Measuring Occupational Moral Injury:

Development, Validation and Applied Use of the Occupational Moral Injury Scale (OMIS)

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Declaration

This thesis is submitted to the Australian National University (ANU) in partial fulfilment of the Doctor of Philosophy (PhD) in Clinical Psychology. The work presented in this thesis is original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for another degree at this or any other institution. This thesis includes original papers that have been published in peer review journals. The ideas, development, and writing of these papers and the thesis were the principal responsibility of myself. The inclusion of co-authors reflects their input on the projects which involved providing guidance on study designs, and reviewing the manuscripts before submission.

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Abstract

Moral injury is defined as the psychological, emotional, and spiritual suffering that can arise when an individual perpetrates, fails to prevent, or witnesses actions that transgress deeply held moral beliefs and expectations, or experiences betrayal by a trusted authority. Originating with military literature, moral injury is increasingly recognised in broader contexts, suggesting it is more widespread than initially thought. A key barrier to research in these broader contexts is the lack of valid, reliable measurement tools suitable for civilian use. This thesis addresses limitations in moral injury measurement beyond the military, first by evaluating military scales modified for civilian use, before constructing a novel scale designed for diverse occupational contexts. We present three chapters that expand moral injury measurement and understanding.

In Chapter 2, two military moral injury scales were adapted and their psychometrics explored in a civilian sample: the Moral Injury Events Scale-Civilian (MIES-C) and Expressions of Moral Injury Scale-Civilian (EMIS-C). A sample of 280 civilians completed the scales along with additional measures of guilt, shame, anger, depression, PTSD, and anxiety. Confirmatory factor analyses (CFA) showed that the factor structure of both scales replicated well. Discriminant validity was supported by significant negative correlations with wellbeing. Both scales correlated as predicted with external validity criteria. Results suggest civilian populations are susceptible to moral injury, but existing measures may not capture this effectively, highlighting the need for further scale development.

In Chapter 3, the Occupational Moral Injury Scale (OMIS) was developed to assess potentially morally injurious events (PMIEs) and primary moral injury markers (guilt, shame, anger, loss of trust, existential conflict) across occupational settings. Bifactor CFA (BCFA) and

Item Response Theory (IRT) were used over two studies with 1,454 frontline health and first responder workers. Analyses revealed a bifactor structure of five PMIE factors (commission with agency, commission under duress, omission, witnessing, betrayal), and a general factor of moral injury. OMIS subscales demonstrated excellent internal consistency, convergent and divergent validity, with interesting differential relationships also observed among the subscales. Paper 2 established the OMIS as a validated tool for assessing moral injury risk in any occupation.

In Chapter 4, the OMIS was established as measurement-invariant across specific occupations. Multigroup BCFA analyses were conducted with 1,431 participants from five high-risk occupational groups (health workers, emergency services, police, government officials, and teachers). Results demonstrated configural, metric, and scalar invariance of the OMIS across all groups and genders – indicating that items hold the same meaning across these groups and their scores can be appropriately compared. Unexpected differential findings were observed and discussed, with government officials reporting the highest moral injury symptoms but the lowest functional impairment. These results validate the OMIS for use across diverse groups, permitting direct comparisons in future research.

Across the above chapters (four studies in total), we created a measure of occupational moral injury that reflects contemporary understanding and fills important gaps in moral injury measurement. The OMIS links morally injurious events to moral injury outcomes while remaining adaptable for use across settings without modification. Established measurement invariance also supports direct comparisons between high-risk groups, facilitating novel insights into how the construct presents in different settings. We hope the OMIS will contribute to further research into occupational moral injury, facilitating more focused interventions for treatment and prevention, and providing greater conceptual clarity in the field as a whole.

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List of Abbreviations

ANU Australian National University

BCFA Bifactor Confirmatory Factor Analysis

BMCFA Bifactor Multigroup Confirmatory Factor Analysis

CFA Confirmatory Factor Analysis

CTT Classical Test Theory

DSM-5 Diagnostic and Statistical Manual of Mental Disorders (fifth edition)

EFA Exploratory Factor Analysis

EMIS Expressions of Moral Injury Scale

IRT Item Response Theory

MIES Moral Injury Events Scale

OMIS Occupational Moral Injury Scale

PMIE Potentially Morally Injurious Event

PTSS Post Traumatic Stress Symptoms

Overview of Thesis and Dissemination of Research During Candidature

The submitted thesis forms one part of the dissemination of the research findings of this candidature. The thesis consists of five chapters that covers the literature on moral injury and the empirical research conducted that has expanded our understanding and measurement of occupational moral injury. Chapter 1 presents a broad literature overview orienting the reader to the current landscape and understanding of moral injury, and the gaps to be addressed. Chapter 2 presents the first empirical research exploring the validation of two modified military moral injury scales in a civilian sample. Chapter 3 presents a two-study research paper exploring the development, validation and refinement of the Occupational Moral Injury Scale. Chapter 4 presents a final research paper exploring the measurement invariance of the OMIS scale across occupational groups and genders. Chapter 5 presents an overall discussion of the findings and their limitations. Below we list the publications, conference proceedings and media that formed the other part of dissemination of research.

Publications

Thomas, V., Bizumic, B., Cruwys, T., & Walsh, E. (2024). Measuring civilian moral injury: Adaptation and validation of the Moral Injury Events Scale (Civilian) and Expressions of Moral Injury Scale (Civilian). *Psychological Trauma: Theory, Research, Practice, and Policy, 16*(2), 270–279. https://doi.org/10.1037/tra0001490

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Thomas, V., & Bizumic, B. (2025). Moral injury in health workers, emergency services, police, government officials, and teachers: Measurement invariance of the Occupational Moral Injury Scale (OMIS) and group comparisons. *Psychological Trauma: Theory, Research, Practice and Policy*. Advance online publication. https://doi.org/10.1037/tra0002001

Thomas, V. & Bizumic, B. (in press). Moral injury. In Bennett, G., & Goodall, E. (eds), *The Palgrave Encyclopedia of Disability*. Palgrave Macmillan, Cham.

Conferences

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Thomas, V., Bizumic, B., Cruwys, T., & Walsh, E. *Measuring civilian moral injury: Adaptation and validation of the Moral Injury Events Scale (Civilian) and Expressions of Moral Injury Scale (Civilian)*. Presentation at the Australasian Conference of Traumatic Stress (2021)

Thomas, V., Bizumic, B., & Quinn, S. *The Occupational Moral Injury Scale: Development and validation in frontline health and first responder workers*. Presentation at the Australasian Conference of Traumatic Stress (2024)

Media

Thomas, V. (June 2024). Radio Interview – ABC Radio, 'Afternoons' with Alice Matthews

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Chapter 1

Introduction

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1.1 Introducing Moral Injury

The term moral injury gives a name to the lived experience of profound suffering and functional impairment that can arise when we experience violations of what we deeply believe to be right and just. It is thought that moral injury affects 6.0% of combat veterans, 7.0% of healthcare workers, and 4.0% of first responders, according to nationally representative estimates from the United States (Maguen et al., 2025). Furthermore, evidence continues to grow that suggests exposure to morally injurious events increases the risk for a range of mental health problems, including posttraumatic stress, depression, problematic substance use, and suicidal behaviour (Maguen et al., 2020; Maguen, Griffin, et al., 2023; Maguen, Nichter, et al., 2023; Norman et al., 2021, 2022).

The concept of moral injury was first introduced by Shay (1994), who drew parallels to Homeric philosophy in his book *Achilles in Vietnam* by comparing the soldiers of Homer's *Iliad* with Vietnam veterans. In his examination of the psychological devastation of war, Shay argued that moral injury was a violation of *themis* – an ancient Greek term referring to what is just, right, proper, and customary. *Themis* is interpreted as a gift from the gods, and indicative of a civilised society. Shay later elaborated on this concept, defining moral injury as a *character wound* caused by the betrayal of justice by a person of authority in a high-stakes situation. Since Shay's introduction of the concept of moral injury into modern lexicon, definitions and understanding of the concept have advanced. Although a consensus definition is yet to emerge, moral injury is most generally understood as the profound suffering that can arise from involvement in either perpetrating, failing to prevent, or witnessing actions that transgress deeply held moral norms and expectations (Litz et al., 2009), or betrayal by a trusted leader or authority (Shay, 2014). It is also

accepted that these potentially morally injurious events (PMIEs) generally take place in high-stakes situations (Shay, 2014).

There is a huge variety in the situations that might fit the categorisation of PMIE. Moral injury literature and research were born from a military context, and most PMIE situations were drawn from military/deployment circumstances. Common thematic examples of military PMIEs have been noted as betrayal-type behaviour from military leadership, ambiguity or impractical application of rules of engagement in high-stakes situations, killing or harming other people, or freezing and failing to perform an active duty in hostile settings (Currier et al., 2015; Terpou et al., 2022). These examples of potentially PMIEs include both acts of commission and omission. For instance, while killing during combat may not necessarily be morally injurious in itself, killing innocent civilians or violating rules of engagement are more clearly consistent with this construct. Similarly, freezing in combat can be experienced as an act of omission, where an individual perceives they failed to act when action was expected, leading to distressing attributions of personal responsibility, shame, or letting others down. In each case, whether the event is experienced as morally injurious depends on the individual's moral framework and appraisal of their role in the situation.

It has also been noted that the unique interaction of trauma exposure and post-traumatic stress disorder (PTSD) symptomology in turn may perpetuate greater exposure to PMIEs through behavioural decisions such as conditioned engagement in and possible enjoyment of aggressive acts, persistent fear and forced sense of helplessness, and accumulative anger and desire for retribution, as some examples (Currier et al., 2015). PTSD is defined as negative symptoms resulting from exposure to traumatic incident/s, including actual or threatened death, serious injury

or sexual violence. Symptoms are categorised as intrusions, avoidance, negative alterations in cognition and mood, and arousal. They must last for more than one month and cause significant impairment and distress (American Psychiatric Association, 2022). Moral injury and PTSD are understood to be highly related in many ways with significant overlap in presentation, although there are also key differences – particularly in relation to aetiology of illness, the nature of threat experienced, the physiological basis of symptoms, the key emotional associations, and the nature of subsequent appraisals. These differences will be discussed in depth later within our literature review.

1.2 PMIE Types and Moral Injury Sequalae

When examining PMIEs on a thematic level, key PMIE types fall under three broad categories – internally-attributed events, externally-attributed events and betrayal events. Internally-attributed events are often described as 'self-directed' events in the literature – situations in which the individual feels personally culpable for the moral violation that has occurred (Currier et al., 2015; Griffin et al., 2019; Nash et al., 2013). Externally-attributed events are often described as 'other-directed' events in the literature – situations in which the individual witnesses a moral violation occur, but may or may not feel directly culpable for this (Currier et al., 2015; Griffin et al., 2019; Nash et al., 2013). Lastly, betrayal events are situations in which an individual feels betrayed by a trusted leader or authority in a high-stakes situation, and experiences dysphoric moral emotions as a result (Currier et al., 2015; Griffin et al., 2019; Nash et al., 2013). Further elaborating on this, recent research (Chaplo et al., 2019) has further delineated internal events according to the degree of personal agency exercised in the violation (either 'commission with agency' where an individual has full agency in their actions, or 'commission under duress' where actions were

undertaken under some degree or coercion or duress), and external events according to whether the individual feels like they simply witnessed a violation (witnessing), or were complicit in the witnessed event through a failure to intervene (omission). Research has not yet established which of these morally injurious event subtypes capture the greatest influence of harm, however an increasing body of research suggests that betrayal can cause significant distress in occupational contexts, and may increase vulnerability to burnout, traumatic stress symptoms and other subtypes of PMIEs if experienced (Park et al., 2023; Simmons-Beauchamp & Sharpe, 2022; Webb et al., 2024).

Much like the variation seen in PMIEs, the symptomatic configuration of how moral injury presents can vary according to individual difference and the type of moral injury event that has been experienced (Webb et al., 2024). Evidence delineating the symptomatic outcome according the type of PMIE exposure is still in its infancy; however, anger has been established as a more common outcome of betrayal, whereas guilt and shame are more closely linked to internally-attributed experiences (Jordan et al., 2017). Research also indicates that internally-attributed events are associated with higher levels of depression, while externally-attributed events (witnessing others commit moral violations) are linked higher levels of PTSD symptomology (Bryan et al., 2015; Nickerson et al., 2018). PMIE exposure in general has also been linked with both significantly higher rates of suicide attempts and greater complexity of trauma in civilians (Fani et al., 2021).

In terms of manifestation, moral injury may present as a constellation of dysphoric moral emotions, changes in beliefs about the self and the world, and associated functional impairment. Without linking these symptoms to the precipitating moral violation event and the functional role

they serve in managing moral pain, moral injury may be frequently misdiagnosed as one of its many individual symptoms or functional impairments – in particular, PTSD, alcohol use disorder, anxiety, or any number of associated and comorbid conditions (Čartolovni et al., 2021; Farnsworth et al., 2017; Riedel et al., 2022; Williams, 2020). It is crucial therefore to take a holistic view of the collection of symptoms and to explore their aetiology and function in order to correctly identify moral injury.

While moral injury can present in a myriad of ways according to event type and individual difference, there are nevertheless key symptoms which have been established as hallmarks of the condition. Primary markers of moral injury are understood to be guilt, shame, anger, loss of trust (in self or others), and existential conflict (a deep questioning of meaning, purpose and identity; Jinkerson, 2016; Yeterian et al., 2019). These primary symptoms can be directed toward the self or others depending on the type of PMIE experienced – although research suggests that guilt and shame are more likely to arise from perceived internal failings, whereas anger is often linked to violations attributed to others (Jordan et al., 2017). Secondary sequalae may be more varied, but often represent an individual's costly or unworkable attempts to cope with the primary symptoms (Farnsworth et al., 2017). These secondary markers frequently include increased depression, anxiety, suicide ideation and attempt, social withdrawal and disconnection, self-handicapping behaviours (attempts to punish the self for perceived moral failures), and increased substance use (Griffin et al., 2019; McEwen et al., 2021). Moral injury also tends to involve a fundamental shift in felt sense of safety and sense of the world and other people as predictable, trustworthy and safe, which is an outcome it shares with PTSD (Barnes et al., 2019; Battles et al., 2018; Fani et al., 2021).

Importantly, research has more recently established that the key differentiating factor between healthy, reactive moral pain and a moral injury is the level of functional impairment experienced (Litz et al., 2022; Litz & Kerig, 2019). Presence of moral injury primary symptoms alone are not enough – they must be linked to a precipitative event/s, and examined in conjunction with levels of functional impairment in key life domains in order to establish the presence of moral injury.

1.3 Moral Injury and PTSD

The concept of moral injury was previously captured under the umbrella of post-traumatic stress symptoms. However, unlike PTSD moral injury is not currently recognised as a diagnosable mental health disorder, according to the DSM-5 (American Psychiatric Association, 2022). Rather, it is a form of severe psychological distress that can lead to the development of mental health disorders.

Post-traumatic stress disorder is defined within the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2022) as symptoms resulting from exposure to death, threatened death, or actual or threatened serious injury or sexual violence. Exposure may take the form of direct exposure, witnessing the trauma, learning about the trauma or indirect exposure via aversive details of the trauma, usually in the course of professional duties. The traumatic event(s) must be re-experienced in some way (often in the form of nightmares, flashbacks, upsetting memories of physical or emotional distress in response to reminders of the event), cause a negative shift in thoughts or emotions, and produce arousal or reactivity that began or worsened after the event (American Psychiatric Association, 2022).

There is much symptomatic overlap of moral injury with post-traumatic stress symptoms, which explains in part why it has taken this long for the two to become disentangled. Perhaps the most profound differences are with the aetiology of the two experiences, and the pathway by which each causes functional impairment and suffering. PTSD, as discussed above, is precipitated by actual or threatened death, serious injury or sexual violence. The disorder is maintained primarily through avoidance and inaccurate beliefs about the self and world, and causes suffering through a pathway of distorted and overactive fear response, which prevents the traumatic event being encoded into long-term memory – causing it instead to be re-experienced as though it were happening in the 'here and now' in response to relevant triggers (American Psychiatric Association, 2022; Brewin, 2011; Rubin et al., 2008; Samuelson, 2011).

Treatment for PTSD often involves recalling and processing details of the traumatic event/s, hierarchical exposure to reminders of the trauma, and the direct challenging and amendment of what are seen as inaccurate thoughts and beliefs about the event/s which help maintain the fear response and suffering (Resick et al., 2016). Moral injury has several key differences that mean traditional PTSD treatment protocols may not be effective without also recognising and uniquely addressing moral injury (Jinkerson, 2016; Stein et al., 2012). These differences are summarised in Table 1.1.

The first is that the potentially morally injurious events (which may be thought of as synonymous with criterion A trauma events that lead to PTSD symptomology, as described in the DSM-5) do not need to contain actual or threatened death, serious injury or sexual violence (as is the case with PTSD). These things may certainly be a component of the event, but are not required – the essential core of a PMIE is an event which violates the moral norms and expectations held

deeply by the individual. Thus not all traumatic events will lead to moral injury, and it is possible to experience moral injury without meeting criteria for PTSD (Terpou et al., 2022). Some of the key symptoms of moral injury are guilt, shame and betrayal – and while these may be experienced in PTSD, they are not defining characteristics of the disorder that are assessed in diagnostic criteria (American Psychiatric Association, 2013; Terpou et al., 2022). Likewise, PTSD diagnostic criteria assess symptoms that are not fundamental to moral injury, such as hyperarousal, dissociation and hypervigilance (Barr et al., 2022).

The second key difference is that, unlike PTSD, which emphasises negative alterations in thoughts and beliefs as a symptom, and treatment of which is often focused around the challenging and alteration of perceived 'inaccurate' thoughts (Resick et al., 2016), cognitions in response to moral injury may not always be inaccurate or unreasonable given the context of what has occurred (Barnes et al., 2019). PTSD beliefs tend to describe the world as it is currently believed to be (i.e. "the world is not safe"), leaving scope for challenging; whereas moral injury beliefs fixate on the way the world *should* be (i.e., "the world *should* be a safe place") (Farnsworth et al., 2017; Forkus & Weiss, 2020). Greater accuracy of appraisals is why traditional treatments for PTSD are often not effective with moral injury – treatment of moral-injury related appraisals may need instead to focus on building acceptance of what has occurred and finding ways to move forward (Murray & Ehlers, 2021).

Table 1.1

Suggested Differences in Moral Injury VS PTSD

PTSD	Moral Injury
Classified as a mental disorder in the DSM-5	Not classified as a mental disorder in the DSM-5
Begins with an event that is often life threatening to self or others	Begins with an event that is witnessed, perpetrated, or learnt about that goes against deeply held moral beliefs
Largely physiological	May not involve physiological arousal
More strongly associated with emotions that were present during the event – especially fear	More strongly associated with emotions that developed after the event – especially guilt and shame
Based on inaccurate fear appraisals following life threatening events and subsequent avoidance	Appraisals are often accurate
A result of direct or indirect threat to life	A result of direct or indirect threat to deeply held moral beliefs

(Gray et al., 2017; Jinkerson, 2016; Litz et al., 2009; Stein et al., 2012)

1.4 A Functional Understanding of Moral Injury

In earlier literature, the examination and measurement of moral injury was often focused on the experience of PMIEs, conflating the experience of such events with the development of moral injury as an outcome (Griffin et al., 2019; McEwen et al., 2021). This created challenges for both the conceptual understanding and measurement of moral injury. Advances in both research and conceptual understanding since then has facilitated a more nuanced and process-focused understanding of moral injury that delineates precipitating events from moral injury outcomes – such as highlighted by Farnsworth and colleagues in their functional definition of moral injury (Farnsworth et al., 2017). Farnsworth et al. (2017) furthered the conceptual clarity of the moral

injury construct by clearly separating it into four sequential process components: potentially morally injurious events (PMIEs), moral pain, moral injury and moral healing (Table 1.2).

Table 1.2

Definitions of Each Moral Injury Component in the Functional Approach

Term	Definition
Potentially Morally Injurious Event (PMIE)	A situation occurring in a high-stakes environment where an individual perceives that an important moral value has been violated by the actions of self or others.
Moral Pain	The experience of dysphoric moral emotions and cognitions (e.g., self-condemnation) in response to a morally injurious event.
Moral Injury	Expanded social, psychological, and spiritual suffering stemming from costly or unworkable attempts to manage, control, or cope with the experience of moral pain.
Moral Healing	The qualities of 1) acceptance of the reality of past moral wrongs; 2) openness to moral pain and associated cognitions as an element (but not the entirety) of human experience; 3) flexible consideration of moral rules in favour of underlying values; 4) awareness of a sense of self that is distinct from moral pain; and 5) actively living values, including those previously violated, in the present moment.

Note. Direct quotes all taken from Farnsworth et al. (2017, pp. 392-393).

Within this functional conceptualisation, not all elements are pathological – the experience of PMIEs and associated moral pain are understood to be an adaptive part of the human experience, and not to be conflated with moral injury outcomes (J. Currier et al., 2018; Farnsworth et al., 2017; J. Greene, 2013; Hutcherson & Gross, 2011; Keltner et al., 2006). Moral pain appears often in the form of painful emotions (such as guilt, shame, anger) and cognitions (often centring on appraisals of culpability, judgement or the tension between the two) (Farnsworth et al., 2017). These painful

emotions and cognitions serve as powerful motivators of repair, prompting individuals to resolve the violation in order to resolve the associated pain. When repair is not possible, or the frequency and/or intensity of PMIEs and associated moral pain is beyond an individual's ability to cope, a moral injury occurs. The final stage of the process, moral healing, involves a recovery from unnecessary suffering and a reconnection with one's capacity for meaningful living, via the mechanisms defined in Table 1.2 (Farnsworth et al., 2017). In this model, moral pain in response to a violation is an adaptive process, designed to prompt course-correction and action. But how and why is this adaptive, in the larger sense?

1.5 Morality as the Blueprint for Social Identity and Community

Human moral pain is adaptive in the sense that it explains our moral experiences as serving the functional purpose of promoting cohesive in-group functioning for the purposes of competing against outgroups, and ultimate survival of the human species (Farnsworth et al., 2017; Greene, 2013). Historically, humans evolved to live in smaller tribal groups of 30-40 people, and to be cast out from the in-group was a fate of almost certain death. Likewise, the in-group's survival depended on its ability to function as a cohesive unit (Farnsworth et al., 2017; Greene, 2013).

As is well established by social identity theory, social group membership is fundamental to human wellbeing (Haslam et al., 2018). Humans instinctively sort ourselves into groups, and take on that shared group identity, even in the absence of any overtly shared grouping quality (Tajfel et al., 1971). Furthermore, research has established the many protective benefits of shared group identity and social connectedness. Social isolation and absence of connection is a significant predictor of increased mortality and associated with a host of health issues including a 29% increase in heart disease, 32% increase in risk of stroke, and increased risk of a range of negative mental

health outcomes (Haslam et al., 2018; Holt-Lunstad, 2021). When we consider social group membership as a matter of life or death in this way (as it has been for much of human history), the profound protective elements make more sense. There are significant benefits to prioritising group cohesion and connectedness, and significant costs to not doing so.

As discussed, it has been established that social identity is essential to our wellbeing and we instinctively sort ourselves into and function as groups. What is less understood is how humans are guided to behave in this instinctive, prosocial way that promotes that group's strength and cohesion, balanced with care for individuals. Research around human morality helps to fill this gap. Morality may be understood as the instinctive sense of right and wrong that promotes prosocial group functioning – via a combination of inherent instinct, and the social policing and cues from those around us. The mechanism by which this instinctive sense is enacted is through moral emotions – both positive moral emotions (i.e., sympathy, pride, satisfaction, gratitude) when we do the *right* thing, and dysphoric moral pain when we experience something appraised to be wrong (i.e., shame, guilt, disgust, anger) (Farnsworth et al., 2017; Greene, 2013).

Understood in this context, moral pain is experienced in response to moral violations (PMIEs) and serves the adaptive function of prompting us to course-correct and address what has occurred for the greater good of the individual and the tribe (Burkart et al., 2018; Farnsworth et al., 2014, 2017; Greene, 2013; Greene, 2017). Human morality is essentially the intrinsic blueprint by which human social identity and community are built. Understood in this light, it makes sense that the kinds of moral violations that tend to commonly invoke moral pain in are violations that harm the group – either by hurting individuals within the group or by threatening the functioning of the group as a whole.

1.6 Are Moral Values Universal?

Researchers have proposed a theoretical model of five (Graham et al., 2011), recently expanded to six (Atari et al., 2023), universal moral intuitions, or foundations. The authors argue that these moral foundations are universal to all groups, but variable in the way they may develop and be prioritised according to group culture and experiences. The moral foundations proposed strike a balance of promoting respect and care for individuals, as well as the larger group – with neither being more important than the other. Atari et al. (2023) propose three *individualising* factors – Care (intuitions about avoiding emotional and physical damage to another individual), Equality (intuitions about equal treatment and equal outcomes for individuals) and Proportionality (intuitions about individuals getting rewarded in proportion to their merit or contribution) – and three 'binding' (group-focused) factors –Loyalty (intuitions about cooperating with ingroups and competing with outgroups), Authority (intuitions about deference toward legitimate authorities and the defence of traditions, all of which are seen as providing stability and fending off chaos), and Purity (intuitions about avoiding bodily and spiritual contamination and degradation) (Atari et al., 2023).

