (2.99) indicating good model fit. Importantly, in response to alterations made in the service of increasing the conceptual distinction between the dimensions of moral injury, correlations between latent factors were reduced to acceptable levels (Table 3). Diagnostic indices (Rodriguez et al., 2016) suggested that the general MI factor explained 39% of the common variance overall (ECV = .39; see Table 5 for individual ECV values for each item). Furthermore, the model-based omega reliability was excellent for the general factor ($\omega = .97$), betrayal ($\omega = .91$), commission under duress ($\omega = .92$), commission with agency ($\omega = .91$), act of omission ($\omega = .92$), and witnessing ($\omega = .89$). The percent of reliable total score variance attributable to the general factor ($\omega H/\omega = .73$), suggested that 73% of reliable (systematic) variance in the multidimensional OMIS model was explained by the general factor. Likewise, the ωHS values suggested that the percent of reliable subscale score variance attributable to the specific factors was 55% for betrayal, 46% for commission under duress, 57% commission with agency, 63% for act of omission, and 63% witnessing. Table 5 shows the standardized factor loadings of the finalized

OMIS model. The factor loadings of all items on both the general moral injury factor and each of the five MIE factors were higher than the recommended level of .32 (Tabachnick & Fidell, 2013).

IRT: Final Model Characteristics

GRM IRT analyses were run on each factor of the finalized OMIS model. There were no violations to unidimensionality based on principal component analysis. While a number of items were locally dependent based on Yen's Q3 index > |0.3| (Yen, 1984), this is to be expected in shorter scales—with type I error rates occurring significantly more in scales with 10 items or less (Houts & Edwards, 2013). All items (Figure 4) and factors (Figure 5) had peaked information curves in the −2 to +2 logit range, indicating that the final OMIS provides higher measurement precision from 2 SD below up to 2 SD above average scores of the latent trait. Each factor demonstrated a good range of item difficulty, suggesting test items provide information at different levels of the latent trait. Full parameter estimates for the GRM of each subscale may be viewed in the online supplemental materials.

Descriptive Statistics, Reliability, and Validity

Descriptive statistics for the final OMIS are presented in Table 6. As with Study 1, mean scores for each factor of the OMIS trended higher in women over men (see the online supplemental materials for mean scores according to gender, each occupational group and years of service). The full range of possible scores for each subscale were utilized. Reliability indices for each subscale and the total measure were all in the excellent range.

Correlations among the latent factors were estimated for the five-factor model and may be seen in Table 3. Correlations among the OMIS factors were all reduced to acceptable levels and ranged from .11 to .70. As in Study 1, the weakest correlations were again between the betrayal subscale and other four subscales, suggesting that the betrayal factor is the most distinct of the moral injury construct (although it did share a slightly stronger relationship with the other externally attributed factor, witnessing). The three strongest correlations were between the internally attributed factors—commission with agency, commission under duress, and act of omission, suggesting that although these factors are still distinct enough to support the five-factor model, they do cluster together. As expected, the overall scale and its subscales illustrated significant positive correlations with external validity criteria—guilt, shame, anger, depression, and PTSD symptoms (see Table 7 for all comparisons). Existential conflict, as measured by meaning in life, showed a more differential relationship—specifically, presence of meaning had a negative trend of correlation with all OMIS subscales (the strongest relationship being with betrayal), whereas search for meaning had a trending positive relationship with all OMIS subscales (the strongest correlation being with act of omission). The moral injury outcomes of shame and trust violation as measured by the MIOS showed some of the strongest correlations with OMIS subscales, supporting construct validity. The betrayal subscale of the OMIS displayed the strongest positive correlations with anger, depression and PTSD symptoms, and the strongest negative correlations with a general sense of trust and presence of meaning. Commission under duress showed the strongest positive correlations with guilt, shame, anger, and MIOS shame and trust violation.