Individualising factors tend to be more focused on the rights and wellbeing of individuals, and the binding factors more concerned with the respect for and functioning of the larger group. Applied research examining the moral foundations theory has tended to focus on political divides, finding that politically left-wing individuals tend to value the individualising factors more highly than the binding – whereas more conservative individuals tend to prioritise binding factors, or value both the individualising and binding factors with equal weight (Kivikangas et al., 2021).

Recent research has begun to examine the of the overlap of PMIEs and the moral foundations – two previously adjacent areas of research. Initial findings suggest that binding values may have the stronger relationship with PMIE experience and PTSD symptoms – however, this finding was examined in a veteran population, who are likely to prioritise binding foundations generally due to the culture of their work (Forkus & Weiss, 2020). Other research further delineates PMIE type in the context of moral foundations, identifying that veterans who value individualizing foundations over binding foundations may be more susceptible to self-directed (internally-attributed) moral injury, whereas veterans who prioritise binding foundations over individualizing may experience higher levels of other-directed (externally-attributed) moral injury (i.e., Witnessing, Betrayal) (Perez et al., 2022). No research has yet examined the overlap of moral foundations and moral injury in non-military populations.

1.7 The Universality of Moral Injury – Lending Relevance to a Broader Range of Settings

Moral injury occurs when we are unable to resolve our functional (albeit painful) moral emotions through corrective action. When free to operate according to our own sense of right or wrong in our private lives, moral injury is certainly still possible but may be less likely to occur. Situations generating a higher risk of moral injury are those where we experience constraint or ambiguity of some kind – impacting our agency in how to respond, or the clarity of what is the correct response due to competing values systems or demands (Williamson et al., 2018). It is not an accident that our present understanding of moral injury was born from the experiences of veterans – deployment in war has all the ingredients of moral ambiguity and increased risk. There is a strong values system and code of conduct imposed, which functions adaptively in such a high-risk and unique environment. However, this values system may clash with the personal values and deeply-held moral beliefs and expectations subscribed to by the individual (consciously or

unconsciously) in their personal life (Frankfurt & Frazier, 2016; Held et al., 2017). This may lead to a real inability to reconcile actions taken or witnessed in war under a military values system, with the personal moral values system, creating very painful cognitive dissonance and moral injury – particularly when the veteran returns to normal life and begins to prioritise a civilian moral values system. Likewise, betrayal by trusted authorities in such an environment may erode the protective power of this code of conduct and shared values system, impairing an individual's ability to connect with the meaning or purpose of difficult things they see or actions they must take in the context of war.

Situations which increase moral injury risk have a number of shared characteristics. The first element that may increase risk includes a clash of values systems, expectations and priorities. This may look like a possible mismatch between the professional and personal in terms of values, priorities and chosen actions. In addition, risk is increased again with a lack of personal autonomy to act in accordance with personal moral values. This can be seen in a professional setting when our professional duties may require us to follow orders or protocol over personal instinct. Moral injury is also at a greater likelihood of occurring in higher stakes situations than typically experienced in civilian life – the most high-risk occupations are often those where daily choices have real life or death implications. Lastly, risk increases in accordance with the increased frequency and/or intensity of exposure to PMIEs. In particular professional contexts, this is significantly higher than would be experienced in civilian life due to the nature of the work.

Given that the experience of moral violations and moral pain is a fundamental human experience, it also stands to reason that all people have the potential to develop a moral injury under situations with the elements of increased risk as detailed above. This theoretical understanding

supports the expansion of moral injury to other settings beyond the military, suggesting that it is not a phenomenon restricted to military settings only – and this is exactly what we are beginning to see.

1.8 Moral Injury Beyond the Military

While present day understanding of moral injury was born from military literature and most research has explored the construct in this space, it is now recognised that moral injury occurs in many different settings. While technically any person is susceptible to experiencing moral injury, it is most commonly seen in occupational settings – particularly in the wake of the COVID-19 pandemic. The COVID-19 pandemic both intensified exposure to morally injurious circumstances in occupational settings (e.g., resource scarcity, constrained agency, ethically complex treatment decisions) and spurred increased research attention to moral injury beyond military populations. Occupations at the highest risk 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 PMIEs 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 PMIE subtype.

Accordingly, moral injury has been examined in an increasing range of occupational settings, with frontline health and first responder groups frequently recognised as being the most at-risk (Beyond Blue, 2018; Čartolovni et al., 2021; Riedel et al., 2022; Simmons-Beauchamp & Sharpe, 2022; Webb et al., 2024). Occupations that are noted as experiencing moral injury include health and social care workers, first responders, journalists, veterinarians, police,

teachers, public sector employees, and child protection services employees (Brennan et al., 2024; Williamson et al., 2018). Moral injury has also been recognised and explored in other high-risk groups, such as refugees (Hoffman et al., 2018; Nickerson et al., 2018) and emerging adults with child welfare histories (Haight et al., 2022). Beyond military populations, moral injury and related psychological distress have been documented in a range of civilian groups, including teachers (Oberg, 2025), human trafficking survivors (Williamson et al., 2024), social workers (Fantus et al., 2024; Reamer, 2022), veterinarians (Williamson et al., 2023), and media workers (Feinstein et al., 2025; Yates, 2024). This evidence highlights the broader relevance of moral injury across occupational and high-stakes contexts, and underscores the need for robust assessment tools suitable for diverse populations. However, one of the key barriers to more widespread research into moral injury in non-military groups has been the lack of valid, reliable measurement tools specifically developed for these groups.

1.9 The Measurement of Moral Injury

Effective measurement of moral injury is an emerging area of research, which has hindered the progress of the field at times. Earlier measurement tools, like earlier literature, sometimes made the mistake of conflating exposure to PMIEs with moral injury as an outcome in the way they tried to capture the construct (Griffin et al., 2019; Litz et al., 2022; Nash et al., 2013). Our understanding of the structure of PMIEs has also been more clearly understood (and thus measured) than the understanding of the symptoms of moral injury, which is an area yet to meet consensus.

Most psychometric measurement tools for moral injury thus far have been developed for military populations. The lack of scales that are more broadly applicable to wider settings has had significant implications for research that has attempted to examine moral injury in non-military

settings. To manage the lack of appropriate scales, most research in non-military settings to-date has tended to use military-specific tools, modifying the language in an ad-hoc manner to make the tool work in a non-military setting (Brennan et al., 2022; Carter, 2021; Fani et al., 2021; Hagerty & Williams, 2022; Haight et al., 2022; Hines et al., 2021; Hoffman et al., 2018; Levi-Belz & Zerach, 2022; Sugrue, 2020; Williamson et al., 2022). This approach has been necessary because researchers have had few alternatives. Adaptations of existing scales validated for use by having their factor structure replicated and psychometrics examined in nonmilitary settings are sorely needed.

1.9.1 Military Measurement

There have been a number of psychometric measurement tools developed to capture moral injury experiences in military settings to date. The most prevalently used are discussed below.

1.9.1.1 *The Moral Injury Events Scale (MIES)*

The MIES **(**Bryan et al., 2015; Nash et al., 2013) is a nine-item self-report measure of military-specific MIEs. Items ask about exposure to perceived transgressions perpetrated by the respondent and/or others, and perceived betrayals by other military and non-military individuals. Participants indicate how much they agree with each statement on 6-point Likert scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*), with higher scores indicating greater moral injury. Examples of items are: “I saw things that were morally wrong”, and “I feel betrayed by fellow service members who I once trusted”.

The MIES has demonstrated good internal consistency, with Cronbach's alpha coefficients above the commonly accepted threshold of 0.70 (Nash et al., 2013). The construct validity of the

MIES has been supported through its ability to measure moral injury-related constructs, particularly moral transgressions and emotional distress (Nash et al., 2013). The scale correlates with symptoms of PTSD, guilt, and shame (Williamson et al., 2018). However, the criterion validity is still under investigation. For example, while the MIES predicts some emotional outcomes (e.g., distress, PTSD symptoms), more research is needed to clarify how well it predicts long-term functioning or behavioural outcomes (Nash et al., 2013).

The MIES is one of the first and most frequently used of all measures capturing moral injury, and the scale most frequently adapted for use in non-military research, likely due to its strong research base, short length and ease of alteration. While focused on capturing PMIEs, several of the MIES items do conflate moral injury outcomes with the events asked about, by asking if a person is "bothered" by what occurred. Originally designed and validated for military populations, the MIES was tested in veterans and active-duty military members (Nash et al., 2013). While it has been frequently adapted for use in wider contexts, its applicability to other groups (such as healthcare workers, emergency responders, or civilians) requires further validation.

1.9.1.2 *The Moral Injury Symptom Scale – Military Version (MISS-M)*

The MISS-M (Koenig et al., 2018b) is a 45-item measure of the emotional and psychological effects of morally injurious events experienced during military service. There is also a short form (10 items) available (Koenig et al., 2018a). The MISS-M focuses purely on symptomatic outcomes of moral injury and does not capture PMIEs. Items are rated on a 10-point Likert scale. The MISS-M attempts to capture moral injury symptoms across 10 dimensions based on the writings and research of trauma experts: betrayal, guilt, shame, moral concerns, religious struggles, loss of religious faith/hope, loss of meaning/purpose, difficulty forgiving, loss of trust,

and self-condemnation. Some examples of items are: “If people knew about things I did they’d think less of me”, and “I wondered what I did for God to punish me”.

The MISS-M demonstrated good internal consistency and test-retest reliability in its initial validation study (Koenig et al., 2018b). While it has been widely used and adapted, there are serious concerns with the validity of the psychometric processes by which the MISS-M scale was initially developed. In the development of the scale, factor analyses (both exploratory and confirmatory) were run at the subscale level only, instead of assessing the construct (and the scale) as a whole. The authors state this was done to ensure comprehensive coverage of the moral injury construct and to safeguard against the inclusion within a subscale of items without clear face validity (which they felt could not be compromised) (Koenig et al., 2018b). However, what this means is that the scale is essentially a collation of 10 separate and unconnected mini-scales of each identified moral injury domain, developed through 10 separate EFA and CFA analyses, rather than a cohesive measure of the moral injury construct as a whole with 10 related factors. Therefore, the measure is not capturing one construct (moral injury) but 10 separate constructs. These very well may be related and supported for inclusion as individual factors of a construct, but without assessing them as such the validity of the scale is not supported. The MISS-M was also specifically developed for military personnel, making its applicability outside of this group a potential limitation.

1.9.1.3 *The Expressions of Moral Injury Scale – Military Version (EMIS-M)*

The EMIS-M (Currier et al., 2018) is a 17-item measure of moral injury symptomology, developed specifically for military populations. The EMIS-M was one the first measures that attempted to capture the symptomatic warning signs of moral injury. It assesses the cognitive,

emotional and behavioural consequences of moral injury, drawing from empirical, theoretical, and clinical sources. The scale focuses on a two-factor structure of moral injury expressions – grouping symptomatic expressions as those directed toward the self and those directed towards others. Items are rated on a 5-point Likert scale. Examples of some of the test items are: "I feel guilt about things that happened during my military service that cannot be excused", and "When I look back on my military service, I feel disgusted by things that other people did".

The EMIS-M followed a rigorous scale construction process involving expert raters, exploratory factor analyses and confirmatory factor analyses, making it one of the more psychometrically robust measurement tools of moral injury. Initial instructions do not refer to betrayal-type moral injury (asking only about experiences "done or witnessed") which is a limitation, however feelings of betrayal are asked about within the test items. The scale demonstrates excellent internal consistency and temporal stability over time (Currier et al., 2018), as well as strong construct validity. However, as with the MIES the scale is limited in its wider applicability, having been designed and validated on military groups only. Adaptation and further validation of the scale is required to support its use in a broader range of non-military contexts.

1.9.1.4 *The Moral Injury Questionnaire-Military (MIQ-M)*

The MIQ-M (Currier et al., 2015) is a 19-item measure of military-specific PMIEs, with a unidimensional structure. Items are statements describing specific war-zone stressors that may lead to moral injury, and rated on a four-point Likert scale. The MIQ-M demonstrates reasonable statistical fit indices and construct validity. However, the development paper does not report on reliability indices, which is concerning. In addition, the items of the MIQ-M are much more specifically worded than the MIES – referring to detailed military scenarios, which may not be as

easily adapted for civilian use without fundamentally altering the measure (i.e., “I had an encounter(s) with the enemy that made him/her seem more ‘human’ and made my job more difficult”, and “I saw/was involved in a ‘friendly-fire’ incident”). It is also more than double the length of the of the MIES. These two elements of the measure likely contribute to its lower take-up rate in non-military research, although it is still utilised within military settings.

1.9.1.5 *The Moral Injury Outcome Scale (MIOS)*

The Moral Injury Outcomes Scale (MIOS; Litz et al., 2022) was developed and validated by a multi-disciplinary consortium, drawing on input from an international group of active-duty service members, veterans, clinicians, and chaplains to ensure strong content validity. The measure begins with screening questions about exposure to potentially morally injurious events—such as acts of commission, omission, or betrayal—and uses this exposure, or another distressing event, as the reference point for responses. The MIOS includes 14 items grouped into two subscales: shame-related outcomes and trust-violation outcomes. Shame-related injury reflects concerns about being viewed negatively by others, whereas trust-violation injury reflects experiences of betrayal, often by authority figures. To capture functional outcomes, the developers also included the 7-item Brief Inventory of Psychosocial Functioning (B-IPF), which assesses impacts on relationships, work, and daily activities.

Although the MIOS is a rigorous and well-constructed instrument, it was originally designed with a military focus and has not been broadly validated for use outside military or veteran populations. To date, only one civilian validation study exists, conducted with acute care nurses (Tao et al., 2024). Importantly, both the publication of the MIOS and the Tao et al. study occurred after the development and data collection of our Occupational Moral Injury Scale

(OMIS; see Chapter 3). By the time the study by Tao et al. was released, the OMIS had already been constructed, validated, published, and made available for use. The MIOS therefore represents a valuable tool in military and select healthcare contexts, but its limited civilian validation underscores the need for a scale specifically designed to address moral injury across more diverse civilian populations. The lengthy nature of the pre-screening component also may inhibit its practical utility in research.

1.9.2 Non-Military Measurement

As mentioned, most research exploring the occurrence of moral injury in non-military settings has used one of the military-specific measures above, modifying the wording on an ad-hoc basis to make the measure work (Brennan et al., 2022; Carter, 2021; Fani et al., 2021; Hagerty & Williams, 2022; Haight et al., 2022; Hines et al., 2021; Hoffman et al., 2018; Levi-Belz & Zerach, 2022; Sugrue, 2020; Williamson et al., 2022). More recently, some scales developed for non-military populations have begun to emerge. There are three that we are aware of prior to commencing our research, which will be critiqued below.

1.9.2.1 ***The Moral Injury Symptom Scale – Healthcare Professionals*** *(MISS-HP)*

The MISS-HP (Mantri et al., 2020) is an adaptation of the MISS-M, with wording altered to make the measure specific to healthcare professionals. The MISS-HP is a 10-item measure capturing moral injury symptoms in healthcare settings. The scale examines the same domains as the MISS-M, with one item for each domain (betrayal, guilt, shame, moral concerns, religious struggle, loss of religious/spiritual faith, loss of meaning/purpose, difficulty forgiving, loss of trust, and self-condemnation). Items are rated on a 10-point Likert scale. Examples of some of the test

items are: “I feel guilt over failing to save someone from being seriously injured or dying”, “I sometimes feel God is punishing me for what I’ve done or not done while caring for patients”.

The MISS-HP demonstrates acceptable reliability indices and reasonable construct validity through its correlational convergent and divergent relationships with relevant measures (Mantri et al., 2020). As mentioned, the MISS-HP is based on the MISS-M which was developed with problematic psychometric procedures. However, the authors of the MISS-HP attempted to rectify this by applying exploratory and confirmatory factor analyses to the measure as a whole. They identified a three-factor structure of moral injury symptomology through exploratory analyses, which they were able to confirm with confirmatory factor analyses. The three factors grouped the original 10 dimensions and reconfigured them into a Guilt/Shame factor (guilt, shame, betrayal, moral concerns), a Spiritual Troubles factor (loss of trust, loss of meaning, being unable to forgive, loss of faith) and a Condemnation factor (self-condemnation and punishment by God). While psychometrically improved, the MISS-HP is also worded very specifically for healthcare settings, limiting its utility for adaptation and use in other occupational settings.

1.9.2.2 *The Moral Injury Scales for Youth (MISY)*

The MISY (Chaplo et al., 2019) is a 24-item measure aimed at measuring MIE experiences in youth populations experiencing interpersonal transgressions. Items are rated on a 5-point Likert scale. Examples of some of the items include: “I have done things to other people that I think are wrong”, and “There have been times when I failed to do the right thing and someone else got hurt”.

The MISY expands on the usual three-factor structure of PMIEs seen in most measures of moral injury (perpetration, witnessing and betrayal events) by adding further nuance to the forms

morally injurious events may take. Specifically, the MISY comprises a five-factor structure – commission with agency, commission under duress, omission, witnessing, and betrayal. The MISY demonstrates good convergent and divergent validity within the original study, correlating as expected with other scales theoretically predicted to be similar and dissimilar (Chaplo et al., 2019). The paper reports only the unstandardised (rather than standardised) factor loadings of the final scale – which gives limited information. The factor structure of the MISY has not yet been replicated, and the measure has not been validated for use in samples with wider age range or more ethnic diversity.

1.9.2.3 *The Perpetration Induced Distress Scale (PIDS)*

The PIDS (Steinmetz et al., 2019) is a 14-item measure of perpetration-induced distress in civilians. The PIDS presents a two-factor structure, capturing distress in the form of maladaptive shame and guilt. Participants endorse items on a five-point Likert scale, rating the degree to which they experience each item (with examples being “Difficulty sleeping because I can't stop thinking about what I did”, and “Believing that I did something bad”).

The development of the PIDS followed robust psychometric development guidelines. The scale demonstrates acceptable temporal stability over a 1-week period as well as excellent internal reliability. Convergent validity was supported through relationship with external measures of functional impairment, posttraumatic stress disorder, and existing scales of shame and guilt (Steinmetz et al., 2019). A key criticism is that while the PIDS states that it is a measure of moral injury, it does not capture the full scope of the construct. The PIDS focuses on perpetration events only, and on guilt and shame as the only symptomatic outcomes. While these are certainly important elements of the moral injury construct, they are not the only components which need to

be addressed. The PIDS therefore does not fully capture the moral injury construct, but rather a specific but insufficient component of it.

In summary, while considerable advances have been made into the measurement of moral injury, there is still room for growth. There have been a variety of approaches taken to the scale construction and validation process. Generally, most scales have tended to focus on capturing either exposure to PMIEs, or capturing the symptomatic outcomes of moral injury – but rarely both within the same measure. There has also been much variation in the breadth of construct assessed across measures – not all measures capture all relevant aspects of moral injury, which raises some concerns regarding content validity. There is a lack of scales which are broadly applicable enough to be used across different settings. The few civilian scales that do exist tend to focus on specific groups, meaning they are not easily transferrable to other contexts. Lastly, all scales examined use some combination of classical test theory approaches in their design. With the advancement of newer statistical approaches to scale construction, such as item response theory (IRT), there is room to consider a fresh approach to the measurement of moral injury.

1.10 Next Steps in the Measurement of Moral Injury Beyond the Military

We have reviewed the theoretical and conceptual underpinnings of the moral injury construct, its place in the functional model of human morality, and the breadth of attempts to capture moral injury in the form of psychometric measurement. We now consider what is most needed in order to advance the field – particularly, the advancement of our understanding and research into moral injury in other settings beyond the military.

The exploration of moral injury in a military context is well in-hand, as the majority of research to date has taken place in this space. However, increasingly other people, contexts and

occupations are recognised as suffering from moral injury. Further research is desperately needed in this space – however, a significant barrier to this research has been the lack of valid, reliable psychometric measurement tools, developed specifically for non-military populations. This in turn limits our understanding and conceptual clarity on the manifestations of civilian moral injury. Most research exploring moral injury in a civilian space continues to utilise existing military-specific measures (the MIES in particular), and adapts them in an ad-hoc way to support their practicality for use. This is problematic, because there has been little to no research assessing the validity of these commonly adapted military measures in civilian samples, replicating their factor structure and offering psychometric support for their use in other settings.

Modifying and using a scale without such evidentiary support raises serious questions about the validity of the research – however, researchers have had little choice due to lack of available options. Research assessing the validity of the more popular military measures frequently adapted and used in civilian populations would therefore be of immense value to all the existing research that has utilised said measures in this way, providing an added layer of validation for their findings. Examining and replicating existing measures in this way, in a non-military sample, may also offer important insights into how the construct does present in civilian settings, informing more robust scale construction efforts to capture the construct in these contexts.

Furthermore, as we have seen from our review of all existing measures of moral injury, different scales tend to focus on different things, and with varying levels of psychometric integrity (Boateng et al., 2018). There is thus far a lack of consistent measurement of all PMIEs and symptoms, which has contributed to the conceptual confusion and lack of consensus on what moral injury actually is, and how it presents. This inconsistency in measurement may be mitigated if

scales were able to be used across a wide range of groups, contributing to direct comparisons and a shared understanding of how moral injury presents and changes according to context and demographic. However, the highly context-specific nature of most measurement tools means that it is impossible to directly compare across groups in a valid and consistent way. Scales adaptable enough to be employed across contexts, rather than requiring ad-hoc alteration or new measurement tools for each new context tested, would be of significant benefit to the advancement of the field as a whole.

Employing more advanced methodology in scale construction would also be of benefit. There are two predominant approaches to measuring a latent construct in psychology – classical test theory (CTT) and item response theory (IRT). CTT is the most commonly used, largely due to the ease of use, greater availability of accessible statistical tools and more comprehensive understanding of the theoretical model that can be gained (Clark & Watson, 2019; DeVellis, 2006). CTT is also the approach utilised in all existing moral injury scales to date. However, IRT offers some advantages when used in combination with CTT that warrants its inclusion when developing an original scale. IRT offers a more nuanced understanding of individual test items and a participant's unique interaction with them (Hambleton & Jones, 1993; Reise et al., 2005). Unlike CTT, which considers each test item with equal weight in its contribution to the overall score, IRT models the probability of a correct response based on an individual's latent trait level, allowing for more precise measurement. IRT also accounts for varying levels of item difficulty and discrimination, meaning that it can differentiate between items that offer more or less information about the presence of the latent trait (Reise et al., 2005; Thomas, 2011). Using both IRT and CTT in the development of a new scale allows for the complementary strengths of each approach to be

leveraged, and provides a comprehensive framework for developing robust, valid, and reliable psychometric tools (DeVellis, 2012; DeVellis, 2006; Hambleton & Jones, 1993; Reise et al., 2005).

To support the further understanding and exploration of moral injury beyond the military, further scale construction efforts are needed. The field would greatly benefit from a generalised scale that addresses the methodological and psychometric shortcomings of the few that exist thus far. Specifically, a scale that unites PMIEs and symptoms is crucial to limit *concept creep* (Haslam, 2016) and ensure we are, in fact, capturing what we aim to capture. Concept creep refers to the gradual expansion of harm-related concepts, both horizontally (to qualitatively new phenomena) and vertically (to less extreme phenomena; Haslam, 2016). This is especially important in the case of moral injury, which overlaps with and may present as a range of mental health challenges. Linking distress and functional impairment to the precipitating moral violation is essential to ensure the construct validity of the measure (Farnsworth et al., 2017; McEwen et al., 2021). Equally as necessary is a scale that is flexible enough for use across settings (addressing the problem of perpetual and inconsistent alterations without validation). Lastly, a scale that addresses the full breadth of PMIE presentation linked with the most well-supported symptom profile we are yet aware of, would allow detailed exploration of how moral injury presents in high-risk non-military occupational settings. Such a scale would help delineate which PMIE types are most common and which cause the most distress. This would allow us to further explore any important differential relationships between PMIE exposure and symptomatic outcomes.

1.11 Summary and Aims of Thesis

Moral injury is an area of rapid research development over recent years, which is only continuing to grow in relevance and interest. Originally arising from attempts to understand the

experiences of traumatised veterans, the construct is one that has expanded into an increasingly wider range of settings – particularly in the wake of the COVID-19 pandemic, which saw increased pressure and diminished resourcing increase the moral injury risk for a number of professionals, including frontline health workers and emergency services. Throughout our research review we have demonstrated the key situations that can lead to moral injury, as well as the most widely accepted symptomatic profile of the syndrome. We differentiate between moral injury and the highly comorbid condition of PTSD. We have also explained why human morality provides the blueprint by which human community and social identity is formed, which in turn provides rationale for why experiences of moral pain and moral injury are so intensely distressing, and lead to a range of functional impairments. We provide rationale for why the experience of moral injury is a universal one, and one highly relevant to a broader range of settings beyond military research. We also discuss the conceptual confusion around the construct and the lack of effective measurement that has limited both our understanding and advancement of the research field. Lastly, we have reviewed key measurement tools for moral injury both within and the military research space and occupational contexts beyond, critiquing each one and identifying key areas for growth in the measurement of moral injury.

This thesis has three key aims. Firstly, we aim to modify two of the more commonly used military measurement tools of moral injury and assess their factor structure and validity for use in a civilian sample. Secondly, we aim to construct and validate a novel measurement tool for occupational moral injury beyond the military, which addresses the limitations of existing tools. Thirdly, we aim to establish the measurement invariance of this new measurement tool and use it to directly examine and compare moral injury presentation in a range of high-risk occupational groups for the first time.