Table 5

Results From the Bifactor Confirmatory Factor Analysis Showing Standardized Item Loadings in Study 2

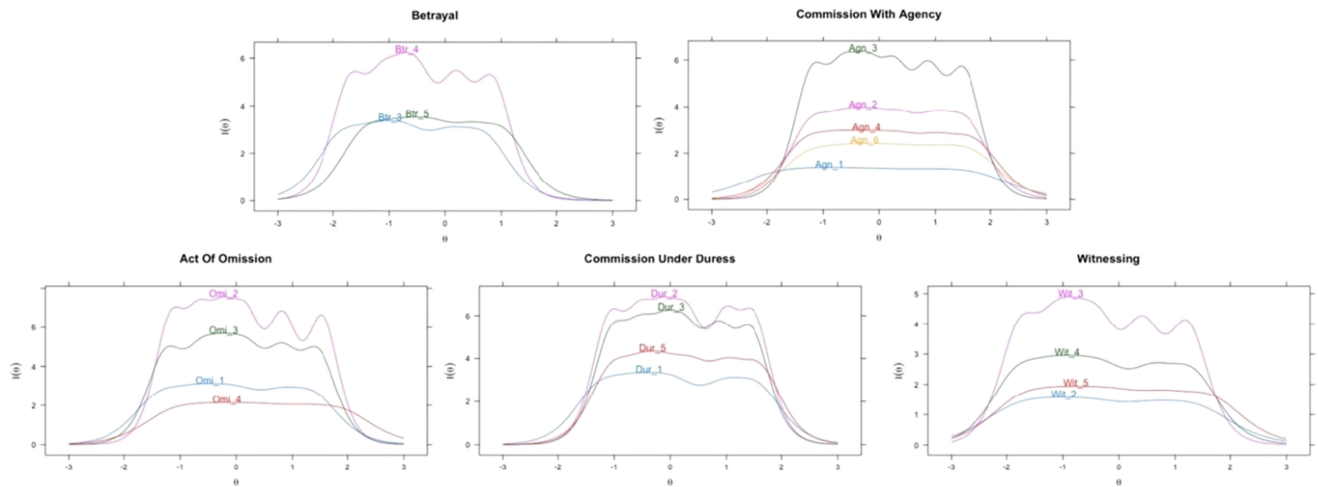| Item label	Item content	Gen	F1	F2	F3	F4	F5	IECV
				Factor loading				
Factor 1: betrayal								
Btr_3	I'm angry because my workplace expects a lot from employees but does not look after us in return	.52	.69					.37
Btr_4	Experience has shown me that I cannot rely on my workplace to look after me	.52	.74					.34
Btr_5	The way my workplace has failed to look after me makes me question my career	.62	.63					.49
Factor 2: Commission with agency								
Agn_1	I feel guilty for choosing to do things at work that go against my conscience	.35		.65				.22
Agn_2	I'm ashamed of choices I've made in my job that go against my beliefs about right and wrong	.41		.76				.22
Agn_3	I feel anger when I think about things I've decided to do at work that don't align with my moral values	.49		.76				.29
Agn_4	I question whether I can trust others because of workplace decisions I've made that go against my conscience	.60		.58				.52
Agn_6	Choosing to act against my own moral values in my job has made it hard for me to find meaning in my work	.70		.49				.67
Factor 3: commission under duress								
Dur_1	I feel guilty over things I've been made to do at work that I don't morally agree with	.50			.73			.32
Dur_2	I'm ashamed of myself because of things I'm pressured to do at work that go against my conscience	.64			.65			.49
Dur_3	I'm angry because I've been forced to do things in the workplace that go against my beliefs about right and wrong	.68			.58			.58
Dur_5	It's difficult for me to find meaning in the morally questionable things I've been made to do at work	.72			.51			.67
Factor 4: act of omission								
Omi_1	I feel guilty about times I stood back and allowed bad things to continue happening in my workplace	.36				.77		.18
Omi_2	I've let myself down at work by allowing things I knew were not right to continue happening	.46				.78		.26
Omi_3	I'm angry that I haven't chosen to stand up against the things that go against my beliefs about right and wrong at work	.51				.73		.33
Omi_4	Ignoring my conscience in order to do my job has made it hard for me to trust myself	.62				.55		.56
Factor 5: witnessing								
Wit_2	Even though it's outside my control, the unethical behavior I've seen from others in my workplace makes me ashamed	.34					.65	.22
Wit_3	It makes me angry that I cannot stop others from doing things at work that go against my values	.35					.82	.15
Wit_4	Being unable to stop people from doing things I don't morally agree with in the workplace has made me less trusting of others	.48					.68	.33
Wit_5	Witnessing unethical behavior at work without being able to change it has broken the sense of purpose I used to have	.58					.56	.52