In line with our first aim, we report on empirical research conducted in Chapter 2 that involves the modification of the Moral Injury Events Scale (Nash et al., 2013) into the MIES-Civilian, and the Expressions of Moral Injury Scale-Military (EMIS-M) (Currier et al., 2018) into the EMIS-Civilian. We test the two new civilian versions of these measurement tools in a civilian sample, assessing their factor structure and validity, offering valuable support for their use in civilian settings as well as novel insights into the presentation of the moral injury construct in civilian groups.

In line with our second aim, in Chapter 3 we report on two empirical studies which outline the development and validation of the Occupational Moral Injury Scale (OMIS) – a new psychometric measurement tool developed to meet the needs highlighted in our introduction. This chapter details two sequential research studies – the first centring around the scale construction process and initial validation of the OMIS measurement tool in a group of frontline health and first responder workers. The second study details the further refinement and validation of the OMIS tool, finalising it for use. Both studies utilise a combination of CFA and IRT statistical analyses – one of the first scales to take this approach in the moral injury measurement space.

Finally, aim 3 is explored in Chapter 4 where we report on our final empirical study, which utilises bifactor multigroup CFA analyses to establish the OMIS tool as measurement invariant across five separate, high-risk occupational groups (health workers, emergency services, police, government officials, and teachers) - indicating that items hold the same meaning across these groups and that their scores can be appropriately compared – before making direct mean comparisons between groups.

Chapter 2

Measuring Civilian Moral Injury: Adaptation and Validation of the Moral Injury Events Scale (Civilian) and Expressions of Moral Injury Scale (Civilian)

Chapter 2 describes the first empirical investigation into the measurement of civilian moral injury, laying the foundations for the later investigations in this thesis. This chapter examines two existing military measures of moral injury that have been modified for civilian use. It provides novel insights into how these scales perform in a civilian group, offering validation for their use in this way in addition to how moral injury presents in our sample. The chapter also provides justification for the development, refinement and measurement invariance of a new measure of occupational moral injury in Chapters 3 and 4.

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2.1 Abstract

Moral injury research has been expanded to populations beyond the military in recent years. A key barrier to further research into moral injury in civilian populations is the lack of valid, reliable measures of the construct appropriate for general civilian use. This paper addresses this barrier by adapting two existing military measures and exploring their psychometrics in a general civilian sample: The Moral Injury Events Scale (MIES-Civilian) and Expressions of Moral Injury Scale-Military (EMIS-Civilian). A sample of civilian women (n = 192) and men (n = 88) completed the above measures, and additional scales designed to capture theoretically-supported primary and secondary markers of moral injury (guilt, shame, anger; depression, post-traumatic stress symptoms, anxiety). Confirmatory factor analyses found that the factor structure of the MIES-C and EMIS-C replicated well within our civilian sample. Discriminant validity was indicated through significant negative correlation with wellbeing. Both measures correlated as predicted with each other and measures of moral injury markers at the total score level. Correlations of individual subscales with each of these measures were more varied. Results shed light on differential relationships between type of moral injury event and clinical outcomes, suggesting some conceptual differences in how moral injury is experienced in general civilian populations. Results suggest that civilian populations are also susceptible to moral injury, but that existing measures may have problems capturing this effectively. Although the MIES-C and EMIS-C are supported for civilian use, further scale construction efforts for this population are warranted.

2.2 Introduction

The moral injury construct first arose within military trauma literature but has garnered increasing interest in a wider range of settings in recent years. It is defined as negative outcomes caused by perpetrating or witnessing actions that violate one's core beliefs (Griffin et al., 2019; Litz et al., 2009) or betrayal by a leader or trusted authority (Shay, 2014). Moral injury captures behavioural, social and spiritual suffering (Currier, Holland, & Malott, 2015) that frequently overlaps with mental health diagnoses. Although emerging from military literature, the increasing relevance of the construct to broader settings suggests moral injury is an issue wider spread than initially thought. A key barrier to further research into moral injury in civilian populations however is the lack of valid, reliable measures of the construct appropriate for general civilian use.

2.2.1 Present Understanding of Moral Injury

Moral injury frequently co-occurs with posttraumatic stress disorder (PTSD) but it is unique in both aetiology and presentation (Barnes et al., 2019; Bryan et al., 2018; Currier et al., 2019). PTSD is caused by exposure to trauma involving perceived threat to self or others, sexual violence, or witnessing harmful acts (American Psychiatric Association, 2013) and is usually characterised by exaggerated startle reflex, memory loss, nightmares, flashbacks and insomnia (Bryan et al., 2018). Moral injury instead is caused by a moral conflict in which the actions or inaction of oneself, the actions of others or the betrayal experienced violate one's moral code, and manifests primarily as guilt, shame, anger, existential conflict and loss of trust (Jinkerson, 2016; Yeterian et al., 2019). Secondary signs often include depression, anxiety, re-experiencing, self-harm, suicidal ideation, substance use and social problems (Bryan et al., 2018; Currier et al., 2019; Currier, Holland, & Malott, 2015; Griffin et al., 2019; Jinkerson, 2016).

Although a clear picture of differential relationships between different types of potentially morally injurious events (PMIEs; perpetration, witnessing or betrayal) and clinical outcomes of interest is yet to emerge, research does suggest that anger is more strongly associated with betrayal, whereas guilt and shame are more strongly associated with perpetration events (Jordan et al., 2017). Research has also suggested that perpetration events are associated with higher levels depression, whereas witnessing others commit moral violations is associated with higher levels of PTSD (Bryan et al., 2015; Nickerson et al., 2018). PMIE exposure has also been linked with both significantly higher rates of suicide attempts and greater complexity of trauma in civilians (Fani, 2021). Unaddressed moral injury may also interfere with the natural post-traumatic recovery response (Jinkerson, 2016; Stein et al., 2012), hindering effective treatment for PTSD if it is not recognised.

2.2.2 The Wider Relevance of Moral Injury

Unlike PTSD, moral injury is also not a diagnosable mental health disorder according to the DSM-5 (American Psychiatric Association, 2013); rather, a moral injury is the outcome of an internal moral system that is functioning adaptively. Farnsworth et al. (2017) describe four sequential stages of the moral injury experience: PMIEs, moral pain, moral injury and moral healing. Within this process, moral pain is an adaptive response to experiences that violate our core values of what's right, designed to prompt reparation and course-correction. When the severity or frequency of the violation is beyond what can be addressed or reconciled with, a moral injury occurs. This distinction is important, because moral injury as an outcome has often been conflated with the events that may lead to it within earlier literature, contributing to unhelpful conceptual confusion (Currier et al., 2018; Farnsworth et al., 2014, 2017).

The universal nature of the experience of moral pain in response to violations highlighted by Farnsworth suggests that the moral injury construct has relevance beyond the confines of military literature. The successful application of the moral injury construct to in an increasingly diverse range of contexts in recent years (Backholm & Idås, 2015; Brennan et al., 2022; Carter, 2021; Crane et al., 2015; Currier, Holland, Rojas-Flores, et al., 2015; Fani et al., 2021; Haight et al., 2022; Hines et al., 2021; Komarovskaya et al., 2011; Lamiani et al., 2017; Levi-Belz & Zerach, 2022; Nickerson et al., 2018; Oh & Gastmans, 2015; Williamson et al., 2022) further supports the idea that all people are susceptible to experiencing moral injury under certain circumstances. Building on this direction of research, a recent integrative review by the US Department of Veterans Affairs (Griffin et al., 2019) flagged broadening the moral injury experience to civilian populations as a key area for further research.

Evidence for the utility of exploring moral injury among civilians comes from not only the growing list of occupations found to experience moral injury, but also the civilian lifetime prevalence rates of PTSD. PTSD is a known correlate of moral injury, and lifetime rates range from 6.1-9.2% in the USA and Canada (Koenen et al., 2017; Van Ameringen et al., 2008) and 2.1-2.3% in upper middle income countries outside the USA (Koenen et al., 2017). This suggests moral injury may also be occurring alongside instances of PTSD. Prior research in military samples suggests rates of co-occurrence as high as 36% (Litz et al., 2018). However, a key barrier to the study of moral injury in non-military contexts is the lack of valid, reliable measures of the construct that are appropriate for use with non-military populations.

2.2.3 Measurement of Civilian Moral Injury

Most extant psychometric measures of moral injury to-date focus on capturing either exposure to PMIEs or on outcomes of moral injury, and nearly all of these are tailored for military groups (Currier et al., 2018; Currier, Holland, Drescher, et al., 2015; Koenig et al., 2018; Nash et al., 2013). Emerging research that does explore moral injury in civilian settings often uses these military-specific measures, modifying the wording of the scales on an ad-hoc basis to make them appropriate for use in other settings (Brennan et al., 2022; Carter, 2021; Fani et al., 2021; Hagerty & Williams, 2022; Haight et al., 2022; Hines et al., 2021, 2021; Hoffman et al., 2018; Levi-Belz & Zerach, 2022; Sugrue, 2020; Williamson et al., 2022). This is necessary because researchers currently have few alternatives, given adaptations of existing scales validated for use by having their factor structure replicated and psychometrics examined in non-military settings do not exist.

Some new scales for specific non-military settings are beginning to emerge. However, wording is often highly specific to particular occupational settings (Mantri et al., 2020), development is still only in the pilot testing phase (Roth et al., 2022), or they do not capture the full range of the moral injury construct (Steinmetz et al., 2019). There are currently no scales developed specifically for generalised settings, able to be used across all age groups and contexts. We aim to address this gap by modifying two existing measures and examining their psychometrics in a non-military sample, to provide validation and support their use in generalised civilian research.

2.2.4 Rationale for Adapted Measures

We chose one military measure focusing on moral injury events (Moral Injury Events Scale; Nash et al., 2013), and one focusing on moral injury outcomes (Expressions of Moral Injury Scale – Military; Currier et al., 2018). The Moral Injury Events Scale (MIES) was selected because it is one of the first and most widely used measures of PMIEs, and the measure most frequently adapted and applied in civilian research. The MIES is a 9-item scale with a three-factor structure (Bryan et al., 2015), that captures exposure to moral violations either perpetrated or witnessed by the individual, and betrayal experiences. It is a popular choice for modification for new non-military research (Brennan et al., 2022; Carter, 2021; Fani et al., 2021; Hagerty & Williams, 2022; Haight et al., 2022; Hines et al., 2021; Hoffman et al., 2018; Levi-Belz & Zerach, 2022; Williamson et al., 2022) due to its brevity and simplicity of wording. Unfortunately, despite frequent use in civilian research, the MIES has not yet been formally adapted and validated for use with a non-military samples, which raises serious concerns for the validity of research utilising the measure in this way.

The Expressions of Moral Injury Scale – Military (EMIS-M) was chosen because it is one of the few measures of moral injury outcomes available, and is the most psychometrically sound according to a review of the methodology within each scale construction paper (Currier et al., 2018; Koenig et al., 2018). The EMIS-M has a two-factor structure, capturing negative cognitions, emotions and behaviours directed towards the self (negative self-beliefs, shame, guilt, and self-handicapping behaviours) and others (mistrust in others, anger, disgust, hostility and aggression) as a result of exposure to PMIEs. Like the MIES, the EMIS-M was developed for military populations and is worded accordingly. It also has not yet been formally adapted and validated for use outside the military.

A third and final measure of moral injury was also included, the Moral Injury Scale for Youth (MISY; Chaplo et al., 2019). The MISY was included because it is one of the first measures of moral injury events developed specifically for a generalised civilian population. Although developed for and validated with youth populations only, it provides a basis for convergent validity when assessing the adapted military measures. Targeted specifically at youth populations experiencing interpersonal transgressions, the MISY builds on the three-factor structure of the MIES by adding further nuance around the forms PMIEs may take. The MISY applies a five-factor structure of PMIEs, capturing perpetrations of moral violations both with full agency and under duress, acts of omission, witnessing, and betrayal experiences. Due to its recent development, the factor structure of the MISY has not yet been replicated, and the measure has not been validated for use in samples with wider age range or more ethnic diversity.

2.2.5 Current Study

The current study had two objectives. The first was to test the modified civilian MIES (MIES-C) and modified civilian EMIS-M (EMIS-C) in a general sample not restricted by age range, occupation or any other demographic. In doing so we investigated the psychometric properties of each measure, how they comparatively perform, and provide validation and support for each measure's use in non-military research. The second was to examine how these measures differentially relate to: (a) each other, b) the MISY and (c) current severity for primary symptoms of anger, guilt and shame, in addition to secondary outcomes of depression, anxiety and posttraumatic stress symptoms (PTSS), and reduced wellbeing.

We predicted that the factor structure for each measure would replicate well, but average scores would be lower than seen in the original studies due to utilising a non-clinical sample. We

predicted that the measures would correlate with the MISY, with stronger association observed between related factors. Specifically; MISY commission factors (With Agency and Under Duress), the MIES-C and EMIS-C Self factors being significantly more strongly correlated with each other; MISY Witnessing and Omission factors, MIES-C and EMIS-C Other factors being more strongly correlated with each other; and the MISY Betrayal factor being more strongly associated with the MIES-C Betrayal factor.

Based on prior research and theory, we also anticipated that the above measures would demonstrate positive associations with shame, guilt, anger, depression, anxiety and PTSS at the total score level. We also predicted some differential relationships at the subscale level, based on prior research. Specifically, we anticipated that anger would be more strongly associated with the Betrayal subscale of the MIES-C and the Other subscale of the EMIS-C; higher levels of guilt, shame and depression would be more strongly associated with the Self subscales of the MIES-C and EMIS-C; and PTSS would be more strongly associated with Other subscales of both the MIES-C and EMIS-C. Lastly, we predicted that divergent validity would be supported through a significant negative correlation of each measure with wellbeing, both at the total score and subscale level.

2.3 Method

2.3.1 Participants and Procedure

Participants were 287 civilians, including 192 women and 88 men (three people identified as gender variant/non-conforming, and four did not disclose their gender). Participants ranged in age from 18 to 59 years (M = 20.28, SD = 3.01). Participants' country of origin was predominantly

Australia (160) and China (55), and there were a small number of participants from other countries, such as Singapore, Germany, and the USA. Religious affiliation was predominantly no affiliation (107), atheist/agnostic (78), Christian (73), Muslim (10), Hindu (5), Buddhist (6) and Other (8). The ethical aspects of this study were approved by the relevant ethics committee.

Participants were recruited both online over social media platforms (Facebook, Reddit) with no incentive offered, and from an undergraduate participant pool in the authors' university department, which offered students the opportunity to participate in research for course credit. The majority of participants (79.44%) were students, and no military personnel participated. Mean score and reliability analyses of the key measures were compared across demographic groups, including students VS non-students, men VS women and Australians VS non-Australians. There was no systematic variance in mean scores or reliability analyses observed, suggesting combined sample CFA fit indices are valid (see Appendix A Supplementary Materials for full comparisons).

Participants who consented received a link to an online survey hosted on Qualtrics. Given the generalised nature of the sample, participants were first oriented to the focus of the study by reading a statement describing moral injury experiences before being asked to write a brief description of their experience with a moral conflict of this nature (see Appendix A Supplementary Materials). This was followed by a battery of questionnaires comprising the MIES-C, EMIS-C and MISY, and additional scales designed to capture primary (shame, guilt, anger) and secondary (depression, anxiety, PTSS) markers of moral injury, in addition to general wellbeing and demographic questions.

2.3.2 Measures

2.3.2.1 *Moral Injury Events Scale - Civilian (MIES-C)*

The original MIES (Nash et al., 2013) is a nine-item self-report measure of PMIEs developed for use in military populations. Items are grouped into three subscales: transgressions by the self, transgressions by others, and betrayal (Bryan et al., 2015). Participants are asked to indicate how much they agree with each statement on a 6-point Likert-type scale (1 = *strongly disagree* to 6 = *strongly agree*). Internal consistency in the current sample was excellent: Transgressions–Self α = .89; Transgressions–Other α = .71; and Betrayal α = .82. To alter the MIES into the MIES-C for generalised civilian use, the initial instructions and items 8 and 9 were modified replace direct reference to the military with generalised language – e.g., '*I feel betrayed by fellow service members who I once trusted*' was replaced with *'I feel betrayed by friends who I once trusted'* (see Appendix A Supplementary Materials for full modifications).

2.3.2.2 *Expressions of Moral Injury Scale – Civilian (EMIS-C)*

The original EMIS-M (Currier et al., 2018) is a 17-item measure of MI-related outcomes. Items on the EMIS-M capture emotions, beliefs, attitudes and behaviours that reflect moral injury grouped into two subscales: Self-Directed moral injury and Other-Directed moral injury. Items are rated on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). Internal consistency in the current sample was excellent: total score, Cronbach's α = .90; Self-Directed Moral Injury α = .81; Other-Directed Moral Injury α = .80. To alter the EMIS-M into the EMIS-C for generalised civilian use, the initial instructions and individual items were modified to replace direct reference to the military with generalised language – e.g., '*My military experiences have*

taught me that it is only a matter of time before people will betray my trust.' was replaced with '*My experiences have taught me that it is only a matter of time before people will betray my trust*' (see Appendix A Supplementary Materials for full modifications).

2.3.2.3 ***Moral Injury Scale for Youth (MISY)***

The MISY (Chaplo et al., 2019) is a 24-item measure of PMIEs for civilian youth populations. Items are grouped into five subscales: Commission with Agency, Commission Under Duress, Omission, Witnessing and Betrayal. Participants are asked to rate each of the items on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). Internal consistency in the current sample was excellent: total Cronbach's α = .91; Commission with Agency α = .90; Commission Under Duress α = .89; Omission α = .82; Witnessing α = .88; Betrayal α = .93.

2.3.2.4 ***Depression Anxiety and Stress Scale 21 (DASS-21)***

The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item measure of depression, anxiety and stress. It distinguishes well between features of depression, physical arousal, and psychological tension, with internal consistency and concurrent validity in acceptable to excellent ranges (Antony et al., 1998) as well as good cross-cultural validation. Participants select ratings on a 4-point Likert-type scale (0 = *never* to 3 = *always*) of how much each item applied over the past week. Internal consistency in the current sample was excellent: Depression α = .91; Anxiety α = .85; Stress α = .86.

2.3.2.5 *Warwick-Edinburgh Mental Well-being Scale (WEMWBS)*

The WEMWBS (Tennant et al., 2007) is designed to capture a broad conception of wellbeing including affective-emotional aspects, cognitive evaluative dimensions and psychological functioning. The scale consists of 14 items answered on a 5-point Likert-type scale (1 = *none of the time* to 5 = *all of the time*). The scale focuses entirely on the positive aspects of mental health, and has been found to be reliable and with good validity, internal consistency and test-retest reliability (Tennant et al., 2007). Internal consistency in the current sample was excellent: $\alpha = .92$.

2.3.2.6 *The Posttraumatic Checklist – 6-item Civilian Version (Abbreviated PCL-C)*

The Abbreviated PCL-C (Lang et al., 2012; Lang & Stein, 2005) is a 6-item shortened version of the PTSD Checklist – Civilian version (PCL-C). The PCL-C is a well-validated and widely-used measure assessing the PTSD criteria described in the DSM-4 (American Psychiatric Association, 2000). In the abbreviated version, respondents are asked to indicate on a 5-point scale (0 = *not at all* to 4 = *extremely*) how much they have been bothered in the past month by each item. Internal consistency in the current sample was excellent: $\alpha = .85$.

2.3.2.7 *Personal Feelings Questionnaire-2 (PFQ-2)*

The PFQ-2 (Harder & Greenwald, 1999) is a 16-item measure designed to assess guilt and shame proneness. Respondents indicate the frequency of their experiences consistent with guilt and shame on a 5-point Likert-type scale (0 = *never* to 4 = *continuously or almost constantly*). Internal consistency in the current sample was excellent: Shame $\alpha = .80$; Guilt $\alpha = .79$.

2.3.2.8 *The Dimensions of Anger Reactions Scale 5 (DAR-5)*

The DAR-5 (Forbes et al., 2014) is a 5-item self-report measure that assesses anger experiences over the prior four weeks. Items are rated on a 5-point Likert-type scale (1 = *none or almost none of the time* to 5 = *all or almost all of the time*). The DAR-5 has demonstrated good convergent and discriminant validity (Forbes et al., 2014). Internal consistency in the current sample was excellent: $\alpha = .83$.

2.3.2.9 *Demographic Questions*

In addition to the existing scales detailed above, demographic information (age, gender, country of origin, religious affiliation) was sought.

2.3.3 Data Analysis

Data were screened and cleaned prior to analyses. 409 participants began the survey, and 287 completed. Of the 30% who did not complete, 17% were from the group recruited over social media, and 13% from the student group – these participants were deleted from the final pool, as no systematic bias was observable. Sample size met the minimum threshold required for factor analyses (Mundfrom et al., 2005; Wolf et al., 2013). Confirmatory factor analyses (CFA) were performed in the *lavaan* package for R (Rosseel, 2012) using the maximum likelihood estimation method. Factors were allowed to correlate, and the variance of each factor was fixed to 1.0. Multiple fit indices were used in order to obtain a more conservative and reliable evaluation of the model fit. Guided by suggestions provided in Hu and Bentler (1999), acceptable model fit with an RMSEA of .08 or less is adequate (whereas values of .06 or less are excellent); CFI value of .90 or

greater is adequate (and values of .95 or higher indicate excellent fit); and for SRMR, values of .05 indicate adequate fit. Internal consistency was assessed using Cronbach's alpha, and construct validity by examining correlations with a bonferroni corrected alpha of .0003 (i.e., $\alpha = .05/139$ comparisons).

2.4 Results

2.4.1 Confirmatory Factor Analyses

Initial goodness of fit indices suggest that the MIES-C three-factor model fit the data poorly ($df = 24$, $\chi^2 = 99.5$, $p < .001$, RMSEA = .10, CFI = .94, SRMR = .05), and the EMIS-C two-factor model ($df = 118$, $\chi^2 = 320$, $p < .001$, RMSEA = .08, CFI = .90 SRMR = .06) and MISY five-factor model ($df = 242$, $\chi^2 = 670$, $p < .001$, RMSEA = .08, CFI = .91, SRMR = .06) fit the data adequately.

Upon closer inspection of residual covariance modification indices, all three measures demonstrated several higher values caused by items that were very similar, either conceptually or in wording (MIES-C items 5/6 and 3/4; EMIS-C items 1/7 and 8/14; MISY items 7/8 and 1/2). Allowing these item pairs to covary improved model fit indices to the point where they were adequate for the MIES-C ($df = 22$, $\chi^2 = 60.2$, $p < .001$, RMSEA = .08, CFI = .97, SRMR =.04), the EMIS-C ($df = 116$, $\chi^2 = 265$, $p < .001$, RMSEA = .07, CFI = .93, SRMR =.06) and the MISY ($df = 240$, $\chi^2 = 479$, $p < .001$, RMSEA = .06, CFI = .95, SRMR =.06).

Although χ^2 values across each measure were significant, the models reproduced the observations in the data well based on alternative fit criteria. The final measurement models contained no double-loading indicators, and all other measurement error was presumed to be

uncorrelated. Item factor loadings are presented for each measure in Appendix A Supplementary Materials.

2.4.2 Descriptive Statistics and Internal Consistency

Mean and standard deviation values in our current sample were equivalent with or higher than those from the original studies for the MIES, EMIS-M and the MISY (Table 1). All measures also demonstrated good internal consistency with values above the recommended cut-off of .70 for internal consistency recommended by Reuterberg and Gustafsson (1992).

Table 2.1

Descriptive Statistics Reliability Estimates of the MISY, MIES-C and EMIS-C (Original VS Current Values)

Measure	Subscale	*M* original	*M* current	*SD* original	*SD* current	Original α	Current α
MISY	Commission with Agency	3.25	3.16	1.00	.92	.92	.90
	Commission Under Duress	1.89	2.21	.93	.90	.94	.89
	Omission	3.18	3.37	1.14	.96	.87	.82
	Witnessing	4.08	4.10	.87	.75	.94	.88
	Betrayal	3.84	3.83	.99	.93	.94	.93
MIES	Transgression – Other	3.68	4.14	1.74	1.12	.79	.71
	Transgression – Self	2.49	3.68	1.71	1.21	.96	.89
	Betrayal	3.21	3.49	1.70	1.31	.83	.82
EMIS	Self-Directed	1.66	2.49	.83	.84	.94	.81
	Other-Directed	2.15	2.84	.91	.86	.92	.80

2.4.3 Validity Analyses

2.4.3.1 *Total Score Correlations*

Total scores for the MIES-C, EMIS-C and MISY all correlated significantly with each other (Table 2) and demonstrated significant positive correlations with measures of anger, shame, guilt, PTSS, depression and anxiety, and significant negative correlations with wellbeing (Table 3).

2.4.3.2 *Subscale Correlations*

EMIS-C. When examining correlations with validity criteria at the subscale level (Table 3), the EMIS-C Self subscale correlated significantly with related subscales of the MISY (Commission with Agency, Commission Under Duress and Acts of Omission) but not other-directed subscales (Witnessing and Betrayal). The EMIS-C Self subscale also correlated significantly with all three subscales of the MIES-C (Self, Other and Betrayal), but most strongly with conceptually related Self subscale. The EMIS-C Other subscale correlated significantly with all MISY subscales except for Commission with Agency, and all MIES-C subscales (although the strongest relationship was observed with the Betrayal subscale).