Note. $N = 710$. Gen = general moral injury factor; IECV = individual explained common variance.

Study 2—Discussion

Study 2 provided important information about the factor structure, reliability, and construct validity of the revised and finalized OMIS. BCFA results affirmed that the OMIS is best conceptualized as five distinct but related MIE factors, with an overarching general moral injury factor. All items loaded above the minimum threshold on both their own MIE factor and the general MI factor. Items tapping guilt and shame were dropped from the betrayal factor entirely, due to consistent poor loading, suggesting they are not directly relevant to the presentation. Furthermore, correlations among the latent MIE factors were reduced to acceptable levels due to the amendments made in response to Study 1. IRT analyses suggested the OMIS measure as a whole captures the MI construct well from 2 *SD* below to 2 *SD* above the mean of the latent construct, with a good range of item information and item difficulty within each factor. Cronbach's alphas were in the excellent range for each factor, and remaining analyses supported the construct validity of the instrument. Specifically, OMIS scores were positively correlated with guilt, shame, anger, search for meaning, depression, PTSD symptoms, and MI-related shame and trust violation symptoms, and negatively associated with general trust and presence of meaning. No significant relationship was observed with narcissism or neuroticism. As hypothesized, betrayal was more strongly associated with anger, whereas internally attributed factors were more strongly associated with guilt and shame—although differences between the subscales tended not to be significant. Contrary to expectations, personality traits tended to show no significant relationship with the OMIS or a relationship opposite to that predicted. Specifically, neuroticism and narcissism were not significantly associated with any OMIS

Figure 4

Item Information Curves for Items Within Each OMIS Factor in Study 2

Note. The graphs are truncated along θ (−3, +3). OMIS = Occupational Moral Injury Scale. See the online article for the color version of this figure.
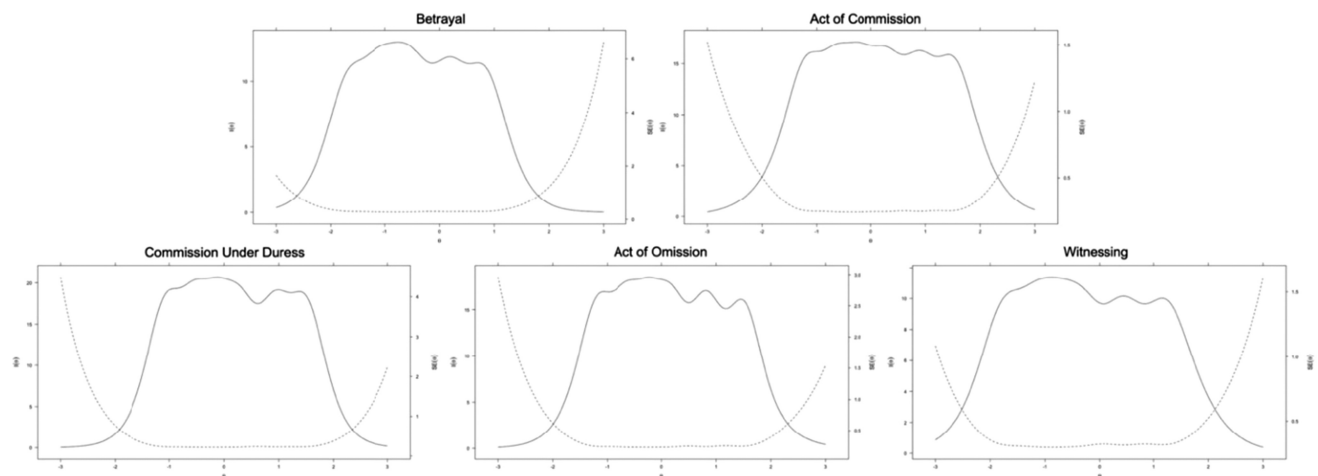
subscale. Contrary to expectations, Machiavellianism was significantly positively correlated with all subscales except for witnessing, and psychopathy was significantly correlated with commission under duress, commission with agency, and acts of omission. We will discuss the implications of these findings in the general discussion.