MIES-C. Within the MIES-C, the Self subscale correlated significantly with the MISY Commission with Agency, Act of Omission and Witnessing subscales, and with both subscales of the EMIS-M (although the relationship with the EMIS-C Self subscale was significantly stronger). The MIES-C Other subscale correlated significantly with MISY Commission with Agency, Acts of Omission, Witnessing and Betrayal, and with both subscales of the EMIS-C. The MIES-C Betrayal subscale correlated significantly with all subscales of the MISY and EMIS-M, although

significantly stronger relationships were observed with the MISY Betrayal subscale, and EMIS-M Other subscale.

External Measures. Both subscales of the EMIS-C correlated significantly with measures of anger, shame, guilt, PTSS, depression and anxiety, and demonstrated a significant negative relationship with wellbeing. The MIES-C Other subscale did not correlate significantly with any measure of related outcomes at the corrected alpha level of .0003, although the strongest relationship was seen with anger (significant at the .01 level). The MIES-C Self subscale correlated significantly with anger, guilt, shame, depression and anxiety, and with PTSS and reduced wellbeing at the .01 level. Lastly, the MIES-C Betrayal subscale correlated significantly with anger, guilt, shame, depression, anxiety and reduced wellbeing, and with PTSS at the .01 level.

Table 2.2

Correlations between MISY, MIES-C and EMIS-C (Total Scores) and Associated Outcomes

	MISY	MIES-C	EMIS-C	PFQ Shame	PFQ Guilt	PCL-C PTSS	WEMWBS Wellbeing	DAR-5 Anger	DASS Dep	DASS Anx
MISY	-	.60***	.45***	.25***	.21***	.12*	-.20**	.33***	.26***	.20**
MIES-C		-	.50***	.28***	.28***	.20**	-.25***	.36***	.30***	.30***
EMIS-C			-	.51***	.54***	.48***	-.42***	.63***	.55***	.51***

Note. *** p <.0003, ** p <.01, p <.05

Table 2.3

Correlations Between MISY, MIES-C and EMIS-C Subscales and Validity Criteria Subscales

	MISY Duress	MISY Omiss	MISY Witness	MISY Betrayal	EMIS-C Self	EMIS-C Other	MIES-C Other	MIES-C Self	MIES-C Betrayal	DASS Dep	DASS Anx	DAR-5 Anger	PFQ Shame	PFQ Guilt	PCL-C PTSS	WEMWBS Wellbeing
MISY Agency	.39***	.51***	.39***	.25***	.31***	.20**	.24***	51***	.25***	.16**	.11	.21***	.20**	.18**	.13*	-.14*
MISY Duress	-	.30***	.13*	.16**	.39***	.30***	.15*	.21**	.23***	.12	.17**	.22***	.19**	.18**	.23***	-.11
MISY Omission		-	.46***	.23***	.27***	.28***	.28***	.45***	.29***	.11	.15**	.19**	.24***	.17**	.08	-.10
MISY Witness			-	.50***	.08	.24***	.32***	.31***	.25***	.17**	.10	.19**	.13*	.05	-.09	-.16**
MISY Betrayal				-	.14*	.39***	.30***	.17**	.56***	.24***	.15*	.29**	.12	.11	.02	-.15**
EMIS-C Self					-	.52***	.24***	.41***	.31***	.51***	.49***	.58***	.48***	.54***	.43***	-.37***
EMIS-C Other						-	.28***	.23***	.46***	.46***	.39***	.52***	.41***	40***	.41***	-.36***
MIES-C Other							-	.43***	.29***	.08	.09	.18**	.09	.11	.07	-.08
MIES-C Self								-	.33***	.24***	.26***	.28***	.23***	.25***	.17**	-.21**
MIES-C Betrayal									-	.30***	.28***	.33***	.26***	.23***	.18**	-.24***

Note. *** p <.0003, ** p <.01, * p <.05

2.5 Discussion

This study addressed the need for generalised, non-military specific measures of PMIEs and moral injury by modifying the MIES and EMIS-M and testing their factor structure and validity in a generalised sample. As predicted, the factor structure of the MIES-C and EMIS-C replicated well within our sample. Unexpectedly, mean scores of each scale measured equivalently or higher than the original studies. This suggests at face-value that the experience of PMIEs and moral injury as measured here are relevant to the general population. The MIES-C and EMIS-C each correlated significantly in predicted ways with primary and secondary markers of moral injury at the total score level, supporting construct validity.

2.5.1 Relationship between the MIES-C, EMIS-C and MISY Subscales

At the subscale level, PMIEs as measured in the MIES-C and MISY converged and overlapped with moral injury outcomes as measured in the EMIS-C in predicted ways. The EMIS-C demonstrated the strongest support for convergent validity, with its Self and Other subscales correlating significantly in predicted ways with subscales capturing related PMIE types within the MIES-C and MISY (Table 3). Specifically, stronger relationships were observed between the EMIS-C Self subscale and the MISY and MIES-C subscales capturing self-directed transgressions (Commission with Agency, Commission Under Duress and Acts of Omission; MIES-C Self). With the EMIS-C Other subscale, the strongest correlations were observed with the MISY and MIES-C Betrayal subscales.

Convergent validity was also supported at the subscale level of the MIES-C, although patterns were less marked. The MIES-C Other subscale correlated significantly with all other subscales except for MISY Commission with Agency (although the strongest relationships

were observed with the conceptually related MISY Witnessing and Betrayal subscales). The MIES-C Self subscale correlated significantly with all other subscales aside from the MISY Commission Under Duress and Betrayal subscales (although, again, the strongest relationships were observed with the conceptually related MISY Commission with Agency and Acts of Omission subscales, and the EMIS-C Self subscale). The MIES-C Betrayal subscale correlated significantly with all other subscales of the EMIS-C and MISY, although significantly stronger relationships were observed with the MISY Betrayal and EMIS-C Other subscales.

2.5.2 Relationship of the MIES-C and EMIS-C Subscales with External Measures

External validity of each measure was also supported. As predicted, anger was most strongly associated with the Betrayal subscales within the MIES-C and MISY, although this relationship was not significantly stronger than with the other subscales. Anger was strongly associated with both subscales of the EMIS-C, with no meaningful difference emerging.

Depression was not significantly more correlated with the Self subscales of the EMIS-C or MISY as seen in prior research, but did show a significant trend of association with the MIES-C Self and Betrayal factors.

The same pattern was observed with PTSS, with no meaningful difference in significant correlations between the two subscales of the EMIS-C emerging. However, a significant relationship was shown with the MISY Commission Under Duress subscale and stronger relationships with the Self and Betrayal subscales of the MIES-C (although falling short of significance at the corrected alpha level of .0003).

Generally, the EMIS-C tended to be significantly associated with all primary (anger, guilt, shame) and secondary (depression, anxiety, PTSS, reduced wellbeing) markers of moral

injury. This is likely due to the measure assessing moral injury symptoms rather than PMIEs. In the case of the MIES-C, a clear pattern emerged whereby other-directed PMIEs were not associated with primary or secondary markers, but self-directed or betrayal-based PMIEs were (Table 3).

2.5.3 Theoretical Considerations

These findings deviate somewhat from those of the original study within military samples and other previous research in refugee populations, which found that other-directed scores were most strongly associated with PTSS (Bryan et al., 2015; Nickerson et al., 2018). This may suggest that the experience of PMIEs in a general population are conceptually different from those experienced by military populations, insofar as primary and secondary markers occur mostly through betrayal or when the individual is the direct agent of the transgression rather than witnessing others commit moral violations.

When considering the theoretical basis of such findings, it is possible that the missing ingredient within a general sample is the strong shared values system and social identity seen within military culture (Ellemers et al., 2013; Ellemers & Bos, 2012; Flack & Kite, 2021). This shared identity and values system is often a strong protective factor (Atuel & Castro, 2018; Castro et al., 2015; Migliore & Pound, 2016), but may also cause the individual to feel implicated in a witnessed PMIE without necessarily being directly responsible. Likewise, professions where moral injury is most commonly seen often experience both the high-stakes situations that give rise to a moral transgression, and the shared identity that may make witnessing violations or the betrayal of other group members all the more devastating (Davidson et al., 2022; Lawn et al., 2020; Willetts & Clarke, 2014). Given a general sample is less likely to have any such strong shared social identity with transgressors of the PMIEs they

witness, they may only experience negative outcomes when they are the direct transgressor of a PMIE, or when experiencing betrayal by another they do identify with. Further research exploring the conceptual differences of PMIEs and markers of moral injury experienced by civilian populations is an important avenue for future exploration.

2.5.4 Next Steps

Although we have demonstrated that the MIES-C and EMIS-C are valid and supported for general non-military use, further scale construction efforts to capture civilian PMIEs and moral injury effectively still may be of benefit. Specifically, each measure required error covariances of two pairs of items to be freed in order to improve model fit to acceptable standards, and fit indices could still be improved upon. Within both the MIES-C and EMIS-C there is some repetition of either wording or conceptual meaning across items that may explain the high error variance and suggest both measures may benefit from further refinement before wider use. The 'other' subscale of the MIES-C also comprised only two items, which correlated strongly – an issue that has been highlighted as a concern previously (Bryan et al., 2015). The high correlation between the two subscales of the EMIS-C may also suggest the measure is better representative of a unidimensional construct (Currier et al., 2020). These psychometric limitations may be reflective of the conceptual differences in the way the moral injury construct is experienced in civilian settings, or could suggest that our sample was too generalised. Given the overlapping nature of PTSD and moral injury, focussing on civilians who have experienced other prior trauma or occupy high-risk professions may offer greater utility in future non-military scale construction research.

2.5.5 Limitations

There are certain limitations to note. Firstly, although the study utilises a generalised, civilian sample and every attempt was made to recruit a broad age range, this sample is less diverse in age and country of origin than is optimal. Even though ages ranged from 18 – 59, providing a much wider scope than that utilised within the MISY, the mean age of participants was still low at 20.28 (*SD* = 3.01). This is reflective of the sample being primarily comprised of students (79.44%). Although no systematic differences in mean scores or reliability analyses were noted between students and the non-student minority, the representativeness of the sample is limited by the student demographic. Future research should aim to validate the MIES-C and EMIS-C in other samples not comprised primarily of students, to further expand the utility and validity of the measures.

Even though construct validity was supported, we implemented a cross-sectional design, and therefore cannot draw temporal inferences regarding the presence of PMIEs, moral injury and associated psychopathology. Further, associations were correlational in nature, and therefore causation cannot be inferred. In addition, although informative validity correlations were observed, their strength was often small to moderate. Although the PCL-C was chosen a measure of PTSS due to its brevity and civilian focus, it was developed for the DSM-IV and therefore does not tap current diagnostic criteria for PTSD.

Finally, it should be noted that although civilians appear to be susceptible to the same moral injury processes and associated psychopathology as military personnel, they may not experience the conditions required for severe moral injury on a day-to-day basis due to the lack of high stakes situations and implication via shared social identity with perpetrators of other-directed PMIEs. Although mean score values in the current study were equivalent to those seen

in the original military samples of each measure, it is possible these are inflated scores due to the priming exercise utilised in our study rather than reflective of true experience. It is also possible that in adapting the measures explored here some precision of focus was lost. All of the above should be considered when interpreting findings.

2.5.6 Conclusions

In sum, this study provided support for the psychometric properties of the MIES-C and EMIS-C when used in a generalised, non-occupation specific sample. Despite limitations, the current study offers an important contribution by amending these two commonly used measures of PMIEs and moral injury markers to support their use in non-military research, in addition to examining their psychometrics and how factor structure replicates in a general sample.

Specifically, we offer the first validation study of the EMIS-C, MIES-C and MISY, in addition to offering new insight into how the construct of moral injury may appear in generalised civilian groups not bound to any one profession. Offering psychometric support for the above measures to be used in this demographic is an important step in both supporting existing research that has already adapted and used the measures without validation, and facilitating further research of the moral injury construct in civilian populations. Despite psychometric support, there are some problems with the scales when applied to a general civilian sample, which may warrant further scale construction efforts.

Future research should build on the existing measures and aim to develop a measure appropriate for assessing moral injury outcomes within the general population, in addition to developing a valid, multidimensional measure of non-military occupational PMIEs and/or moral injury that can be applied across professional settings. Development of such

measurement tools will address problems with inconsistent measurement within the field, and will help facilitate further exploration of the conceptual differences in PMIEs and moral injury outcomes (Farnsworth et al., 2017) as they are experienced in civilian populations, contributing to our larger understanding of moral injury as a construct.

Chapter 3

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

Chapter 3 describes the development, validation and refinement of the Occupational Moral Injury Scale. This chapter details our approach to the scale construction, incorporating both classical test theory and item response theory frameworks. We also describe how the resulting psychometric findings guided further refinement of the scale and conceptualisation of moral injury. This chapter details the development of a novel scale that fills many of the gaps identified in the previous two chapters.

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3.1 Abstract

Moral Injury is an emerging construct that has been primarily examined in military groups but is increasingly expanding to a broader range of non-military 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 non-military settings. The current paper addresses this gap by developing the Occupational Moral Injury Scale (OMIS), a measure designed to capture both potentially morally injurious events (PMIEs) 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 (CFA) and Item Response Theory (IRT) analyses were used in scale development and refinement. Drawing upon a sample of 1454 frontline health and first responder workers across two studies, factor analytic results revealed an expected bifactor structure of five primary factors capturing exposure to PMIEs (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.

3.2 Introduction

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.

3.2.1 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 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 DSM-5 (American Psychiatric Association, 2013) as exposure to actual or threatened death, serious injury or sexual violence. Potentially morally injurious events (PMIEs) differ in that mortal danger is not a key precipitating factor. PMIEs are instead defined as situations where one's

core beliefs of what's right are violated in some way. Specifically, PMIEs can be perpetration events where 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 where the individual witnesses morally violating acts committed by others, or betrayal events where 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 PMIEs remain consistent.

3.2.2 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 where 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 PMIEs 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, 2022a), which aligns with the 'betrayal' form of PMIE. 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 non-military occupations has been the lack of valid, reliable measures specifically developed for civilian groups.

3.2.3 Assessment of Civilian Moral Injury

Most extant psychometric measures designed to capture moral injury have also been tailored for military groups (Currier et al., 2015; Currier et al., 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 moral injury 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, 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 generalised civilian use (Morriss & Berle, 2023; Thomas, Bizumic, Cruwys, et al., 2024), there are limited measures available developed intentionally for civilian settings. More recently, measures designed for non-military 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 PMIEs 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., 2022). As yet, there are no existing measures that are a) generalised enough for use across different occupational settings, allowing for effective comparison across groups, and b) that also link the moral injury symptoms asked about to precipitating PMIEs. 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 PMIEs or symptoms only, without linking the two in a meaningful way (Chaplo et al., 2019; Roth et al., 2022). Assessment of moral injury symptoms without also

assessing moral injury exposure impairs the ability to tie moral injury symptoms that are often transdiagnostic to PMIEs specifically – contributing to 'concept creep' and reducing the utility of the assessment tool. The Moral Injury Assessment for Public Safety Personnel (Roth et al., 2022) proposes subscales of 'exposure' and 'symptoms' of moral injury, but this has not yet been subject to factor analysis, limiting empiric confidence in whether it is meaningful to calculate scores on this measure in this way.

Furthermore, existing civilian measures of moral injury 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 PMIEs and moral injury outcomes whilst also limiting 'concept creep' of moral injury (Haslam, 2016) by ensuring symptoms are linked to a precipitating morally injurious event.

3.2.4 The Occupational Moral Injury Scale (OMIS)

We are introducing here the Occupational Moral Injury Scale (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 PMIEs, by ensuring each moral injury symptom explored was directly linked to a precipitating PMIE type at the item-level. We aimed to do this using advanced techniques in the form of a combination of IRT and CFA analyses.

Construction of OMIS items were informed by empirical, clinical and theoretical sources. An a-priori five-factor model of PMIEs was chosen. In specifying this five-factor

structure, we drew upon existing 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 PMIEs (commission, witnessing and betrayal events) to add greater nuance around the forms PMIEs may take. By adding greater theoretically-informed a-priori specification and clarity to the forms PMIEs 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 the PMIE subtypes that 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 PMIE factors chosen were: Commission with Agency, Commission under Duress, Acts of Omission, Witnessing and Betrayal (see Appendix B Supplementary 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, VS 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 Appendix B Supplementary 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 behavioural outcomes are also linked to moral injury (Jinkerson, 2016). However, 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 that capture the key emotional symptoms (guilt, shame, anger) and alteration 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 PMIEs in this way, there is a risk of 'concept creep' (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). To balance the need for nuance with the risk of concept creep, OMIS items distinguish between five PMIE types while ensuring that each symptomatic response is explicitly linked to a discrete potentially morally injurious event (PMIE). This approach preserves the construct validity of moral injury measurement by capturing distress that arises from specific moral violations rather than more general negative affect or workplace dissatisfaction.

We anticipated higher levels of inter-factor 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 PMIEs.

3.2.5 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 from frontline health and first responder occupations, supported as high-risk by the literature. Item response theory (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 (re-experiencing, avoidance, negative cognition and mood, hyperarousal), PMIE exposure (perpetration, witnessing and betrayal), burnout and secondary traumatic stress. We also anticipated significant negative correlations with wellbeing, compassion satisfaction, and aspects of workplace psychosocial safety including organization and management commitment, management priority, and organization participation – offering support for divergent validity.

3.3 Study 1 - Method

3.3.1 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. Although all participants were pre-selected on Prolific as indicating they worked in frontline health and first responder fields, a subset of 73 participants stated they did not fit these occupational categories when completing the survey. As this was a scale construction study requiring sufficient power for item response theory analyses, all participants were retained, including those who did not self-identify as frontline workers. Sensitivity analyses (primary analyses run both with and without these participants included) confirmed that excluding these participants did not alter the results in any meaningful way. Therefore, their data was retained to help increase the power of IRT analyses (see Appendix B Supplementary Materials for a comparison of results).

A total of 479 participants identified as women, 260 as men, four as non-binary 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 UK; 180 (24.19%) as the USA; 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 114 (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 – 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-minute study). Participants were pre-screened/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.

3.3.2 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 PMIE (Commission with Agency, Commission under Duress, Act of Omission, Witnessing, Betrayal) at the item level. Items were written to be comprehensible at a 5th-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, whilst 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, utilising psychometric data to inform development of the final 25-item shortlist.

3.3.3 Measures Used in Construct Validity Analyses

3.3.3.1 *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 organisation.

3.3.3.2 *Post-Traumatic 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.

3.3.3.3 ***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.

3.3.3.4 ***Psychosocial Safety***

The Psychosocial Safety Climate Scale (PSC-12) is a 12-item self-report measure of the psychosocial safety climate of a workplace, comprising four subscales: management commitment, management priority, organisational communication, and organisational 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.

3.3.3.5 ***Moral Injury Events Scale (MIES)***

The MIES (Nash et al., 2013) is a 9-item self-report measure of potentially morally injurious events (PMIEs), exploring exposure to perceived transgressions committed by the respondent and/or others, and perceived betrayals by other military and non-military 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.

3.3.3.6 ***Wellbeing***

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.

3.3.3.7 *Occupational Moral Injury Scale (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 behaviour I've seen from others in my workplace".

3.3.4 Analytic Plan

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

In the case where there is sufficient empirical and theoretical evidence for an a-priori/anticipated factor structure, proceeding directly to confirmatory factor analyses rather than running exploratory factor analysis is recommended (Hurley et al., 1997). Our decision to proceed directly to BCFA was based on the theoretically-informed, a-priori structure of our model, and our goal of reducing conceptual confusion around the moral injury construct and advance the field of understanding by pinpointing which types of PMIEs 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. Utilising 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 exploratory factor analyses are useful when the structure of the constructs is not well known, using EFA may also capitalise on chance, 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 non-normality. 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 moral injury within each subscale, thus ensuring even content coverage. We then re-ran factor analyses to compare and confirm the hypothesized factor structure, before running item response theory (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 PMIE factors, as is required in a bifactor model (Reise, 2012). Fit indices were assessed using recommended cut-offs (Kline, 2016, 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 non-significant value indicates good fit to the data); however, it was interpreted with caution due to large sample size and sensitivity to non-normal 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, values less than five indicate acceptable fit to the data, with values between two and 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).

3.4 Study 1 - Results

3.4.1 Confirmatory Factor Analyses

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 moral injury factor for bifactor specification along with PMIE group factors (see Figure 3.1 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 3.3). Additional statistical approaches of regular CFA and hierarchical CFA were also compared for each model (see Appendix B Supplementary Materials), with the bifactor approach providing the best fit to the data. Bifactor fit statistics for each model tested are provided in Table 3.1. 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.

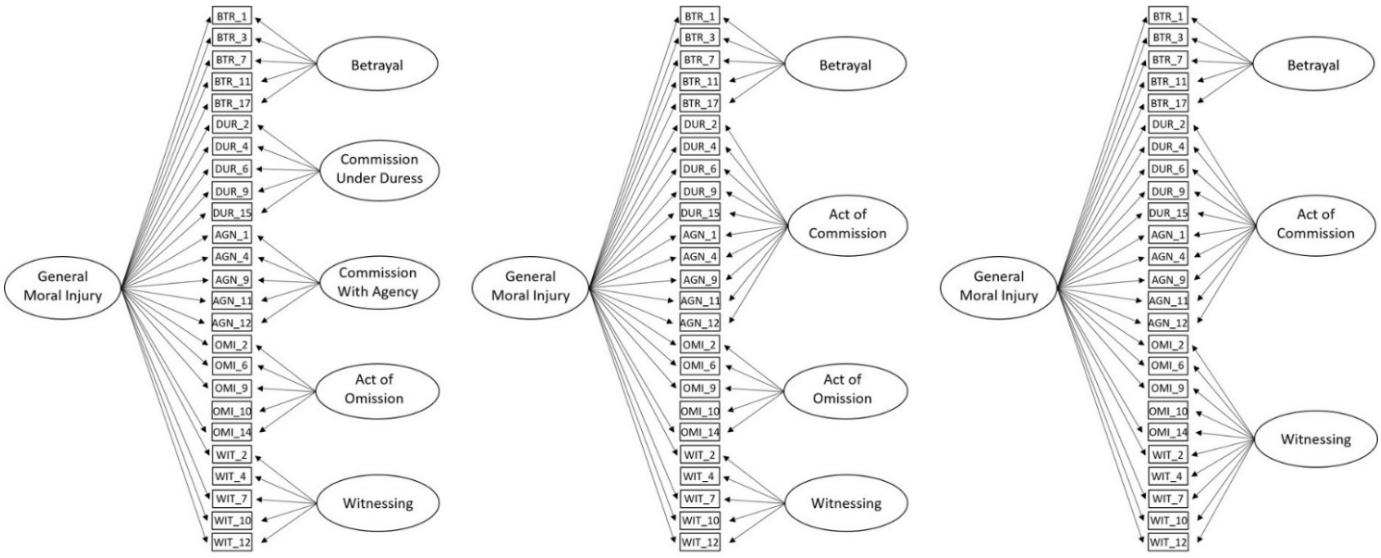
Table 3.1

Bifactor Fit Indices for the Five-, Four- and Three-Factor Models of the OMIS in Study 1, and Five-Factor Model in Study 2

Study 1	*df*	χ^2	χ^2/df	*p*-value	RMSEA	95% CI	CFI	TLI	SRMR	AIC	BIC
5-factor	241	699.30	2.90	< .001	.05	.046-.055	.97	.97	.03	60125.85	60513.53
4-factor	294	1444.07	4.91	< .001	.07	.069-.073	.94	.93	.04	65079.18	65466.59
3-factor	297	1682.90	5.66	< .001	.08	.076-.083	.93	.91	.04	65312.01	65685.58

Figure 3.1

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



The five-factor chi-square was significant, $\chi^2(241) = 699.30$, $p < .001$; however, all alternative fit indices (CFI, TLI, SRMR, RMSEA) showed that the model fitted the data well, and the χ^2/df value was between two and three (2.90) indicating good model fit. We used the five-factor bifactor model to calculate several diagnostic indices to analyse the dimensionality and reliability of the OMIS in more detail (Rodriguez et al., 2016). These indices suggested that the general moral injury factor explained 37% of the common variance overall (ECV = .37; see Appendix B Supplementary Materials for individual ECV values for each item). Furthermore, the model-based omega reliability (interpreted similar to 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 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.