General Discussion

The moral injury construct captures the profound psychosocial suffering that can arise from the violation of deeply held moral values and beliefs, beyond which can be captured by related diagnoses such as PTSD and MDD. It is increasingly recognized that many frontline health and first responder workers are suffering from moral injury,

particularly in the wake of the global COVID-19 pandemic. Lack of valid, reliable measurement tools developed for nonmilitary occupations has limited the advancement of knowledge. At present, researchers may utilize one of three measures developed specifically for civilian groups (Chaplo et al., 2019; Mantri et al., 2020; Roth et al., 2023); however, none of these measures are appropriate for use across a range of diverse occupational settings. They also do not link moral injury symptomology to precipitating MIEs in a meaningful way, and do not utilize more advanced scale construction techniques such as IRT. To our knowledge, this is the first attempt to develop and evaluate a measure of occupational moral injury, precise enough to capture the construct well whilst generalized enough in wording to allow use across any occupational setting in which moral injury might be a concern, without ad hoc adaptation. Addressing previous measurement

Figure 5

Test Information and SE Curves for Each OMIS Factor in Study 2

Note. The *SE* is illustrated by the dotted line. OMIS = Occupational Moral Injury Scale.

Table 6

Descriptive Statistics for the Occupational Moral Injury Scale—Study 2

Study 2	M	SD	Range	Cronbach's α	McDonald's ω
Total score	4.20	1.24	1–7	.95	.95
Betrayal	4.81	1.67	1–7	.90	.89
Commission under duress	3.84	1.65	1–7	.93	.93
Commission with agency	3.92	1.48	1–7	.91	.91
Act of omission	3.91	1.60	1–7	.91	.91
Witnessing	4.54	1.42	1–7	.87	.87

Note. $N = 710$.

problems in the field, we also unite MIEs and moral injury symptoms at the item level, limiting "concept creep" (N. Haslam, 2016) and facilitating confidence in construct validity, in addition to utilizing a combination of CFA and IRT statistical approaches. Overall, the results of this article suggest the OMIS is a structurally sound, psychometrically valid, and reliable instrument for assessing the presentation of moral injury in occupational settings.

Review of Key Psychometric Findings

BCFA results confirmed that the OMIS is best conceptualized as a bifactor model, with a general factor of moral injury, in addition to five distinct but related dimensions of MIEs. This was evidenced by excellent model fit, and items loading effectively on their individual MIE factor as well as the general moral injury factor. The five-factor MIE model is consistent with the psychometric properties of most existing measures of moral injury (Chaplo et al., 2019; Currier et al., 2018; Litz et al., 2022; Nash et al., 2013) that find unique factors related to whether the individual is the direct perpetrator of a moral transgression

(i.e., commission), a witness of a moral transgression, or has experienced a betrayal of what's morally right by another trusted party.

IRT analyses on OMIS items suggested all items performed well, capturing a high level of information on the moral injury construct from two standard deviations below to two standard deviations above average. Cronbach's alpha and McDonald's omega values of the OMIS were all within the excellent range, and all remaining analyses supported the construct validity of the instrument. Specifically, OMIS scores in Study 1 were positively correlated with all aspects of PTSD symptomology, including reexperiencing, avoidance, negative alterations in cognition, mood, and hyperarousal. The OMIS also positively correlated with an alternate measure of MIEs—self, other, and betrayal events—and negative aspects of psychosocial safety, including burnout and secondary traumatic stress. Strong divergent validity was observed in significant negative correlations of the OMIS with well-being, compassion satisfaction, and all aspects of psychosocial safety, including management commitment and priority, as well as organization commitment and participation. Study 2 demonstrated further support for construct validity, with scores of the finalized OMIS scale showing

Table 7

Correlations Between OMIS Subscales and Validity Criteria Subscales in Study 2

Subscale	OMIS total	OMIS betrayal	OMIS duress	OMIS commission	OMIS omission	OMIS witnessing
OMIS betrayal	.62*	—				
OMIS duress	.88*	.44*	—			
OMIS commission	.88*	.40*	.76*	—		
OMIS omission	.84*	.34*	.75*	.69*	—	
OMIS witnessing	.76*	.47*	.53*	.58*	.52*	—
SD3 narcissism	−.02	**−.08**	.02	−.00	−.01	−.02
SD3 Machiavellianism	.23*	.18*	**.23***[*]	.21*	.17*	.13
SD3 psychopathy	.16*	.10	**.20***[*]	.15*	.14*	.06
MINI IPIP neuroticism	.10	.07	.09	.05	**.10**	.09
SSGS-8 guilt	.31*	.21*[2]	**.32***[1,2]	.28*	.27*	.16*[1]
SSGS-8 shame	.34*	.28*	**.32***	.28*	.28*	.22*
DAR-5 anger	.31*	**.27***	**.27***	.26*	.22*	.24*
GTS trust	−.13	**−.21***[3,4,5]	−.10[5]	−.08[4]	−.05[3]	−.12
MILQ presence of meaning	−.15*	**−.22***[6,7,8]	−.11[8]	−.10[7]	−.11[8]	−.08[6]
MILQ search for meaning	.16*	.12	.14	.12	**.15***	.14
PHQ-9 depression	.38*	**.34***	.33*	.29*	.31*	.28*
MIOS shame	.45*	.28*[10]	**.43***[9,10]	.41*	.39*	.27*[9]
MIOS trust violation	.43*	.37*	**.38***	.32*	.31*	**.38***
MIOS PTSD	.30*	**.28***	.27*	.22*	.24*	.23*

Note. $N = 710$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. OMIS = Occupational Moral Injury Scale; MINI IPIP = Mini International Personal Item Pool; SSGS-8 = State Shame and Guilt Scale; DAR-5 = Dimensions of Anger Reactions Scale 5; GTS = General Trust Scale; MILQ = Meaning in Life Questionnaire; PHQ = Patient Health Questionnaire; MIOS = Moral Injury Outcome Scale; PTSD = posttraumatic stress disorder.
Significant differences in correlation values between OMIS factors are marked with superscript—p values as follows: 1 = .002; 2 = .03; 3 = .002; 4 = .02; 5 = .03; 6 = .007; 7 = .02; 8 = .03; 9 = .0008; 10 = .002.
* Significant at Bonferroni-corrected $p < .0005$.

significant positive correlations with measures of guilt, shame, anger, search for meaning, depression, PTSD symptoms, and moral injury-related shame and trust violation outcomes. Significant negative relationships were noted with presence of meaning and general trust.