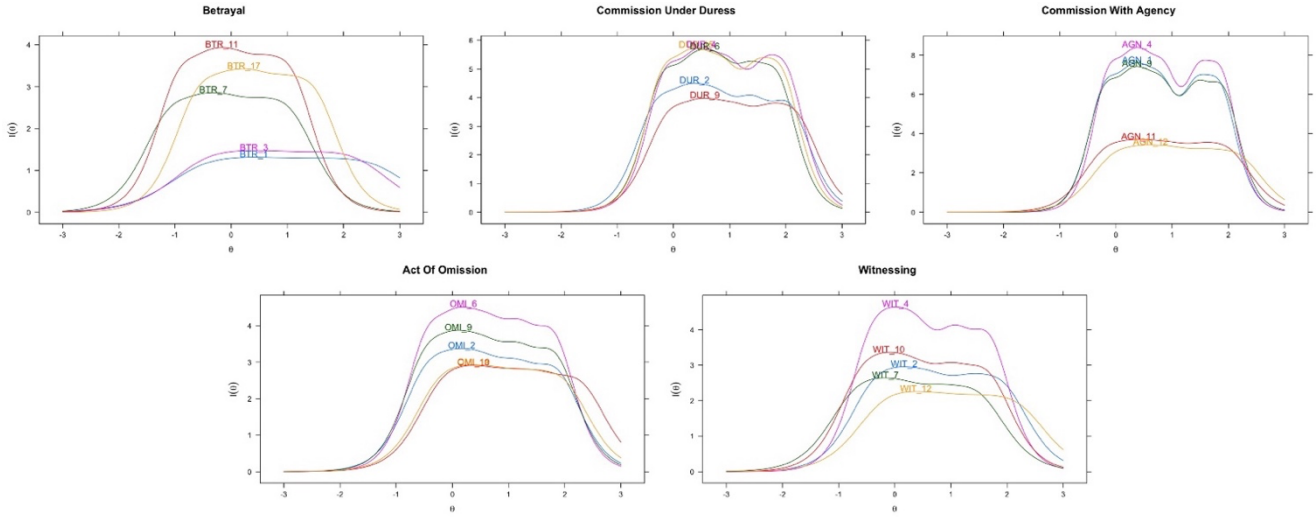
The factor loadings for each of the five PMIE factors were higher than the recommended level of .32 (Tabachnick & Fidell, 2013; see Appendix B Supplementary Materials for full table of standardized factor loadings for the model). All items also loaded onto the generalised moral injury factor, with all but two items (Btr_7 and Wit_7) exceeding this cut-off. The two items that fell short did so due to loading very strongly on their own PMIE factor, and less strongly on the G factor and are assessed not to be of concern.

3.4.2 Item Response Theory: Shortlisted Model Characteristics

We conducted IRT analyses, with a GMA on each subscale of the shortlisted OMIS model to assess individual item performance. There were no violations to unidimensionality based on principal component analyses. Although 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 Appendix B Supplementary Materials.

Figure 3.2

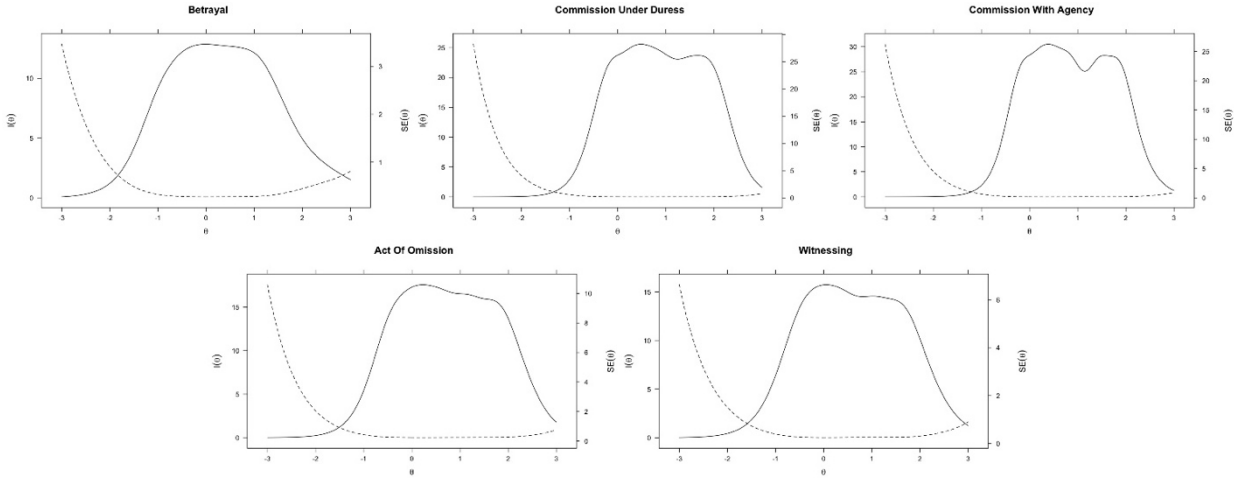
Item Information Curves for Items within Each OMIS Factor in Study 1



Note. The graphs are truncated along θ (-3, +3).

Figure 3.3

Test Information and Standard Error Curves for Each OMIS Factor in Study 1



Note. The standard error is illustrated by the dotted line.

3.4.3 Descriptive Statistics, Reliability, and Validity

Descriptive statistics for the shortlisted OMIS are presented in Table 3.2. Mean scores for each factor of the OMIS trended higher in women over men, and also tended to increase with years of service (see Appendix B Supplementary Materials for mean scores according to gender, each occupational group and years of service). Total scores ranged from 5-35 for each subscale, with the full range utilized. Reliability indices for each subscale and the total measure were all in the excellent range.

Table 3.2

Descriptive Statistics for the Occupational Moral Injury Scale – Study 1

Study 2	Mean	*SD*	Total Score Range	Cronbach's α	McDonald's ω
Total Score	98	7.09	35-175	.97	.97
Betrayal	3.41	1.64	5-35	.89	.89
Commission under Duress	3.18	1.52	5-35	.94	.94
Commission with Agency	2.99	1.45	5-35	.94	.94
Act of Omission	3.28	1.58	5-35	.91	.91
Witnessing	3.41	1.63	5-35	.90	.90

Note: $N = 710$. *SD* = standard deviation.

Correlations among the latent factors were estimated for the five-factor model and may be seen in Table 3.3. Correlations among the OMIS factors ranged from .32 – .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 moral injury. 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.

Table 3.3

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

Study 1	OMIS Betrayal	OMIS Commission	OMIS Duress	OMIS Omission
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 $N = 710$. * = $p < .001$. ** = $p < .05$. Commission = Commission with Agency; Duress = Commission under Duress; Omission = Act of Omission.

As expected, the overall OMIS scale and its subscales illustrated significant positive correlations with additional measures of PMIEs (capturing witnessing-based, perpetration-based and betrayal-based events), PTSD symptoms, burnout and secondary traumatic stress (see Table 3.4). There was a consistent pattern of significant negative correlation of the OMIS with compassion satisfaction, wellbeing, 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 3.4 for significance comparisons).

3.5 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 re-experiencing, 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, 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 required – in particular, adjustments of the operational definitions and item content to emphasise the conceptual and theoretical distinctiveness of the five dimensions and minimise any unnecessary overlap between these dimensions.

Table 3.4

Correlations Between OMIS Subscales and Validity Criteria Subscales in Study 1

	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 Total	.38*	.28*	**.35***	**.35***	.34*	.33*
PCL Re-experiencing	.35*	.23*[1]	**.33***[1]	.32*	.32*	.31*
PCL Avoidance	.29*	.18*	.27*	**.28***	.25*	.25*
PCL Negative Cog/Mood	.35*	.28*	**.32***	**.32***	.31*	.29*
PCL 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 Total	-.42*	**-.67***[8,9,10]	.-.32*[10]	-.26*[8]	-.28*[9]	-.28*[9]
PSC Mgmt Commitment	-.41*	**-.64***[11,12,13,14]	-.31*[14]	-.26*[11]	-.27*[12]	-.28*[13]
PSC Mgmt Priority	-.41*	**-.65***[15,16,17]	-.31***[17]**	-.26*[15]	-.28*[16]	-.28*[16]
PSC Org Commitment	-.38*	**-.63***[18,19,20]	-.28*[20]	-.23*[18]	-.25*[19]	-.25*[19]
PSC Org Participation	-.35*	**-.55***[21,22,23,24]	-.28*[24]	-.22*[22]	-.24*[23]	-.21*[21]
Wellbeing	-.32*	**-.38***[25,26,27]	-.27*[27]	-.25*[26]	-.25*[26]	-.24*[25]

Note. *N* = 744. * = significant at Bonferroni-corrected $p < .0003$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. 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.

3.6 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 reconceptualised the five MIE factors. Minor revisions were made to operational definitions and associated test items to fit this reconceptualisation 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 moral injury 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, whilst 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 moral injury, we also anticipated some differential relationships among the factors of the OMIS and associated outcomes of moral injury, 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 moral injury construct, we also examined some

personality traits and their relationship to moral injury outcomes. We chose to measure neuroticism, and subclinical levels of individual differences associated with Dark Triad traits (i.e., narcissism, Machiavellianism, and psychopathy), which are established constructs within personality research and increasingly studied in clinical and occupational contexts. We included measures of these traits to test divergent validity, given theoretical grounds for expecting associations with moral injury exposure and outcomes (Brennan et al., 2024; Papazoglou et al., 2019; ter Heide, 2020). Although research on the relationship of these traits with experiences of moral injury is still emerging, based on existing literature and understanding we anticipated a positive relationship of moral injury with neuroticism due to known increased vulnerability to PTSD (Jakšić et al., 2012; Litz et al., 2009; Voecks, 2018), and a negative relationship with sub-clinical 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.

3.7 Study 2 - Method

3.7.1 Participants and Procedure

Study 2 focused on a second sample of primarily 713 frontline health, first responder and emergency services workers. As in Study 1, although all participants were pre-selected on Prolific as indicating they worked in frontline health and first responder fields, a subset of 71 participants stated they did not fit these occupational categories when completing the survey. Primary analyses were run both with and without these participants included (see Appendix B Supplementary Materials for a comparison of results). Given excluding these participants did not alter the results in any meaningful way, their data was retained to help increase the power of IRT analyses. 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 non-binary 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 UK and USA, with 563 (79.30%) identifying their country of citizenship as the UK and 86 (12.11%) as the USA. An additional 53 (7.46%) participants held citizenship in a range of different countries. Most participants resided within the UK and USA.

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%) were unspecified or other occupations. Years of occupational service ranged from <1 – 48, with an average of 9.72 years. Participants were predominantly White (83.5%; 593), followed by Asian (8.16%; 58), Black/African (4.36%; 31), Multiracial (1.69%; 12), Hispanic (1%; 7) and Other (1%; 7). The majority were of Average socioeconomic status (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%; 3).

3.7.2 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 Appendix B Supplementary Materials for full changes made, and full shortlist of final item pool). 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 supplementary 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 VS 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, utilising 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 that underwent data collection.

3.7.3 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 moral injury and provide support for convergent and divergent validity.

3.7.3.1 *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 organisation.

3.7.3.2 *Guilt and Shame*

The State Guilt and Shame Scale (SGSS8; 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 SGSS8 was .95 in this sample.

3.7.3.3 *Anger*

The Dimensions of Anger Reactions Scale 5 (DAR5; Forbes et al., 2004) is a five item self-report measure that assesses anger experiences over the prior four weeks. Items are rated on a five-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.

3.7.3.4 *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 five-point Likert scale from 1 (*completely disagree*) to 5 (*completely agree*). Cronbach's alpha of the GTS was .85 in this sample.

3.7.3.5 ***Existential Conflict***

The Meaning in Life Questionnaire (MLQ) is a 10-item self-report inventory (Steger et al., 2006) that 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.

3.7.3.6 ***Depression***

The Patient Health Questionnaire (PHQ-9; Spitzer et al., 1999) is a 9-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.

3.7.3.7 ***Moral Injury***

The Moral Injury Outcome Scale (MIOS; Litz et al., 2022) is a 14-item measure of military moral injury that 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 potentially morally injurious

events (PMIEs) 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 that 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 PMIE 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 (B-IPF; 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.

3.7.3.8 ***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.

3.7.3.9 *Dark Triad Personality Traits*

The Short Dark Triad (SD3; Jones & Paulhus, 2014) is a 27-item measure that 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.

3.7.4 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 re-ran 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. Please see Appendix B Supplementary Materials for full finalised item shortlist.

3.8 Study 2 Results

3.8.1 Bifactor Confirmatory Factor Analyses

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% CI .047-.059), AIC = 45263.51, BIC = 45578.51. The χ^2/df value was between two and three (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 4). Diagnostic indices (Rodriguez et al., 2016) suggested that the general moral injury factor explained 39% of the common variance overall (ECV = .39; see Table 3.5 for individual ECV values for each item). Furthermore, the model-based omega reliability was excellent for the general factor (ω = .97), Betrayal (ω = .91), Commission under Duress (ω = .92), Commission with Agency (ω = .91), Act of Omission (ω = .92) and Witnessing (ω = .89). The percent of reliable total score variance attributable to the general factor (ωH/ω = .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 3.5 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 PMIE factors were higher than the recommended level of .32 (Tabachnick & Fidell, 2013).

3.8.2 Item Response Theory: 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. Although 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 Appendix B Supplementary Materials.

Table 3.5

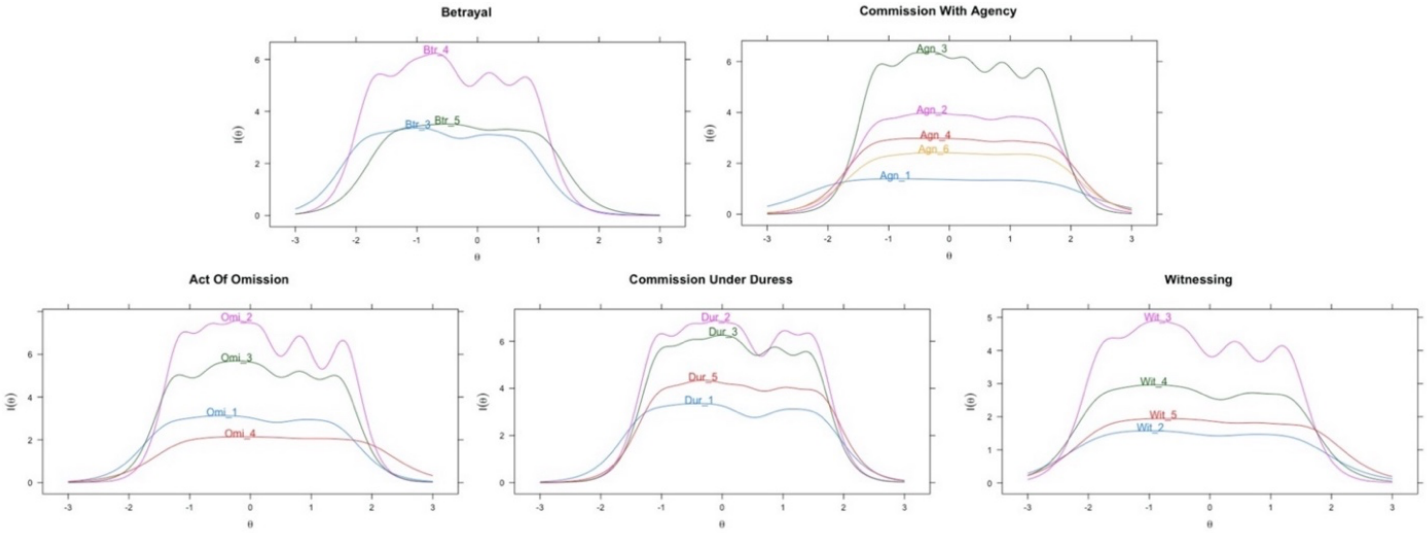
Results from the Bifactor Confirmatory Factor Analysis Showing Standardised Item Loadings in Study 2

		Factor loading						
Item label	Item content	Gen	F1	F2	F3	F4	F5	IECV
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 behaviour 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 behaviour 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

Figure 3.4

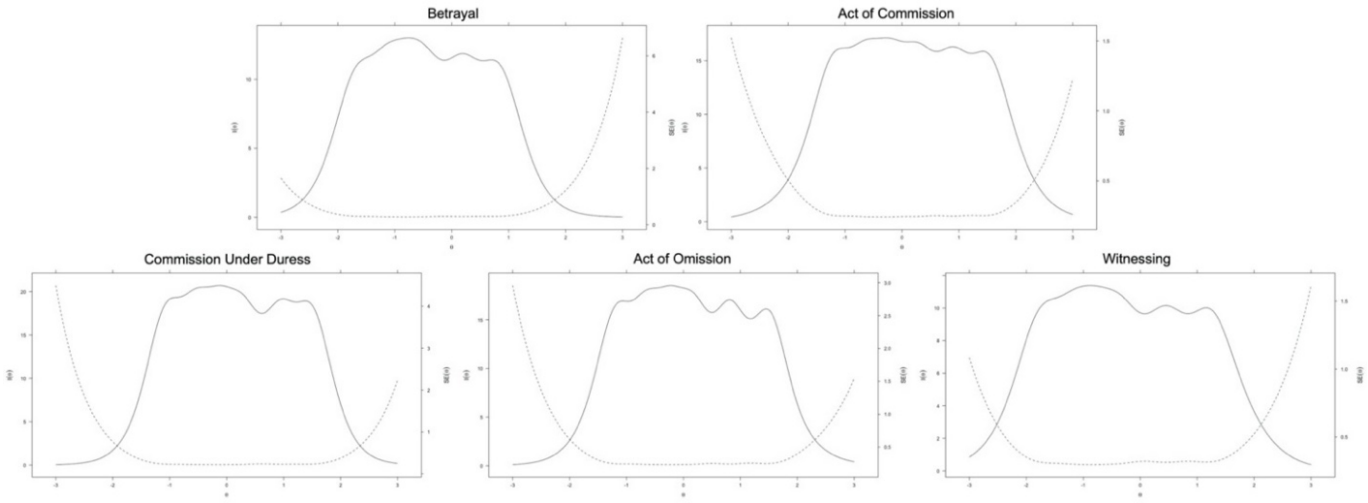
Item Information Curves for Items within Each OMIS Factor in Study 2



Note. The graphs are truncated along θ (-3, +3).

Figure 3.5

Test Information and Standard Error Curves for Each OMIS Factor in Study 2



Note. The standard error is illustrated by the dotted line.

3.8.3 Descriptive Statistics, Reliability, and Validity

Descriptive statistics for the final OMIS are presented in Table 3.6. As with study 1, mean scores for each factor of the OMIS trended higher in women over men (see Appendix B Supplementary 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.

Table 3.6

Descriptive Statistics for the Occupational Moral Injury Scale – Study 2

Study 1	Mean	*SD*	Total Score Range	Cronbach's α	McDonald's ω
Total Score	16.65	5.04	20-140	.95	.95
Betrayal	4.81	1.67	3-21	.90	.89
Commission under Duress	3.84	1.65	4-28	.93	.93
Commission with Agency	3.92	1.48	5-35	.91	.91
Act of Omission	3.91	1.60	4-28	.91	.91
Witnessing	4.54	1.42	4-28	.87	.87

Note: N = 710. *SD* = standard deviation.

Correlations among the latent factors were estimated for the five-factor model and may be seen in Table 3.3. 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 3.7 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 Moral Injury Outcome Scale (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 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.

3.9 **Study 2 Discussion**

Study 2 provided important information about the factor structure, reliability and construct validity of the revised and finalised OMIS. BCFA results affirmed that the OMIS is best conceptualized as five distinct but related PMIE factors, with an overarching general moral injury factor. All items loaded above the minimum threshold on both their own PMIE factor and the general moral injury 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 PMIE factors were reduced to acceptable levels, due to the amendments made in response to Study 1.

Table 3.7

Correlations Between OMIS Subscales and Validity Criteria Subscales in Study 2

	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 Guilt	.31*	.21*[2]	**.32***[1,2]	.28*	.27*	.16*[1]
SSGS 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. $N = 710$. * = significant at Bonferroni-corrected $p < .0005$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. 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

IRT analyses suggested the OMIS measure as a whole captures the moral injury 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 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.

3.10 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 recognised 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 non-military occupations have limited the advancement of knowledge. At present, researchers may utilise one of three measures developed specifically for civilian groups (Chaplo et al., 2019; Mantri et al.,

2020; Roth et al., 2022); 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 PMIEs in a meaningful way, and do not utilise 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 problems in the field, we also unite PMIEs and moral injury symptoms at the item-level, limiting 'concept creep' (Haslam, 2016) and facilitating confidence in construct validity, in addition to utilising a combination of CFA and IRT statistical approaches. Overall, results of this paper suggest the OMIS is a structurally sound, psychometrically valid, and reliable instrument for assessing the presentation of moral injury in occupational settings.

3.10.1 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 PMIEs. This was evidence by excellent model fit, and items loading effectively on their individual PMIE factor as well as the general moral injury factor. The five-factor PMIE 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 have 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 re-experiencing, avoidance, negative alterations in cognition and 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 wellbeing, compassion satisfaction, and all aspects of psychosocial safety including management commitment and priority, and organization commitment and participation. Study 2 demonstrated further support for construct validity, with scores of the finalised OMIS scale showing 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.

3.10.2 Contribution to Conceptual Understanding of Moral Injury

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 come 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 sittings 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 at the way we define the moral injury construct in future research.

3.10.3 Differential Relationships and Theoretical Considerations

Some differential relationships in validity were observed, particularly with the OMIS Betrayal factor that demonstrated 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 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 general sense of trust and presence of meaning. Conceptually, the betrayal aspect of moral injury and negative psychosocial safety 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, 2022a), and where betrayal may manifest operationally as poor psychosocial safety, this is an important avenue for future exploration. A strong shared social identity is powerful protective factor for a range of psychosocial health outcomes (Ellemers et al., 2013; 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 PMIEs (Dollard et al., 2012a; Hall et al., 2013; Law et al., 2011). Our finding that betrayal was both more common and more strongly linked to poorer outcomes also aligns with prior large-scale studies of healthcare workers (e.g., Park et al., 2023, 2024), highlighting the need for organisations to acknowledge and respond effectively to betrayal-related experiences. Future studies may wish to explore whether institutional betrayal plays a mediating or moderating role between exposure to commission and witnessing-based PMIEs 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 for 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 current sense of meaning is damaged, we intrinsically attempt to seek out meaning in our lives to repair from this in an act of post-traumatic 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 sub-clinical narcissism also demonstrated a weak negative relationship, which was consistent with predictions. However, sub-clinical levels of Machiavellianism and psychopathy both demonstrated significant positive relationships with moral injury as measured by the OMIS. Although antithesis to our hypothesis, this may be understood in the context of policing literature that 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 PMIEs 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 paper, 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 moral injury.

3.10.4 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 (83.5% white, 84.36% average or above average SES, 68.8% 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 differentially 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 moral injury measure generalised enough for use across occupational settings without the requirement for ad-hoc adaptation. Although we achieved this aim, it is possible that some sensitivity of measurement may have been lost due to the non-specific language used. Although this is a necessary cost to creating a measure that facilitates generalised 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 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 PMIE exposure. There may be utility for future studies to pre-screen participants with great 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 PMIEs 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. Future research should aim to cross-validate the OMIS in a range of specific occupational settings, to support its use across a variety of occupational settings.

3.10.5 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 moral injury. 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.

Chapter 4

Moral Injury in Health Workers, Emergency Services, Police, Government Officials and Teachers: Measurement Invariance of the Occupational Moral Injury Scale (OMIS) and Group Comparisons

Chapter 4 describes the examination of how the OMIS performs across five different high-risk occupational groups. In this chapter we conduct multigroup bifactor confirmatory factor analyses to establish the scale as measurement invariant across the occupational groups, and between primary genders. We also describe interesting differential findings in how moral injury and functional impairment presents between these groups. This chapter builds on the previous one by validating the OMIS for use in specific occupational groups, supporting out claim of the scale being appropriate for use in any occupational setting. Dr Conal Monaghan and Dr Danushika Sivanathan supported this work with statistical guidance.

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4.1 Abstract

The Occupational Moral Injury Scale (OMIS) was designed to capture both potentially morally injurious events (PMIEs) and a general factor of moral injury symptoms in any occupational setting beyond the military. Although the initial development and refinement of the OMIS demonstrated excellent results, it was undertaken on a combined sample of high-risk occupations. Further research is required to establish the OMIS as a measurement invariant instrument separately in specific occupations. This study ran bifactor multigroup confirmatory factor analyses on a sample of 1,431 participants from five separate, high-risk occupational groups (health workers, emergency services, police, government officials, and teachers) before making direct mean comparisons between groups. The results demonstrated configural, metric, and scalar invariance of the OMIS across all occupational groups tested, as well as between men and women – indicating that items hold generally the same meaning across these groups and that their scores can be appropriately compared. The OMIS was also able to distinguish between occupational groups, according to mean score comparisons. These results validate the OMIS for use across occupational groups and genders, facilitating further research in this space and permitting direct comparisons between diverse occupational groups for the first time.

4.2 Introduction

Moral injury is a construct that captures the pervasive and complex suffering caused by exposure to or involvement in morally violating events. The most widely accepted definition of moral injury states that it may be understood 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 is instigated by the experience of potentially morally injurious events (PMIEs). PMIEs may involve: (a) perpetration events in which the individual is responsible for acting (or failing to act) in such a way that core moral values are violated; (b) situations in which the individual witnesses others committing morally violating acts; or (c) betrayal events in which the individual experiences treatment that violates a social contract of what is right (typically by a trusted leader or authority; Held et al., 2021).

Symptoms of moral injury may be categorized as primary or secondary. Primary symptoms capture initial moral pain and alterations in worldview, and are most commonly recognized as guilt, shame, anger, loss of trust, and existential conflict (Jinkerson, 2016; Koenig et al., 2020; Yeterian et al., 2019). Secondary symptoms often are captured in the harmful or ineffective ways individuals attempt to cope with the primary symptoms – including self-handicapping behaviors, social withdrawal, increased suicide risk, and substance use problems (Farnsworth et al., 2017). A key differentiator of functional moral pain, as opposed to moral injury, is the level of functional impairment experienced as a result of these symptoms (Farnsworth et al., 2017; Griffin et al., 2019; Williamson et al., 2021). Moral injury is also associated with increased risk for clinical anxiety, depression, and PTSD – although it is understood to be distinct from these mental health conditions in its own right (Barnes et al., 2019; Hall et al., 2022).

4.2.1 Occupational Moral Injury

Moral injury as a construct has its origins in the experiences of soldiers during and after deployment, and the majority of research has examined it in this space (Griffin et al., 2019). Increasingly, however, it has been expanded to a range of other high-risk occupations, particularly in the wake of the COVID-19 pandemic. Research has explored moral injury in occupational groups including health and social care workers, first responders, journalists, veterinarians, police, teachers, public sector employees, and child protection services employees (Brennan et al., 2024; Williamson et al., 2018), offering evidence for the widespread applicability of the construct beyond the confines of military literature.

4.2.2 Measurement of Moral Injury in Occupations Outside the Military

Given that most studies have examined moral injury in military settings, most measurement tools have been specifically designed for military populations (Currier et al., 2015; Currier et al., 2018; Koenig et al., 2018; Litz et al., 2022; Nash et al., 2013). Accordingly, measures appropriate for non-military use are infrequent. Several scales for use outside a military context exist, but these often tend to be occupation-specific (meaning they are not easily applicable to broader occupational settings; Mantri et al., 2020; Roth et al., 2022), designed for specific age groups (Chaplo et al., 2019), or do not meaningfully link symptomatic outcomes of moral injury to precipitating PMIEs, potentially causing issues for ‘concept creep’ of the construct (Haslam, 2016; Houle et al., 2024). There is an absence of measurement tools that are appropriate for use across different occupational settings, necessitating researchers to further modify existing scales in an ad-hoc manner. Adaptations of existing military scales have also been made (Thomas, Bizumic, Cruwys, et al., 2024), but there is a need for new measurement tools developed specifically for non-military settings to meet the needs identified above.

4.2.3 The Occupational Moral Injury Scale

Most recently, the Occupational Moral Injury Scale (OMIS; Thomas et al., 2023) was designed to meet the need for a non-military scale, supported for use in any high-risk occupation. The OMIS is a 20-item scale designed to link precipitating PMIE exposure to the symptomatic outcomes of moral injury at the item level when measuring, thereby addressing concerns regarding 'concept creep' of the construct (Haslam, 2016; Haslam & McGrath, 2020) and ensuring it is in fact moral injury experiences that we are capturing. Each item is written in such a way that it captures both exposure to the event and the moral injury outcomes, with these elements being distinguished in measurement through advanced statistical methodology (see Thomas, Bizumic, & Quinn, 2025, for more information). The OMIS employs a bifactor structure, where each item has a dual loading – the first on to one of five key PMIE situations (commission with agency, commission under duress, omission, witnessing, and betrayal), and the second on to a general factor of moral injury symptoms (comprised of guilt, shame, anger, loss of trust, existential conflict), as well as a brief assessment of functional impairment in key life domains. Most importantly, the scale is designed to be sufficiently general in wording to allow its use across any occupational setting without the need for modification. As mentioned, the OMIS employs a five-factor bifactor structure and utilises both confirmatory factor analyses (CFA) and item response theory (IRT) methodology in its development and refinement. The OMIS measure demonstrates excellent model fit and internal consistency, as well as convergent and divergent validity. All test items loaded above minimum thresholds on both their unique PMIE factor and the general factor of moral injury symptoms, supporting the bifactor structure and item design. It was developed using a sample of 1,454 frontline health and first responder workers across two studies.

4.2.4 Aims and Hypotheses

Although the initial development and refinement of the OMIS in high-risk occupational groups demonstrated excellent results (Thomas, Bizumic, & Quinn, 2025), it was undertaken on a combined sample of high-risk occupations. Further research is required to establish the OMIS as measurement invariant separately in specific occupations, thus supporting its claim as being valid for use in any occupational setting. It was expected that establishing measurement invariance in this way would also allow for direct comparison between groups using the OMIS, examining comparative differences in scores across the various subscales and establishing that the OMIS can successfully differentiate between groups.

We aimed to examine the factor structure of the OMIS in five separate occupational groups - health workers, emergency services, police, government officials, and teachers. Each group was chosen because it was identified as high risk for moral injury after a review of the literature (Brennan et al., 2024; Williamson et al., 2018). Measurement invariance was examined using bifactor multigroup confirmatory factor analysis (BMCFA). We also aimed to examine OMIS performance across the two primary genders, conducting a BMCFA between men and women as well. Once measurement invariance was established, we aimed to establish that the OMIS could successfully differentiate between groups by examining mean differences between the occupational groups.

We hypothesised that we would establish configural, metric, and scalar invariance between occupational groups and gender groups alike. We also anticipated that the OMIS would successfully differentiate between occupational groups, and that emergency services, police, and health worker groups would score higher than government officials and teachers on moral injury

subscales and associated functional impairment (Brennan et al., 2024), due to the higher-stakes situations encountered in their work.

4.3 Method

4.3.1 Participants and Procedure

Participants were recruited via the online recruitment platform Prolific. They were remunerated 6 GBP per hour (pro-rata for an estimated 4-minute study). Participants were pre-screened and selected as those indicating they worked within one of the five occupational groups. After reading a participant information sheet and providing consent, participants were redirected to the Qualtrics platform where they completed the OMIS questionnaire. They 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.

The initial sample consisted of 1,644 participants, comprised of five different occupational groups – health workers, emergency services, police, teachers, and government officials. All participants were pre-selected on Prolific because they indicated they worked in one of the specified occupations. Data from seven participants were excluded due to requesting to withdraw their data. Data were then rigorously screened and cleaned prior to analysis. A further 11 participants were excluded due to their response time falling below one third (116 seconds) of the median (350 seconds). An additional 54 participants were removed due to showing no discrimination between test items (responding with the same response for all questions). When completing the survey, a further subset of 139 participants left their occupations unspecified or stated they did not fit the primary occupational categories. These participants' data were also

excluded from further analyses. The final sample, therefore, included in measurement invariance analyses and subsequent demographic details was N = 1,431.

In the final sample, a total of 850 participants identified as women, 565 as men, eight as non-binary, five as transgender men, one as a transgender woman, and two preferred not to disclose gender. The mean age of the sample was 38.23 (SD = 11.36, range: 18-77). In the sample, 1,103 (77.08%) identified their country of citizenship as the UK; 165 (11.53%) as the USA; 56 (3.91%) as Canada; 44 (3.07%) as Australia and New Zealand; 24 (1.68%) as Nigeria, and 15 (1.05%) from Ireland. The remaining 24 (1.68%) participants held citizenship in a mix of different countries. Nearly all participants resided in the UK or the USA. Of the occupations, 203 participants (14.19%) worked in emergency services; 313 participants (21.87%) worked in policing; 294 participants (20.55%) were government officials; 322 participants (22.50%) were health workers; and 299 participants (20.90%) were teachers. Participants' years of service ranged from less than 1 to 53, with a mean of 10.85 years (SD = 9.30).

4.3.2 Measures

4.3.2.1 *Occupational Moral Injury Scale (OMIS)*

The OMIS (Thomas, Bizumic, & Quinn, 2025). The OMIS is a 20-item measure of moral injury experiences in occupational settings. The OMIS assesses five kinds of morally injurious events (commission with agency, commission under duress, acts of omission, witnessing, and betrayal) in addition to a general factor of moral injury symptoms (comprising guilt, shame, anger, loss of trust, and existential conflict), applying a bifactor model structure to do so. Respondents are asked to rate on a 7-point Likert scale how much they agree or disagree with 20 statements describing difficult workplace experiences. The anchors for each point of the Likert scale are: *1.*

strongly disagree; 2. moderately disagree; 3. slightly disagree; 4. neither agree or disagree; 5. slightly agree; 6. moderately agree; and 7. strongly agree. Examples of some of the items include, "I'm angry because my workplace expects a lot from employees but doesn't look after us in turn", "Ignoring my conscience in order to do my job has made it hard for me to trust myself", and "I feel guilty over things I've been made to do at work that I don't morally agree with". The OMIS was developed and validated among frontline health and first responder workers, and displays excellent validity and reliability (Thomas, Bizumic, & Quinn, 2025) Internal consistency reliability, as measured by Cronbach's alpha, in this sample was in the excellent range: betrayal α = .88; commission with agency α = .89; commission under duress α =.89; omission α = .94; witnessing α = .93; total score α = .96.

4.3.2.2 ***Functional Impairment***

A single item assessing functional impairment caused by moral injury symptoms is included at the end of the OMIS scale (Thomas, Bizumic, & Quinn, 2025). The item asks, "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?", with participants rating their response on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). This item is ancillary to the primary OMIS scale and does not contribute to the overall score. Instead, it provides supplemental information to assess the level of functional impairment caused by primary moral injury markers assessed in the OMIS.

4.3.3 Analytic Plan

Bifactor multigroup confirmatory factor analyses using the lavaan package for R (Rosseel, 2012) were used to evaluate the measurement invariance of the OMIS between occupational groups

and between the two primary genders. Multigroup CFA involves the sequential estimation of increasingly constrained multigroup models in a hierarchical manner. Beginning with configural invariance (which is an unrestricted model), followed by metric invariance (constraining item loadings to equality) and then scalar invariance (constraining intercepts of items to equality). According to Chen, (2007), evidence for invariance is supported when the change in Comparative Fit Index (CFI) is less than .01 and the change in Root Mean Square Error of Approximation (RMSEA) is below .015, indicating the tested parameters remain equivalent across groups. When specifying the bifactor model, the general moral injury (G) factor of the BMCFA (moral injury symptoms) was specified as being orthogonal to the five PMIE factors (commission with agency, commission under duress, omission, witnessing, and betrayal), as is required in a bifactor model (Reise, 2012). Fit indices were assessed using the recommended cutoffs (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 then directly examined differences in scores between groups, by running an analysis of variance (ANOVA) for the OMIS total score, each of its five subscales, and the functional impairment score, before conducting Tukey's HSD post-hoc comparisons of estimated marginal means.

4.4 Results

We first ran a bifactor CFA on the sample to establish that the OMIS structure showed good fit. All model fit indices, factor loadings, and latent factor correlations may be found in the

Appendix C Supplementary Materials. The fit indices and factor loadings were excellent according to cut-offs specified by Kline (2016), supporting the factor structure of the OMIS measure and replicating the findings of Thomas et al. (2023) in a different sample. We did note that the correlation value between the commission with agency and commission under duress factors was higher than anticipated; however, finding higher correlations between related constructs in this way is not uncommon, and the five-factor bifactor model tested displayed superior model fit when compared to a four-factor model, which collapsed the two related factors together.

4.4.1 Multigroup Bifactor Confirmatory Factor Analyses

We then conducted a BMCFA to assess the measurement invariance of the OMIS across the five occupational samples, as well as between genders, using the lavaan package for R (Rosseel, 2012). We found the bifactor structure of the OMIS to show configural, metric, and scalar invariance for both occupational group (Table 1) and gender (Table 2), with changes in CFI values less than .01 and RMSEA values less than .015 in both cases.

Table 4.1

Bifactor Multigroup CFA Indices for the OMIS – Occupational Group

Model	df	χ^2	$\Delta\chi^2$	p	CFI	ΔCFI	RMSEA	|ΔRMSEA|
Configural	80	903.18			.977		.056	
Metric	314	941.88	38.702	.266	.977	.000	.053	.003
Scalar	334	974.46	32.573	.037	.976	.001	.052	.001

Note. $N_{POLICE} = 313$. $N_{HEALTH} = 322$. $N_{TEACHER} = 299$. $N_{GOVERNMENT} = 294$. $N_{EMERGENCY} = 203$.

Table 4.2

Bifactor Multigroup CFA Indices for the OMIS – Gender

Model	df	χ^2	$\Delta\chi^2$	p	CFI	ΔCFI	RMSEA	|ΔRMSEA|
Configural	700	1487.1			.971		.063	
Metric	836	1787.9	300.71	>.001	.965	.006	.063	.000
Scalar	920	2025.6	237.72	>.001	.960	.005	.065	.002

Note. N_{WOMEN} = 850. N_{MEN} = 564.

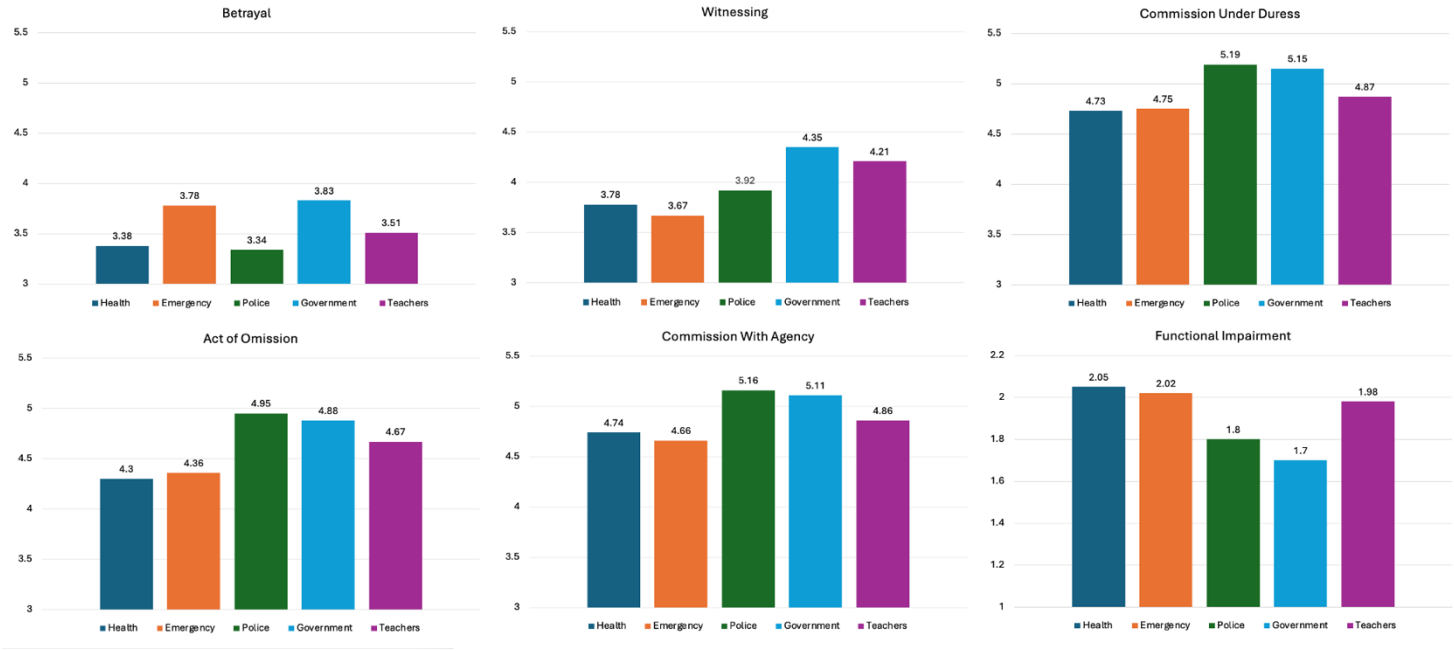
4.4.2 ANOVA Analyses

Given the established scalar invariance of the OMIS, we were justified in using it to conduct mean comparisons between the occupational samples and binary gender groups. However, we do note that the samples used within this study may not be truly representative of their occupation, therefore any observed differences in mean score must be interpreted with caution.

We conducted a two-way analysis of variance (ANOVA) to establish whether the OMIS scale successfully differentiated between occupational groups. Specifically, we investigated the effects of occupation and gender on the OMIS total score, each of its five subscales, and the functional impairment score. Subsequently, we conducted post-hoc comparisons of estimated marginal means. Assumptions were met for the data. Levene's test was non-significant (p = .515), indicating the assumption of equal variance was met. Although Shapiro-Wilk's test was significant (p < .001), this is not a concern for samples over 100 participants (see Kwak & Kim, 2017). Visual depiction of all mean group comparisons between occupations may be seen in Figure 4.1.

Figure 4.1

OMIS Mean Score Comparisons Across Occupational Groups



Note: Possible scores ranged from 1-7 for each OMIS subscale, and 1-5 for the Functional Impairment score. $N_{POLICE} = 313$. $N_{HEALTH} = 322$. $N_{TEACHER} = 299$. $N_{GOVERNMENT} = 294$. $N_{EMERGENCY} = 203$.

4.4.2.1 ***Total Score***

A two-way ANOVA revealed a statistically significant difference in mean total scores between at least two of the occupational groups, $F(4, 1405) = 6.87$, $p < .001$, $\eta^2p = .02$. Tukey's HSD post-hoc test showed the government official group scored significantly differently than health workers ($p < .001$, Cohen's $d = .36$) and emergency services ($p < .001$, Cohen's $d = .39$). Police also scored significantly differently than health workers ($p = .028$, Cohen's $d = .25$) and

emergency services (p = .017, Cohen's d = .28) on total OMIS scores. There was no significant main effect for gender (p = .253) or interaction effect between gender and occupation (p = .572).

4.4.2.2 ***Betrayal***

A two-way ANOVA revealed a statistically significant difference in mean betrayal scores between at least two of the occupational groups, $F(4, 1405) = 4.50$, p = .001, $\eta^2p = 0.01$. Again, Tukey's HSD post hoc test showed the government official group scored significantly differently than health workers (p = .020, Cohen's d = .27), police (p = .001, Cohen's d = .31), and emergency services (p = .026, Cohen's d = .27) on betrayal scores. There was no significant main effect for gender (p = .841), but the interaction effect between gender and occupation was significant, $F(4, 1405) = 2.94$, p = .020, $\eta^2p = 01$. Tukey's HSD post hoc test showed that male (p < .001, Cohen's d = .51) and female (p = .019, Cohen's d = .39) government officials both scored significantly differently than male police on betrayal scores. Male government officials also scored significantly differently than female health workers on betrayal (p = .034, Cohen's d = .35).

4.4.2.3 ***Witnessing***

A two-way ANOVA revealed a statistically significant difference in mean witnessing scores between at least two of the occupational groups, $F(4, 1405) = 20.27$, p < .001, $\eta^2p = 0.02$. Tukey's HSD post hoc test showed that the government group again scored significantly differently than health workers (p = .001, Cohen's d = .33), police (p = .003, Cohen's d = .29) and emergency services (p < .001, Cohen's d = .44) on witnessing. Teachers also scored significantly differently than health workers (p = .031, Cohen's d = .26) and emergency services (p = .001, Cohen's d = .37). There was also a significant main effect for gender, $F(1, 1405) = 5.36$, p = .021, $\eta^2p = .004$.

Tukey's HSD post hoc test showed that men recorded mean scores 0.202 higher than women on witnessing (p = .021, Cohen's d = .13). There was no significant interaction between gender and occupation on witnessing scores.

4.4.2.4 *Omission*

A two-way ANOVA revealed a statistically significant difference in mean omission scores between at least two of the occupational groups, $F(4, 1405) = 9.73$, $p < .001$, $\eta^2p = .03$. Tukey's HSD post hoc test showed that the government official group scored significantly differently than health workers ($p < .001$, Cohen's d = .38) and emergency services (p = .002, Cohen's d = .34) on omission. Police also scored significantly differently than health workers ($p < .001$, Cohen's d = .43) and emergency services ($p < .001$, Cohen's d = .39) on omission. Teachers also scored significantly differently than health workers on omission (p = .014, Cohen's d = .28). There was no significant main effect for gender (p = .179) or interaction effect between gender and occupation (p = .05).

4.4.2.5 *Commission under Duress*

A two-way ANOVA revealed a statistically significant difference in mean commission under duress scores between at least two of the occupational groups, $F(4, 1405) = 5.07$, $p < .001$, $\eta^2p = .01$. Again, Tukey's HSD post hoc test showed the government official group scored significantly differently than health workers (p = .015, Cohen's d = .27) and emergency services (p = .035, Cohen's d = .26) on duress. Police also scored significantly differently than health workers (p = .006, Cohen's d = .30) and emergency services (p = .015, Cohen's d = .28) on duress.

There was no significant main effect for gender (p = .505) or interaction effect between gender and occupation (p = .689).

4.4.2.6 *Commission with Agency*

A two-way ANOVA revealed a statistically significant difference in mean commission with agency scores between at least two of the occupational groups, $F(4, 1405) = 5.18$, $p < .001$, η^2p = .02. Continuing with the pattern, Tukey's HSD post hoc test showed the government official group scored significantly differently than health workers (p = .012, Cohen's d = .34) and emergency services (p = .005, Cohen's d = .35) on commission. Police also scored significantly differently than health workers (p = .008, Cohen's d = .24) and emergency services (p = .004, Cohen's d = .25) on commission. There was no significant main effect for gender (p = .275) or interaction effect between gender and occupation (p = .577).

4.4.2.7 *Functional Impairment Scores*

A two-way ANOVA revealed a statistically significant difference in mean functional impairment scores between at least two of the occupational groups, $F(4, 1405) = 6.14$, $p < .001$, η^2p = .02. Tukey's HSD post hoc test showed the health worker group scored significantly differently than government officials (p = .001, Cohen's d = .34) and police (p = .042, Cohen's d = .24) on functional impairment. Emergency services also scored significantly differently than government officials (p = .002, Cohen's d = .35). Teachers also scored significantly differently than government officials on functional impairment (p = .019, Cohen's d = .26). There was no significant main effect for gender (p = .316) or interaction effect between gender and occupation (p = .122).

4.5 Discussion

Moral injury is the profound suffering and associated functional impairment that may be caused by the violation of deeply held moral values and beliefs. Originally arising from military research literature but increasingly expanding to a range of settings beyond this, existing measurement tools for moral injury outside the military have lagged in their ability to capture the construct across different occupational settings without requiring ad-hoc modification (Houle et al., 2024; Thomas, Bizumic, & Quinn, 2025). The Occupational Moral Injury Scale (OMIS; Thomas et al., 2023) is a recent scale designed to capture moral injury experiences in any occupational setting. Despite being developed on a combined sample of high-risk occupations and designed to be used across any occupational setting, further establishment of the OMIS as measurement invariant across specific occupational groups was needed to support this claim.

4.5.1 Key Findings

The current paper fills this gap by conducting BMCFA across five high-risk occupational groups – health professionals, emergency services, police, government officials, and teachers. As expected, we found configural, metric, and scalar invariance of the OMIS across all occupational groups tested, as well as between the two primary genders (men and women). These results establish the OMIS as supported for use across occupational groups that are known to experience higher levels of moral injury. In addition, the scale demonstrated invariance across the two primary genders, suggesting that items hold the same meaning across men and women, and that their scores could be appropriately compared. Establishing the OMIS as measurement invariant in this way also means that we may now directly compare mean scores between these validated groups. This is something that has not previously been accessible in moral injury research outside the military,

which has relied on use of different measurement tools and ad-hoc modification of existing tools to capture the construct in various settings.

As predicted, the OMIS scale was also able to successfully differentiate between different occupational groups, suggesting it is appropriate to use in a more representative sample to examine mean score differences. We also examined mean score differences between the occupational groups. We, however, do note that our sample was recruited online through the Prolific panelling service and therefore may not be truly representative of each occupation. The following key findings should therefore be interpreted with caution. Nevertheless, we believe that preliminary findings on mean score differences between groups offer interesting avenues for future research and are thus reported here, although our trend of results would need to be replicated in representative samples before we can draw wider conclusions on how moral injury presents across occupational groups.

Contrary to predictions, direct comparisons of scores between occupational groups in our sample showed a consistent pattern of government officials and police scoring the highest across the internally-attributed subscales (measuring commission with agency, commission under duress and omission), followed by teachers (Figure 1). Externally-attributed subscales (measuring witnessing and betrayal) showed a different presentation. Government officials recorded the highest scores on witnessing, followed by teachers and then police. Government officials again reported the highest score on betrayal, followed closely by emergency services; however, all group scores on the betrayal factor tended to be lower than those on the other subscales.

These were unexpected findings, as we anticipated the highest scores in the health, emergency, and police groups due to the higher stakes situations encountered in their line of work

and the greater body of evidence to support the vulnerability of these groups to moral injury experiences due to the nature of their work (Beyond Blue, 2018; Hall et al., 2022; Papazoglou et al., 2020; Williamson et al., 2018). Nevertheless, when examining mean functional impairment scores across groups, a very different pattern was noted – government officials scored the lowest on functional impairment in key life domains experienced as a result of primary moral injury symptoms, despite recording higher scores of those symptoms. The highest scores were reported by health worker and emergency services, followed by teachers.

4.5.2 Theoretical Considerations

Findings on the unexpectedly high OMIS scores in the government official and teaching groups, compared to scores recorded by health workers and emergency services, suggest that moral injury experiences may be more relevant to these groups than previously thought. The policing group performed as we might expect, also reporting higher scores. The inverse trend we noted of functional impairment scores not necessarily marrying up to reported symptoms also establishes the importance of measuring functional impairment as a key component of moral injury. Recent research suggests that the defining characteristic distinguishing more severe moral injury from reactive moral distress is the level of functional impairment caused by the symptoms (Litz et al., 2022; Litz & Kerig, 2019). Moral distress refers to the psychological suffering of individuals in response to moral stressors, whereas moral injury captures both moral distress and the more holistic and drastic alterations to a person's self-concept, meaning-making capacity, and ability to function in important life domains (Litz & Kerig, 2019; Riedel et al., 2022).