Contribution to Conceptual Understanding of MI

Building on prior research (Chaplo et al., 2019), the OMIS adds greater nuance to the factors mentioned above by refining whether the moral violation was committed of the individual's own volition (i.e., commission with agency), or they were coerced or pressured to do so in some way (i.e., commission under duress). In assessing occupational moral injury, this is an important difference because much of the source of moral distress in occupational acts of commission comes from individuals being obligated to act in a certain way due to institutional constraints or requirements of their position, even if the action "feels" morally wrong (Held et al., 2019; Williamson et al., 2018). Likewise, differentiating between whether an individual simply witnesses a moral violation (witnessing) or witnesses a violation with an added sense of personal culpability for failing to step in and intervene in what was observed (act of omission) is a subtle but important distinction to make. This is particularly true when assessing moral injury in occupational settings where the shared sense of social identity (Brown, 2000) is likely to increase feelings of personal culpability when witnessing another perpetrate a moral violation without choosing to or being able to intervene. It is also possible that the more meaningful source of moral injury is from the sense of personal culpability in an act of omission, rather than simply witnessing a violation—but without differentiating the two, research has previously been unable to pinpoint this. The greater nuance of the OMIS factor structure will help advance our understanding of the way we define the moral injury construct in future research.

Differential Relationships and Theoretical Considerations

Some differential relationships in validity were observed, particularly with the OMIS betrayal factor, which demonstrated a significantly stronger negative association with all aspects of psychosocial safety, compared to any other OMIS factor and the OMIS total score. Betrayal also demonstrated a significantly stronger positive relationship with burnout and a negative relationship with compassion satisfaction, compared to any other OMIS factor. In Study 2, betrayal also correlated most strongly with anger, depression, and PTSD symptoms, and had the strongest negative correlation with a general sense of trust and presence of meaning. Conceptually, the betrayal aspect of moral injury and negative psychosocial safety climate are very similar, and research suggests that poor psychosocial safety climate may be a predictor of developing moral injury in occupational settings (Gilbert-Ouimet et al., 2022). Psychometrically, our study supported the distinctiveness of the betrayal factor through its lower correlation with other factors and differential relationship to external variables. The guilt and shame symptoms of moral injury also did not load as strongly with the betrayal factor, which instead showed a strengthened relationship with anger, loss of trust and existential conflict. The consistent poor loading of the guilt and shame-related OMIS items on the betrayal factor led to the dropping of these items entirely in Study 2, as results twice suggested the items did not fit well with the factor.

Given the pertinence of the betrayal factor to occupational settings, where much moral injury is precipitated by poor treatment and support from the organization in the context of high-stakes work (McKendy & Ricciardelli, 2022; Simmons-Beauchamp & Sharpe, 2022), and where betrayal may manifest operationally as poor psychosocial safety climate, this is an important avenue for future exploration. A strong shared social identity is a powerful protective factor for a range of psychosocial health outcomes (Ellemers et al., 2013; C. Haslam et al., 2018). When this breaks down due to perceived institutional betrayal, it may leave the individual without the psychosocial safety climate buffer to protect from moral injury—meaning they are more vulnerable to long-term suffering and impairment caused by perpetration or witnessing-based MIEs (Dollard et al., 2012; Hall et al., 2013; Law et al., 2011). Future studies may wish to explore whether institutional betrayal plays a mediating or moderating role between exposure to commission and witnessing-based MIEs and the development of moral injury as an outcome.

As predicted, commission with agency, commission under duress and act of omission tended to correlate most strongly with measures of guilt and shame in Study 2, suggesting these symptoms are most relevant to internally attributed factors of moral injury. There was also a trend for meaning in life to correlate with OMIS subscales in a differential way—specifically, presence of meaning was negatively associated with all subscales, whereas search for meaning was positively associated with all subscales. This suggests that while the experience of moral injury does indeed damage an individual's sense of life as meaningful and contributes to a sense of existential conflict, it may also increase the person's search for life meaning—suggesting that while our current sense of meaning is damaged, we intrinsically attempt to seek out meaning in our lives to repair from this in an act of posttraumatic growth (Jayawickreme & Blackie, 2014).