Interpreted in light of this literature, what government officials and teachers are experiencing may be more akin to a diffuse state of sustained moral distress, which, while stressful,

may not generally be of a sufficient intensity to cause debilitating levels of associated functional impairment. The risk of experiencing workplace moral distress is exacerbated by pressure to act and produce required work, coupled with a low degree of influence or ability to affect change due to exclusion from input into decision-making processes (Jameton, 1993; Riedel et al., 2022). These groups may be more prone to experiencing such conditions, due to the nature of their work – for example, government officials being beholden to enact the processes and policies of whichever government currently holds power and refraining from any public criticism, regardless of whether these policies align with personal values systems (Gray, 2021; Sciepura & Linos, 2024).

Alternatively, the pattern of scores observed in health and emergency services may indicate that these groups may experience lower levels of day-to-day moral distress, but when moral injury does occur, it causes significantly higher levels of associated functional impairment in important life domains – likely due to the immediate and higher-stakes nature of PMIEs experienced. It is also possible that these professions experience higher levels of professional autonomy on a day-to-day basis, which acts as a protective buffer against lower level moral distress (Abdolmaleki et al., 2019); however, when an PMIE is experienced, this same professional autonomy may leave health and emergency services workers open to more severe moral injury due to the increased sense of responsibility for outcomes that may come with greater influence over day-to-day decision making (Čartolovni et al., 2021). Further research examining the PMIE types across groups and the nature and presentation of symptoms in more representative samples should be a matter of priority. While the findings reported here offer some interesting preliminary insights, they must be replicated in further research before any wider conclusions about the comparative presentation of moral injury in these occupations can be drawn.

4.5.3 Limitations and Future Directions

There are several important limitations to note. First, although the sample groups in this study captured specific high-risk occupations, they did so over an online data collection platform (Prolific) and are therefore not truly representative samples of each occupation. In addition, we did not screen out those who did not meet a minimum threshold of trauma or PMIE exposure. The lower functional impairment scores and moderate mean scores in our sample are reflective of this. Future research should pre-screen participants with greater precision to ensure that samples are truly representative of each occupation. We also recommend that future researchers consider including qualitative methodology to investigate individual differences in the interpretation of test items as participants complete the scale. Doing so will allow more accurate conclusions to be drawn about the way different subtypes of PMIEs present across different occupational settings and across individuals. Future research should also aim to establish norms and clinical cut-off points for the OMIS scale. Doing so would contribute to understanding the meaning OMIS scores hold and the conclusions we may draw from the data.

Although we established the OMIS as measurement invariant across these specific high-risk occupational groups, and between the two primary genders, we have not examined the invariance of the measure across cultural or national groups. Additionally, although we have examined five different occupational groups, the sample demographics remain predominantly white, English-speaking, and of an above average socioeconomic status. It is crucial for the OMIS to be further examined in a broader range of cultural groups, translated as necessary, to assess the relevance of the moral injury construct as it is measured in these settings before we can claim it is valid for use in wider cultural groups. Likewise, further validation with those who do not identify with binary gender groups is important. Although we did screen for a broader range of gender

identification, we only had a sufficient sample size to assess measurement invariance between those who identified as men and women in the current study.

Lastly, although the OMIS model displayed excellent model fit in our sample (see Appendix C Supplementary Materials), it is important to note that the correlation between the commission under duress and commission with agency factors remained high – a finding at odds with prior research (Thomas, Bizumic, & Quinn, 2025). These two factors are the most conceptually similar in the model. Accordingly, a strong correlation is expected; however, the excellent model fit does suggest they remain distinct factors (albeit highly related). When considering this relationship, it is important to draw upon the underpinning theory and not just statistical values. For example, recent research makes the important argument that highly correlated constructs, such as biological sex and gender, may still be distinct and should be treated as such in research (Kaufman et al., 2023). Further research is, therefore, required to delineate the nature and distinctiveness of the commission with agency and commission under duress factors in more depth. We also welcome any future revision of the OMIS scale, in alignment with advances within the research field.

4.5.4 Conclusions

The current paper assessed the recently developed Occupational Moral Injury Scale (OMIS) across five different high-risk occupational settings to examine whether the scale displayed measurement invariance across groups. Configural, metric, and scalar invariance was established across occupations as well as between the two primary genders. Furthermore, the OMIS was able to successfully differentiate between the groups compared, with some interesting preliminary findings on the differential presentation of scores noted. Taken together, our findings suggest that

the OMIS is a valid, reliable measure supported for use in various occupational settings without needing any modification. Furthermore, differential findings on scores between groups suggest that further research into the nature and presentation of moral injury experiences and associated functional impairment in different high-risk occupational settings is warranted – in particular, an examination of moral injury presentation in government officials, which is an area that remains largely unexplored.

Chapter 5

General Discussion

Moral injury is a concept first explored by Homer in the seventh century BC, but has only recently been named and studied within psychological science. As inherently social beings, our well-being hinges on social identity and community, with morality serving as the framework that sustains these connections. Moral distress, leading to moral injury, signals when we deviate from this path. Although research on moral injury has largely focused on military contexts, it is a phenomenon that affects individuals across various high-risk occupations. However, the tools to effectively measure and study it in these contexts remain underdeveloped. Understanding moral injury's causes, consequences, and the need for targeted interventions is critical, and effective measurement is the first step toward addressing these challenges.

This research aimed to address measurement issues of the moral injury construct in non-military settings, by focusing on scale construction efforts and subsequent examination of differences in moral injury presentation across high-risk occupational groups. There were three key research aims:

- To adapt and validate two established existing military measures of moral injury for use in civilian groups – offering psychometric support for existing research that has utilised the measures in this way.

- To develop a psychometrically sound measure of the moral injury construct for non-military settings – including full PMIE construct measurement, linked to primary

moral injury markers, with wording generalised enough to be used across contexts without alteration and utilising a combination of IRT and CFA analyses.

- To establish this new scale as invariant across high-risk occupational groups, before assessing how the moral injury construct presents in these groups and conducting comparisons between them.

This thesis began with a background literature review (Chapter 1) about the history, etiology, conceptual understanding, and theoretical underpinnings of the moral injury construct, and a comprehensive examination, synthesis, and critique of all existing psychometric measurement tools of moral injury prior to the commencement of research. The three research questions were then addressed through four studies described in Chapters 2, 3, and 4. Chapter 2 reported the findings of Study 1 - an empirical study that adapted two popular existing measurement tools of military-specific moral injury, before replicating their factor structure and examining conceptual differences in how moral injury presents in a civilian sample. Chapter 3 described Studies 2 and 3, which were focused on the initial development (Study 2) and then refinement (Study 3) of a new measure of moral injury developed specifically for non-military occupational settings – the Occupational Moral Injury Scale (OMIS). Chapter 4 then examined the measurement invariance of the new OMIS scale across five high-risk occupational groups – health professionals, emergency services, police, teachers and government officials. This study used bifactor multigroup confirmatory factor analyses to validate the OMIS for these specific occupations, before directly comparing moral injury presentation between them.

The current chapter draws together key findings from these studies, contextualises the body of work within the current existing literature, and summarises what can be said about the way moral

injury is measured and presents in occupational settings. Implications for existing theory and clinical practice are also discussed, in addition to strengths and limitations of the research, and directions for the future.

5.1 Overview of the Main Research Findings

5.1.1 Chapter 2

Addressing research aim 1, the first study modified and tested two existing military-specific measures – one focusing on capturing PMIEs (the Moral Injury Events Scale), and the other on capturing moral injury symptomology (the Expressions of Moral Injury Scale-Military). The study tested these adapted measures (renamed the MIES-Civilian and EMIS-Civilian) in a general civilian sample, not restricted by age range or any other demographic. The study investigated the psychometric properties of each measure in depth, assessed how each performed, and examined the differential relationships of each measure to each other and a range of external validation measures of related moral injury symptoms and sequelae (posttraumatic stress symptoms, depression, anxiety, anger, guilt, shame and wellbeing).

Several key findings arose from the study. Firstly, the factor structure of each measure replicated in a satisfactory way within our generalised civilian sample, offering support for each measure's use in non-military research. In contrast to what was predicted, we identified average scores that were equivalent with or higher than those seen in the original development research for each measure (using military samples). We also anticipated, and found, positive associations of the MIES-C and EMIS-C with shame, guilt, anger, depression, anxiety and post-traumatic stress symptoms, and negative associations with generalised wellbeing – offering support for the convergent and divergent validity of our modified scales. Some differential relationships were

noted among PMIE type and symptom outcome in the civilian sample, that were distinct from the typical military presentation.

The most significant contribution of Study 1 was offering a crucial validation study on the modified MIES-C and EMIS-C. In assessing the validity of the scales in a non-military population, we offer further validation and support for a plethora of existing research studies who have already modified and used the MIES and EMIS-M in an ad-hoc manner without first assessing the validity of the scales when used in civilian groups. Although the exact amendments made to the MIES and EMIS-M may still vary across prior research studies, we found the factor structure of the measures were shown to replicate satisfactorily in a general sample, suggesting research that has utilised those measures in civilian settings is valid.

5.1.2 Chapter 3

Addressing research aim 2, Studies 2 and 3 made a significant contribution to the existing field of civilian occupational moral injury, by developing, testing, validating and refining the Occupational Moral Injury Scale (OMIS). The OMIS fills an important gap in the psychometric measurement of civilian occupational moral injury, by offering one of the first measurement tools that link PMIEs to moral injury outcomes at the item level. It is also specific enough to capture the construct well (evidenced by model fit indices and IRT output), yet generalised enough in its wording to allow usage across any occupational setting without modification required – an important step forward to avoid ongoing issues with inconsistent measurement in the field.

5.1.2.1 *Study 2*

Study 2 followed rigorous scale-construction guidelines, utilising data from a group of 748 frontline health and first responder workers. We applied a nuanced bifactor structure, with five PMIE factors and a general factor of moral injury symptoms, with all test items written accordingly to capture both aspects of the construct and to support a dual loading of each item on both the relevant PMIE factor and the general factor. A combination of classical test theory (BCFA) and item response theory analyses were utilised in the development of the OMIS – a statistical approach not yet taken with any existing measure of moral injury that we are aware of. The psychometric findings of Study 2 demonstrated that the factor structure of the new measure worked well. Although the fit indices of the model suggested the five-factor bifactor model demonstrated overwhelmingly the best fit, correlation values between latent factors were much higher than was optimal. Further refinement was required to address these latent factor correlations and to further remove the poorest performing items to generate the finalised OMIS measure.

5.1.2.2 *Study 3*

Study 3 focused on further refinement of the OMIS. We aimed to address any psychometric concerns that arose within Study 2, before generating a nomological net to support the construct validity of the final OMIS measure. Data was gathered from a further 713 frontline health and first responder workers. Limited amendments were also made to a) the wording of each operational definition; and b) the wording of the test items, to ensure their fidelity to the altered operational definitions, before adding five new items to help further emphasise the distinctiveness of each factor. All altered definitions and items then underwent a second expert rater process to ensure fidelity of the item to the definition, and content validity of the items. Bifactor CFA and IRT

analyses were then repeated with the new sample, followed by internal consistency and correlation analyses to establish the nomological net.

The final OMIS model demonstrated excellent BCFA model fit, as well as a good range of IRT coverage – demonstrating that the measure as a whole effectively captured the moral injury construct from 2 *SD* below to 2 *SD* above the mean. Importantly, the alterations to operational definitions and associated items drastically reduced the correlations between latent factors to acceptable levels – suggesting that we were now tapping the heart of each PMIE, with minimised overlap to other related factors, and that the bifactor structure applied to capture five nuanced PMIEs and a general factor of moral injury symptomology was working extremely well. The final OMIS also demonstrated strong internal consistency, and conformed to predicted relationships with moral injury antecedents and outcomes, generating a strong nomological net to support the construct validity of the measure as a whole.

5.1.3 Chapter 4

Study 4 was the final study of the thesis, and focused on establishing the OMIS scale as measurement invariant across different occupational groups, thus supporting our claim that it is appropriate for use in any occupational setting. To this end, we ran bifactor multigroup confirmatory factor analyses on a sample of 1,431 participants from five separate, high-risk occupational groups (health workers, emergency services, police, government officials, and teachers) before making direct mean comparisons between the groups. The results demonstrated configural, metric, and scalar invariance of the OMIS across all occupational groups tested, as well as between men and women – indicating that items hold the same meaning across these groups and that their scores can be appropriately compared. Interesting differential findings in mean scores

between occupations were observed, with government officials consistently recording the highest scores on moral injury symptoms but the lowest on functional impairment. As well as providing novel insights into moral injury presentation in government workers, and offering unique observations on the configuration of moral injury presentation and related functional impairment between groups, our final study validates the OMIS for use across occupational groups and genders. This in turn will facilitate further research in this space and permit direct comparisons between diverse occupational groups.

5.2 Conceptual and Theoretical Implications

The research presented within this thesis offers several important conceptual and theoretical implications for the field of moral injury.

5.2.1 An Expanded Model of Moral Injury

One of the primary contributions of the thesis is an expanded model of moral injury, as detailed within the development, validation and measurement invariance of the OMIS in Chapters 3 and 4. We approached scale construction with a theory-based five-factor bifactor model of moral injury, which was confirmed through BCFA, IRT and BMCFA analyses. This is the more rigorous approach, as opposed to putting a pool of test items through an exploratory factor analysis and seeing what arises (Boateng et al., 2018). Within our model, we have expanded the understanding of morally injurious events, extending this from three to five factors (drawing from prior research to do so). Previously, PMIEs have tended to be grouped into three categories in moral injury measurement – experiences of betrayal, witnessing experiences, and acts of commission (personally committing the violation). Originally extended by Chaplo et al. (2019), we have built on their research by including this differentiation in our own psychometric measure of moral injury,

further refining the operational definitions of the construct and expanding the nomological network. Definitions for each factor of our model can be seen in Table 5.1:

Table 5.1

Operational Definitions of Each Moral Injury Factor in Chapter 3

Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from:	
Betrayal	The violation of a presumptive contract, trust or confidence by a previously trusted individual in the workplace, or by the workplace organisation itself
Commission with Agency	Freely committing acts in the workplace that transgress one's own deeply held moral beliefs and expectations
Commission Under Duress	Being directed or pressured to commit acts in the workplace that transgress one's own deeply held moral beliefs and expectations
Witnessing	Witnessing others commit acts that transgress one's own deeply held moral beliefs and expectations in the workplace, without any ability to stop them
Omission	Choosing not to intervene when witnessing transgressions of one's own deeply held moral beliefs and expectations in the workplace, despite having agency to do so

When considering what differentiated witnessing and omission (which, from an external viewpoint, may appear very similar) we emphasised the *internal* sense of culpability. Although both may appear from the outside like a person witnessing something they perceive as morally wrong, the witnessing factor captures witnessing *without* feeling responsible. Whereas in omission, the most important component is the feeling of personal responsibility via inaction.

When emphasising this distinction in our operational definitions and items, we found a marked reduction of the degree to which these two factors were correlated. It became apparent that three key dimensions of moral injury events emerged – internal culpability, external culpability, and betrayal. The specific factors clustered under each were still distinct enough to warrant

individual measurement in their own right (as evidenced by the excellent five-factor model fit, which did not support collapse into a two-factor structure), however these construct factors were clear. This conceptualisation of internal and external attributions of culpability is compatible with existing research that examines self- and other-directed experiences of moral injury. However, omission has not typically been treated as a distinct factor of moral injury, and has mostly been absorbed into the other-directed component of moral injury in prior research, under the 'witnessing' factor (Bryan et al., 2015; Currier et al., 2018). Our research here suggests when distinguished in measurement, omission is better placed to cluster with internally-attributed experiences (or 'self-directed' moral injury), and operates in a differential way from the other factors. These findings hold important implications for the conceptualisation of moral injury moving forward, and how the construct should be measured in research if we are to fully capture the nuance and breadth of presentation.

In additional to establishing a new model of moral injury, we have also situated this model in a nomological network of related variables. We have established predicted relationships with known correlates such as depression, anxiety, anger, loss of trust, sense of meaning in life and post-traumatic stress symptoms. However, we extend the research by also examining relationship with less explored concepts including psychosocial safety climate, compassion satisfaction, burnout, and certain personality traits.

5.2.1.1 *Psychosocial Safety Climate and Betrayal*

The betrayal factor was markedly the most distinct of the moral injury construct, and demonstrated the weakest relationship to the other four factors in the OMIS (although this factor tended to be still significantly related to them). Betrayal also consistently showed the highest

degree of distress and the strongest positive correlation with burnout, depression and PTSD, and the strongest negative correlation with compassion satisfaction, wellbeing, general sense of trust and presence of life meaning, and all aspects of psychosocial safety climate. Correlations between the betrayal component of moral injury and all aspects of impaired psychosocial safety climate were extremely elevated within our second paper (Thomas, Bizumic, & Quinn, 2023). This finding converges with existing research that begins to suggest that the betrayal dimension of moral injury and impaired psychosocial safety climate may be almost indistinct, with significant overlap between reported PMIEs and the psychosocial hazards identified by regulatory bodies (Layson & Almeida, 2023). Research also suggests that exposure to psychosocial stressors at work causes an individual to be up to 5.58 times more likely to also experience moderate to high levels of moral injury, when compared to individuals who do not experience psychosocial stressors at work (Zahiriharsini et al., 2022), adding further weight to the idea that the two may be indistinct.

The strong association between betrayal and psychosocial safety climate in our research also raises questions around whether in addition to being an equivalent PMIE type in the moral injury construct, betrayal experiences may also play a mediating role between exposure to PMIEs and development of moral injury as an outcome. Existing research supports the moderating role of psychosocial safety climate between job demands and psychological distress (Dollard et al., 2012), and the relationship between the experience of psychosocial stressors at work and increased risk of moral injury (Zahiriharsini et al., 2022). Furthermore, while moral injury reflects appraisals of specific workplace events, research on traumatic embitterment (Brennan et al., 2024) and betrayal-based moral injury (Layson & Almeida, 2023) suggests that repeated morally injurious experiences may also cultivate a dispositional lens through which subsequent workplace situations are interpreted. Further research is required to extend our understanding of the potential mediating role

moral injury betrayal might play in the experience of other types of PMIE and moral injury as an outcome.

Psychosocial stressors most predictive of moral injury include low ethical culture (5.58 increased likelihood of experiencing moderate to high levels of moral injury), low reward (4.43 increased likelihood of experiencing moderate to high levels of moral injury) and high emotional demands in the work (4.32 increased likelihood of experiencing moderate to high levels of moral injury) (Zahiriharsini et al., 2022). These aspects share significant overlap with the PMIEs most frequently reported as harmful by first responders, which include poor resourcing, work overload, trauma in vulnerable groups, lack of appropriate recognition, organisational injustice, and poor support from leaders (Layson & Almeida, 2023). The inclusion of psychosocial safety climate in our nomological network supports this growing body of literature, and holds important implications regarding the areas that we may most effectively target and enhance in an organisational setting, if we are to reduce instances of moral injury. This idea will be discussed further later in the chapter.

5.2.1.2 *Compassion Satisfaction, Burnout, and Personality Traits*

Our research findings in Chapter 3 indicate that moral injury experiences negatively affect the ability of an individual to experience the positive feelings and fulfilment derived from helping others. This finding was true of all PMIE types, with betrayal demonstrating a significantly stronger negative influence on compassion satisfaction. The same relationship was observed with burnout, which refers to the state of emotional, physical, and mental exhaustion caused by prolonged or excessive stress, leading to feelings of depletion, cynicism, and reduced professional efficacy. All PMIE types had a significant positive relationship with burnout, with betrayal again being the strongest predictor of this. These relationships are perhaps not surprising, but do hold meaningful

implications for the importance of taking moral injury seriously and addressing it as a priority. In addition to causing profound suffering for the professionals who must operate in such a state, experiences of burnout and compassion fatigue also hold significant risk for the individuals under the influence of these professionals. There is an established relationship between professional burnout and worsening patient safety among health professionals (Garcia et al., 2019), and a reduction in effective decision making, community engagement and higher turnover rates in police (Queirós et al., 2020). Our findings here extend these known relationships, offering novel evidence to suggest that the harm caused by moral injury does not end with the professional who suffers from it, but can also impact all the individuals within their realm of professional influence and responsibility.

Our findings also noted some novel and interesting relationships between moral injury and personality variables. Findings in Chapter 3 suggest that a general predisposition to poorer mental health does not increase vulnerability to moral injury experiences. Based on prior research, we anticipated a positive relationship of moral injury with neuroticism due to known vulnerability to PTSD and related stress outcomes (Jakšić et al., 2012; Litz et al., 2009; Voecks, 2018), and poorer mental and physical health generally (Lahey, 2009). However, our findings indicated no significant relationship between neuroticism and any aspect of moral injury, as measured with the OMIS. Despite not being what was anticipated, this finding does support the theoretical perspective that all humans are susceptible to moral injury experiences under the right conditions. Our findings here may also offer further support for the reduction in stigma associated with moral injury, suggesting that it is not linked to any perceived personal failing or vulnerability, but is a byproduct of the human condition under harmful moral experiences – as suggested by Farnsworth (2017) in their

functional contextual conceptualization of moral injury. We recommend this finding be replicated and explored further in future research.

Alternatively, we did observe that subclinical levels of Machiavellianism and psychopathy both demonstrated significant positive relationships with moral injury within our second paper. This pattern indicates that susceptibility to moral injury is not restricted to individuals with poorer general mental health (i.e., higher trait neuroticism), but may emerge across individuals under the right circumstances, shaped by particular personality dispositions. This was an unexpected finding that opens up a new avenue of research. Very limited research currently exists linking dark triad personality traits to moral injury experience; however, policing literature has suggested that people higher in these traits may be vulnerable to moral injury experiences, due to the poorer emotion regulation and tendency to perceived invulnerability associated with them, and moral violations being interpreted as a betrayal of their self-concept and ego (Papazoglou et al., 2019).

Moral injury experiences as measured here may therefore reflect both exposure to objectively negative, potentially morally injurious events and individual dispositional tendencies, such as general dissatisfaction, negative appraisal styles, or certain personality traits (e.g., Machiavellianism, psychopathy). This suggests that moral injury is shaped by a complex interplay between situational experiences and personal factors, highlighting the importance of considering both when interpreting scores. Mapping these relationships contributes to the nomological net of moral injury by clarifying how theoretically relevant personality constructs relate to moral injury outcomes, providing insight into potential antecedents and vulnerabilities, informing the interpretation of moral injury scores, and offering implications for future prevention, treatment, and theoretical conceptualisation of the construct (Brennan et al., 2024; Papazoglou et al., 2019;

ter Heide, 2020). This is an area that requires further exploration in future research to fully understand the role personality variables play in moral injury experience. Our findings here represent the first steps in this direction, and offer some preliminary insights into what future researchers may wish to explore.

5.2.2 Moral Injury as a Dimensional Construct

Another key implication of this thesis is further support for the conceptualisation of moral injury as a dimensional construct, incorporating both lower-level moral distress and higher-level moral injury. Within our OMIS scale, we treat moral injury as a dimensional construct existing on a continuum from lower scores to higher. Findings from Chapter 4 support this dimensional conceptualisation, suggesting that moral distress and moral injury present with the same characterisation of emotional symptoms, but that functional impairment is the lynchpin that separates the two, and the point at which reported symptoms and intensity of impairment may diverge. This finding is in line with recent research that supports the crucial role of functional impairment in identifying more severe moral injury (Litz et al., 2022), and which suggests moral distress and injury are different degrees of severity along the same continuum (Litz & Kerig, 2019).

The concept of moral distress is an adjacent field of research, more commonly explored in nursing populations but increasingly overlapping with moral injury research. Houle et al (2024) offer the following definition to differentiate the two:

> The terms ‘distress’ and ‘injury’ may also be understood to represent different degrees of harm experienced across a continuum of moral stressors and outcomes (Litz & Kerig, 2019), with “distress” describing moderate impacts from relatively common moral stressors (e.g., being lied to) and “injury” describing a more severe and functionally impairing

> outcome in response to high stakes and higher magnitude events (e.g., bearing witness to human cruelty) (pg. 2).

There has been much debate within the literature around what is a moral injury and what is a normal reaction or a general symptom of stress. Within our model with align ourselves with the definition posited by Houle and colleagues (2024), arguing that moral distress and injury are two parts of a dimensional construct that represent the lower and higher levels of the continuum. Although it is crucial that we strive to establish clinical cut off points in measurement to avoid pathologising normative reactions to morally distressing situations and to assist in prioritising individuals and populations for treatment and intervention, there is still value in capturing the full range of the spectrum in measurement. It is possible that the different terms ‘distress’ and ‘injury’ contribute to this categorical confusion. Future research may wish to choose one new umbrella term that may represent the full breadth of the construct – both lower level functional and reactive distress, and higher level, functionally impaired moral injury.

Our contributions to the dimensional conceptualisation of moral injury are in synthesis with similar research in other areas, such as in the space of personality disorders. Increasingly, researchers build a compelling case for the movement away from categorical approaches to a more dimensional conceptualisation of mental health conditions. Lahey et al. (2022), posit that within a continuous dimensional model of psychological problems:

> There is continuous variation in the frequency and severity of problems—and the distress and functional impairment associated with them—across the full range of each dimension and that there is no natural or meaningful binary threshold between “having” or “not having” a psychological problem (p. 1).