Lastly, the personality-related variables that were included as predictors of moral injury tended to show either no significant relationship to the construct, or the opposite relationship to what was anticipated. Neuroticism did show a weak positive relationship to each factor of the OMIS, and subclinical narcissism also demonstrated a weak negative relationship, which was consistent with predictions. However, subclinical levels of Machiavellianism and psychopathy both demonstrated significant positive relationships with MI as measured by the OMIS. While antithesis to our hypothesis, this may be understood in the context of policing literature, which suggests that those with higher dark triad personality traits do experience higher instances of moral injury—perhaps due to poorer emotional regulation within such individuals, and the experience of MIEs being interpreted as a betrayal of their self-concept and ego (Papazoglou et al., 2019). Further examination of the role of personality traits in moral injury experience is beyond the scope of this article, but an important avenue for future research. We recommend these findings be further extended and replicated in other groups to better understand the relationship between Machiavellianism, psychopathy, and MI.

Limitations and Future Directions

There are some limitations within the current study to note. One of the key limitations is the use of a predominantly White, Western, educated sample (83.52% white, 84.36% average or above average SES, 68.87% tertiary educated). Although a range of relevant occupations and balance of gender demographics were captured, the nature of the recruitment platform used meant that participants

were primarily White, English-speaking, and educated at a tertiary level. This is significant because recent research suggests that moral injury may present differently according to ethnicity and gender, and measures of moral injury likewise may not be appropriate for use with other ethnicities if developed using primarily White, Western samples (Morris et al., 2022). Healthcare systems may also differ between cultures, meaning the OMIS may not be valid for use with Eastern healthcare workers unless validated for use in this way. Future research, therefore, should aim to apply measurement invariance analyses to validate the OMIS for use across different ethnic, occupational, and gendered groups.

There were also further limitations. The goal of the OMIS was to create a MI measure generalized enough for use across occupational settings without the requirement for ad hoc adaptation. While we achieved this aim, it is possible that some sensitivity of measurement may have been lost due to the nonspecific language used. While this is a necessary cost to creating a measure that facilitates generalized use and cross-group comparison in this way, it is also a limitation nonetheless. The study was cross-sectional in nature, without longitudinal analyses, so no temporal inferences about findings can be made. Validity analyses were also correlational in nature, and although these were mostly moderate in magnitude, regression analyses may allow greater predictive utility in the future. The OMIS sample also focused on specific high-risk occupations but did not screen out those who did not meet a minimum threshold of trauma or MIE exposure. There may be utility for future studies to prescreen participants with greater precision to ensure a mostly clinical population is captured rather than a large proportion who do not report any experience of moral injury. Doing so may also offer more insight into the rates at which different subtypes of MIEs occur across different occupational settings. Lastly, we were able to implement a limited number of variables within the study to allow for evaluation of construct validity. Theoretical models of moral injury (Farnsworth et al., 2017; Jinkerson, 2016; Litz et al., 2009; Shay, 2014) suggest a greater range of variables with potential relevance to moral injury that may be explored in future studies to further support the construct validity of the OMIS.

Conclusion

The OMIS offers one of the first reliable, psychometrically validated tools for capturing the experience of moral injury in occupational settings. One of the strongest contributions of the OMIS is its ability to be used in any occupational setting, without the necessity for ad hoc amendment, which is currently seen in most other measures of MI. Our research suggests the OMIS is both reliable and valid (factorial, convergent, and divergent) instrument, precise enough to capture key aspects of the moral injury construct whilst generalized enough in wording to allow its use across any occupational setting without requiring amendment. With consideration of limitations, the OMIS offers a valuable tool for clinicians and researchers seeking to explore moral injury presentation in occupational settings outside the military. The OMIS will help facilitate further research into and greater understanding of the moral injury construct as a whole.

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