A dimensional approach works naturally with psychological problems such as moral injury, which are themselves dimensional in nature, and accounts for the inherent lack of consistency in how symptoms may be reported and present from individual to individual. There are key advantages to this approach over a categorical conceptualisation, including more reliable measurement, more valid prediction of adverse outcomes, better ability to account for and accommodate the dimensional, correlated and frequently comorbid nature of psychological problems, greater flexibility in accounting for individual differences, reduction in stigma, and greater clinical utility in practice (Lahey, 2021; Lahey et al., 2022). It is our belief that our understanding and exploration of moral injury will benefit significantly from adopting a similar approach. This is particularly relevant, when considering the functional contextual definition of moral injury put forward by Farnsworth (2017) that positions the experience as the injured end point to an adaptive and necessary psychological process. It is by its very nature the higher end of a spectrum, made up of a constellation of symptoms, changes in world view and functional impairments. The development of the OMIS as a dimensional measurement tool will offer important insights into the range of moral distress and injury presentation across occupational contexts, capturing differential presentations at the lower and higher ends of the spectrum. Reconceptualising moral distress and injury as a combined dimensional construct will also circumvent some of the circular arguments within the research field about what is worthy of the moral injury label, and what is not.

Moving towards a dimensional model of moral injury does not solve the problem of prioritising who requires treatment, in a medical system that is inherently categorical. To this end, despite benefits of the dimensional approach there is a need to establish some clinical cut off points for ‘mild’, ‘moderate’ and ‘severe’ levels of moral injury. The OMIS as a dimensional

measurement tool may be used to further pinpoint clinical tipping points where the distress escalates into more long-term and functionally impairing injury, and this should be a priority of future research. The assessment of functional impairment in conjunction with emotional symptoms and changes in world view is also a critical component of differentiating this continuum, as evidenced within our third paper that found inverse differential results in how these two components present. Such research will be essential if we are to effectively tailor approaches to the treatment and prevention of moral injury, and to reduce the stigma that comes with the condition.

5.2.2.1 *Differential Implications of the Moral Injury Dimensions*

The Mediating Role of Shared Social Identity in Civilian Moral Injury. Chapter 2 presents some important insights into the ways moral injury may differentially present in generalised civilian settings. Specifically, we found that injury was most prominently linked to betrayal and perpetration-based experiences – but not witnessing. This is at odds with previous findings regarding moral injury in military settings, which identified the highest rates of post-traumatic stress symptomology were actually linked to witnessing events (Bryan et al., 2015; Nickerson et al., 2018).

This new finding can be understood in the context of social identity theory, and consideration of the functional role moral pain plays in prompting us to course-correct within our social group. As discussed within Study 1, the key differentiating factor between a military and generalised, non-occupation specific civilian sample that mediates the development of moral injury after exposure to PMIEs may be the lack of a strong shared social identity among civilians who are not otherwise connected to each other – a departure from what is seen within military culture. This

lack of shared social identity or values system may make civilians less susceptible to witnessing-based PMIEs. A civilian may see a PMIE occur, and may feel bad about it, but due to the lack of shared social identity with the perpetrator they may be unlikely to experience distress to a point that would qualify as moral injury. Instead, our findings suggest that generalised civilian groups (not linked by shared occupation) may experience more severe moral injury-related symptomology when there is a direct connection to or shared identity with the perpetrator – namely, when they are the direct transgressor, or when they experience a betrayal perpetration against them by another they (presumably) do identify with.

Just as a strong shared social identity can be an important protective factor in many domains of health and wellbeing (Haslam et al., 2018; Holt-Lunstad, 2021), these findings suggest that so too can it be a vulnerability factor to developing moral injury if the conduct and psychosocial safety climate within the culture of the shared social identity is not attended to and maintained to an acceptable standard of moral/ethical behaviour. Such a finding holds weighty implications for the conduct of workplace organisations, and even the government when representing their nation. The large-scale moral distress experienced in response to government inaction to (or exacerbation of) the recent Israeli/Gaza conflict and escalating consequences of climate change are some examples of this. Findings in Study 4 that demonstrated elevated moral injury scores in government officials would seem to corroborate this theoretical perspective.

Betrayal, Guilt and Shame. Findings from Study 2 and 3 looking at correlations with external validity criteria support previous research suggesting anger is more strongly associated with betrayal, whereas guilt and shame are more strongly associated with internally-attributed experiences (Jordan et al., 2017). This trend was replicated within our scale construction processes,

which found that items tapping guilt and shame loaded most poorly onto the betrayal factor. This was observed in Study 2, but the items were retained to re-confirm their poor loading in Study 3 before they were cut from the scale. When the same pattern was noted within Study 3 (with shame and betrayal items failing to meet the minimum item loading value on the betrayal factor), these two symptoms were cut and assessed as not directly relevant to the experience of betrayal. Anger was consistently the strongest betrayal-related symptom of moral injury, followed by loss of trust and existential conflict. This research finding holds important implications for the effective treatment of betrayal-type moral injury, which will be discussed further in the next section.

5.3 Clinical Implications

5.3.1 Treatment

Taken together, the research discussed within this thesis leads to several key clinical implications for the management, prevention and treatment of occupational moral injury. The first key implication is around the treatment of moral injury. Research on effective treatment protocols for moral injury is still in its infancy. There is promising evidence beginning to emerge for some treatment modalities, including cognitive processing therapy for moral injury (Wachen et al., 2021), prolonged exposure (K. R. S. Jones et al., 2021), acceptance and commitment therapy (ACT) (Walser & Wharton, 2021), and adaptive disclosure therapy (Gray et al., 2021). Cognitive processing therapy is a form of CBT that focuses on processing and reframing the emotional and cognitive responses to moral injury events. Prolonged exposure is a hierarchical exposure-based treatment that aims to overcome avoidance and process/re-balance the emotional and cognitive impact of moral injury. Acceptance and commitment therapy is a third-wave form of CBT that focuses on clarifying core values and promoting psychological flexibility, by accepting difficult emotions, thoughts, and experiences while committing to actions aligned with one’s values.

Adaptive disclosure therapy is based on principles of exposure therapy and CBT, but it also integrates elements of existential and narrative therapy to help individuals address the moral and spiritual dimensions of their experiences. In addition to these psychological approaches, spiritual and chaplaincy-based interventions have also been developed and evaluated (Carey et al., 2016; Harris et al., 2018; Nieuwsma et al., 2021), highlighting the need for an integrative understanding of treatment pathways that encompass both psychological and spiritual dimensions of moral injury.

As previously discussed in our literature review, any treatment approach for moral injury must be carefully managed, to avoid applying inappropriate cognitive restructuring techniques to patient's valid appraisals of a morally injurious experience (Williamson et al., 2021). Although early findings on the effectiveness of these treatments are encouraging, most protocols either do not specify the type of PMIE for which the treatment may be most appropriate or fail to adequately tailor interventions to the differential presentation of moral injury (i.e., internally attributed, externally attributed, or betrayal-based). Additionally, the majority of treatment protocols have been assessed only in military populations. These observations are based on our review of the literature and clinical experience, highlighting the need for research and intervention development that is sensitive to moral injury subtypes and applicable across diverse occupational contexts.

As demonstrated by prior research and supported within this thesis, it is becoming increasingly apparent that there are reliable differential symptoms associated with different types of PMIEs that must be considered for treatment to be effective (Jordan et al., 2017; Thomas, Bizumic, & Quinn, 2025). Emerging evidence suggests that moral injury subtypes may be associated with distinct symptom profiles—for instance, guilt and shame are more prominent following internally attributed events, whereas anger and loss of trust are more characteristic of

externally attributed events, including betrayal (Jordan et al., 2017; Thomas, Bizumic, & Quinn, 2025). Recognising these distinctions is important for guiding the refinement of treatment approaches, as existing protocols may not fully address the unique challenges presented by each subtype.An ACT-based intervention that supports patients to move past debilitating guilt and shame to find meaning again, or replace self-handicapping behaviours with values-driven acts of service, likely will not be as effective with a person suffering from betrayal-related moral injury who is primarily affected by deep anger, and distorted ability to trust others or find meaning in their work or life. Adaptive disclosure therapy (Gray et al., 2021) has perhaps the most targeted treatment for betrayal-type moral injury, explicitly including some guidance on how to tailor components of the treatment for this experience. However, the findings of our research on the distinctiveness of betrayal-based moral injury experiences suggests that for treatment of existing moral injury to be effective, the type of PMIE and primary symptoms experienced must be explicitly considered. Given that betrayal-based moral injury experiences are the most frequently reported in a diverse range of settings (ter Heide & Olff, 2023), it is concerning that we do not have more effective, targeted treatments for this available.

Our research offers support for the importance of developing more targeted interventions for moral injury, based on PMIE event type. The OMIS scale can assist in identifying which PMIE types are of greatest concern within a population, which provides valuable direction on the type of intervention that would be most helpful. Our research also suggests that guilt and shame-based symptoms are not directly relevant to betrayal-based moral injury, so treatment modalities that focus on overcoming these emotions would not be suitable for primarily betrayal-based presentations. Instead, treatment approaches targeting deep anger, loss of trust and existential

conflict are necessary. Further development in the treatment space to address these limitations is crucial, and the findings discussed within our thesis can help guide the direction of this.

We have discussed some of the implications for treatment of moral injury once it has occurred. Perhaps more pertinent to consider is ways to prevent its occurrence in the first place – with a focus on organisational and leadership-level prevention strategies. Further considerations around the prevention of occupational moral injury more broadly in the next section may serve the dual function of also offering guidance on pathways to healing.

5.3.2 Prevention

We now consider the prevention of occupational moral injury. Human morality is inherently social, as was established within our literature review. When considering the prevention of moral injury, we consider it appropriate to examine the research on the management and prevention of psychosocial hazards more broadly, due to the highly related relationship between the two.

Research indicates that one of the key sources of psychosocial strain in an organisation is the combination of high demand workload coupled with low control (Boot et al., 2024). The theory of organisation justice (Greenberg, 1987) also argues that it is essential to workers' wellbeing, performance, and behaviour that they perceive their work organisation to demonstrate fairness and justice in how resources are distributed, procedures and processes are conducted, and how employees are treated. There are many parallels between psychosocial safety climate and the moral injury subtype of betrayal, insofar as betrayal is also characterised as "the violation of a presumptive contract, trust or confidence by a previously trusted individual in the workplace, or by the workplace organisation itself" (Thomas et al., 2023, Suppl. p. 1) – a definition with much

overlap to the concept of impaired organisational justice. Research also identifies a host of health problems that are linked to impaired psychosocial safety at work – with cardiovascular and mental illness being the strongest correlates of this, again with particular associations to organisational justice (Niedhammer et al., 2021; Rugulies et al., 2023). What does this mean for the prevention of moral injury in a workplace setting?

5.3.2.1 ***Prevention is a Leadership Issue***

The research within this space begins to converge to increasingly suggest that prevention must come from leadership, rather than making it an individual problem (Boot et al., 2024). Movement in this direction has been slow, likely due to the large evidence base supporting individual-based interventions, with less evidence supporting organisational strategies and policy change as effective prevention against psychosocial hazards and moral injury (Boot et al., 2024). However, the greater evidence base for individual strategies does not necessarily translate into greater effectiveness (Boot et al., 2024; Schulte et al., 2024; Williamson et al., 2018). The larger evidence pool is due to the greater ease of implementing and assessing strategies targeting individual mental health – Organisational-wide strategies at the policy level are more difficult to implement, change is slower to occur and assess, and it can be more challenging to implement strong research designs for assessing that change (such as randomised control trials) (Boot et al., 2024; Fleming, 2024; Schulte et al., 2024). A part of the difficulty with implementing such research designs and assessing organisation-wide strategies has been the lack of effective measurement tools to measure baseline levels of psychosocial stress and moral injury, and how they might change over time in response to intervention.

Despite the smaller research base, the evidence that does exist for the effectiveness of organisational strategies is considerably stronger than evidence for individually-focussed prevention strategies, which tend to offer limited effectiveness, and little long term, meaningful change (Boot et al., 2024; Fleming, 2024; National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on Systems Approaches to Improve Patient Care by Supporting Clinician Well-Being, 2019; Schulte et al., 2024). Although research is less available due to the logistical challenges discussed, that which does exist offers compelling support for the effectiveness of organisational-level strategies in mitigating psychosocial risk – in particular changing working time arrangements, and offering greater flexibility and influence on work tasks, and improvements of the psychosocial work environment to enhance worker mental health (Aust et al., 2023).

Organisations may have been resistant to implementing policy changes, instead favouring individual mental-health based interventions because these are 'easier' to implement (as discussed), and also shift the onus of responsibility onto the individual rather than the organisation. Nevertheless, laws are beginning to shift that will encourage organisations to take their psychosocial safety obligations seriously. In Australia, recent changes to work health and safety laws (Safe Work Australia, 2022) have now included psychosocial hazards under the OH&S umbrella, proscribing for the first time how employers must identify and manage hazards and risks to workers' psychological health and safety. Moral injury can be considered to fall under this definition. Some examples of psychosocial hazards identified by Safe Work Australia include low job control, poor organisational justice, exposure to traumatic events or material, lack of role clarity, and inadequate recognition and reward (Safe Work Australia, 2022). With these law changes, the penalties for organisations failing to manage psychosocial risk can be steep – with

fines of up to $15 million AUD for corporations and $3 million AUD or a maximum 15 year jail sentence for individuals found guilty of negligence or reckless conduct without a reasonable excuse (Safe Work Australia, 2022). The development of the Occupational Moral Injury Scale has come at the right moment to assist organisations assess moral injury experiences in their workforce, with uptake of the scale in organisational settings already being undertaken for this purpose.

5.3.2.2 *Areas to Target for Meaningful Change*

Strengthening the psychosocial safety climate and reducing incidence of betrayal-type moral injury events are arguably the strongest preventative factors an organisation may wield against moral injury risk specifically, and psychosocial hazards more broadly. The strong relationship between impaired psychosocial safety climate and moral injury identified in our research adds further weight to this directive. Many workers in high-risk occupations recognise and accept the demands of their jobs and engage in this work willingly – often for various values-driven reasons. Likewise, they accept the possibility of exposure to traumatic incidents and the associated risk that comes with this. However, research suggests that it is the perceived experience of betrayal that causes the most psychological harm, above and beyond the experience of trauma exposure alone (Griffith et al., 2024; Martin et al., 2013; Park et al., 2023). Strengthening psychosocial safety climate and minimising perceived institutional betrayal provides a crucial protective buffer between unavoidable PMIE exposure as a part of the job, and development of psychopathological moral injury outcomes. It also provides a protective buffer around the exposure to traumatic incidents that is an inevitable component of many high-risk occupations. Although shifting organisational culture and strengthening psychosocial safety climate may seem like a daunting and inconvenient task among competing demands, it is the only pathway to long term and

meaningful change, and the best defence we have to protect the mental health of our high-risk workers.

Research suggests that there are tangible, modifiable components that workplace organisations can address to foster a 'just culture' and significantly reduce moral injury risk (Layson & Almeida, 2023) – although we also recognise that cultivating a 'just culture' of open discussion can be particularly difficult in contexts where organisations are also navigating legal or compensation processes, a tension that is especially relevant to betrayal-based moral injury.

Some of the areas that evidence recommends prioritising are: fostering 'just culture' by prioritising open communication, repairing harm, space for difficult emotions and learning rather than blaming (Boysen, 2013; van Baarle et al., 2022) and training and supporting management in key protective leadership behaviours (Layson & Almeida, 2023). In a healthcare setting, key logistical and organisational factors with the potential to minimise moral injury risk have been identified as increased staffing, streamlined bureaucracy, greater personal agency in dealing flexibly with patients on a case-by-case basis, greater workplace cultural safety with sharing feelings and concerns, working fewer hours, a workplace that encourages speaking up, and greater emotional and psychological support (British Medical Association, 2021). It is important to note that very few of these suggestions are within individual control, and must come from the organisational and leadership level.

At a policy level, organisations can take proactive steps to reduce the risk of moral injury and foster environments that support recovery when it does occur. Strategies include embedding psychosocial safety principles into organisational policy, ensuring transparent and participatory decision-making processes, and providing accessible avenues for staff to raise ethical concerns

without fear of reprisal (Boysen, 2013; Layson & Almeida, 2023; van Baarle et al., 2022). Leadership training and accountability mechanisms are also critical, as morally injurious events often occur in contexts where trust in leadership has been compromised (Layson & Almeida, 2023). By prioritising these organisational-wide strategies, workplaces can help to minimise exposure to potentially morally injurious events and strengthen staff resilience when such challenges do arise.

5.3.2.3 *Key Contributions of This Thesis to Organisational Moral Injury Prevention and Measurement*

We hope that the research described within this thesis will further advance the cultural shift toward organisational responsibility for mitigating moral injury risk. Although trauma exposure and some moral injury risk is always an inherent part of the work in high risk occupations, many of the major causes of moral injury are modifiable organisational and leadership practices that can have a profound impact on the mental health and wellbeing of workers if taken seriously and addressed (Layson & Almeida, 2023). Our research findings add weight to the significant role psychosocial safety climate plays in mitigating moral injury harm. Furthermore, the ability to easily measure moral injury symptoms and associated functional impairment across organisational contexts with the OMIS will assist with higher quality evidence to support the effectiveness of organisational and leadership strategies, as we are better able to establish baseline measures of each of these, and track longitudinal changes and improvement over time. The limited options for rigorous research methodology and design has previously been a key element that hindered the evidence base to support organisational intervention (Boot et al., 2024). OMIS items are specifically designed so that each symptomatic response is linked to a precipitating potentially morally injurious event (PMIE). This approach ensures that moral injury is measured as a response

to concrete morally injurious experiences, rather than general distress or negative affect, thereby maintaining conceptual clarity and differentiating moral injury from overlapping conditions. The nuanced five factor structure of the OMIS scale will assist organisations to more effectively pinpoint which PMIE types are reported as causing the most harm within their organisation, and to tailor intervention and prevention strategies accordingly. Our bifactor model specifies a single general factor of moral injury alongside five specific PMIE factors, highlighting that the measure captures both overarching moral injury experiences and distinct subtypes, and reinforcing the rationale for reporting both global and subscale scores. We believe that through our research efforts we have been able to offer one small part of the solution to facilitate better quality evidence, and greater understanding into which types of intervention are most effective moving forward.

5.4 Limitations and Future Directions

Despite many meaningful contributions, there are also several limitations to note regarding the research presented within this thesis, as well as suggestions for future directions of research. The first limitation centres on the lack of cultural and ethnic diversity in our sample, which limits our ability to apply findings to other cultures. Like much psychological research, our sample was primarily WEIRD (western, educated, industrialised, rich, democratic) in nature (Henrich et al., 2010). The reasons for limited sample diversity were linked to the need for primary English speakers to construct and validate the OMIS scale (which is in English), and a logistical issue reflecting the demographics of the participants who volunteer across the Prolific platform, which we primarily used for data collection. However, research suggests people in western and eastern cultures demonstrate cultural differences in moral judgement (Awad et al., 2020) and other kinds of higher order cognition (Markus & Kitayama, 1991). Therefore, further validation studies are required to support the use of the OMIS scale in other cultural and national groups beyond what is

represented here. We were able to establish measurement invariance of the scale across occupational groups and primary genders. Future research should aim to translate the scale as required and establish the same invariance across cultural groups as a matter of priority.

The second limitation is regarding the cross-sectional nature of our research design. Although this the most accessible and frequently used method of data collection in psychological research (Wang & Cheng, 2020), the moment-in-time nature means we cannot draw any temporal inferences about the research. We instead rely upon the self-report of participants regarding whether symptoms may be attributed to a relevant PMIE exposure. This is particularly relevant given the sequential nature of the functional moral injury process (Farnsworth et al., 2017), and the inability of cross-sectional methodology to establish cause and effect (Taris et al., 2021). Future research therefore may wish to consider the use of longitudinal methods in high-risk occupations to track exposure and potential development of moral injury over time (if feasible) (Gabriel et al., 2019).

When considering the development and refinement of the OMIS, strong attention was paid to addressing the limitations of existing measures, and following a highly rigorous, theoretically and psychometrically-informed top down scale construction process. One component of this was the intentional use of generalised, non-situational specific language within the test items. The purpose of this was to allow for use of the measure across occupational settings without the requirement of ad-hoc amendment and adaptation without validation, and we achieved this goal. However, a cost of the approach may have been some loss of measurement precision in the way moral injury presents in specific settings. A strength of more specific measures designed for particular occupations may be the ability to use language and PMIE scenarios uniquely relevant to

that setting. Although such approaches limit the utility of the scale in other settings, they may tap into stronger presentations of moral injury or more effectively capture how it uniquely manifests within that particular environment. Furthermore, while the OMIS was designed to capture reactions to discrete potentially morally injurious events, it is possible that participants' responses also incorporate more generalised perceptions of their workplace or enduring personal dispositions. Acknowledging this dual influence may help guide both the interpretation of findings and the design of future measures that differentiate between situational responses and broader dispositional factors.

As the field of measurement and understanding of civilian moral injury progresses, future research may wish to update generalised measures such as the OMIS to include more specific language, revise the factor structure or refine the included PMIE scenarios, if the evidence base to do so is there. Alternatively, others may wish to build upon the foundations the OMIS has laid to develop better measurement tools that more precisely capture our understanding of civilian moral injury as it evolves. Future research may also wish to consider the role of seniority and level of responsibility, as these factors may shape both the likelihood of PMIE exposure and the way such events are experienced.

One last limitation to note regards the use of a non-representative sample obtained by an online data collection service (Prolific) in our scale construction, refinement and invariance studies. Although the sample groups captured specific high-risk occupations, they did so over the Prolific platform where participants self-identify, and are therefore not truly representative samples of each occupation. While Prolific offers screening tools, pre-screening by occupation, and fraud detection procedures, we acknowledge the ongoing concerns regarding fake participants in online research (Martino et al., 2024; Pozzar et al., 2020; Ridge et al., 2023). We

implemented standard attention and data-quality checks, but some, albeit minor, risk of misrepresentation remains.

In addition, we did not screen out those who did not meet a minimum threshold of trauma or PMIE exposure. Future research should pre-screen participants with greater precision and recruit directly from appropriate work organisations to ensure that samples are truly representative of each occupation. Future research should also aim to establish norms and clinical cut-off points for low, mild, moderate and severe presentations of moral injury according to OMIS scores. Our IRT results indicate that the OMIS captures the moral injury trait well at a range of 2 *SD* below to 2 *SD* above the mean, suggesting it does have capacity to capture the experiences of those at the higher end of the distribution. Although we posit that moral injury is a dimensional construct, establishing norms and clinical cut off points will contribute to understanding the meaning OMIS scores hold and the conclusions we may draw from the data. This will also further assist in prioritising higher risk individuals and populations for treatment and intervention in a medical system that is highly categorical by nature.

Lastly, future research may also wish to further examine the mediating role betrayal-type moral injury might play between exposure to PMIEs and development of moral injury as an outcome, given that research suggests betrayal can significantly exacerbate the harm caused by trauma exposure (Martino et al., 2024; Pozzar et al., 2020; Ridge et al., 2023). There would also be utility in validating the OMIS for use in more specific high-risk occupations, beyond those explored within Chapter 4. Research may also wish to utilise the OMIS scale to help widen the evidence base for organisational-level intervention to prevent moral injury, establishing a baseline prior to intervention and longitudinally tracking changes over time. Doing so would make a significant contribution to improving the evidentiary support for organisational strategies to

address moral injury and psychosocial hazards more broadly, which is an area that has impeded the necessary shift away from individual strategies.

Lastly, future research may wish to draw upon the findings of this thesis that highlight the differential symptom outcomes according to PMIE type exposure, to develop clinical treatment methods for moral injury according to PMIE type, instead of treating all forms of moral injury under the same treatment umbrella. We specifically recommend alternate treatment approaches according to whether the PMIE type is internally attributed, externally attributed or betrayal based, given this is the most defining structure causing differential outcomes. Given the lack of available options and high prevalence of betrayal-type moral injury, efforts may be most usefully spent developing effective intervention for externally-attributed and betrayal-based moral injury that do not report guilt and shame as their primary symptoms.

5.5 Summary and Conclusion

This PhD thesis had three primary aims. First, we aimed to modify two established military measures of moral injury and validate them for civilian populations. We explored this in chapter 2, where we modified the MIES-C and EMIS-C, before demonstrating that the factor structure of both scales replicated satisfactorily. In doing so we were able to provide psychometric support for existing studies that have applied these measures in non-military contexts, and affirm the relevance of moral injury in general civilian contexts.

Second, we aimed to address key gaps in the measurement of moral injury beyond the military, by developing a psychometrically robust measure of moral injury in occupational settings. The OMIS tool fills a crucial gap in the psychometric measurement of civilian occupational moral injury by linking PMIEs to moral injury outcomes at the item level while being sufficiently specific

to capture the construct and generalised enough for use across diverse occupational settings. Study 2 established the initial version of the OMIS utilising both IRT and CFA analyses, following rigorous scale-construction guidelines and incorporating data from 748 frontline health and first responder workers. However, further psychometric issues related to latent factor correlations required additional refinement. Study 3 addressed these concerns, refining both the operational definitions and the test items, and incorporating feedback from a second expert review. The final OMIS, with 20 items, demonstrated excellent bifactor model fit, strong internal consistency and construct validity. The refined version also minimised factor overlap, providing a valid and reliable tool for measuring civilian occupational moral injury across various settings.

Our final aim was to establish the OMIS scale as invariant across high-risk occupational groups, and to compare how moral injury presents within these groups. Study 4 achieved this aim, using bifactor multigroup confirmatory factor analyses with a sample of 1,431 participants from five high-risk occupational groups (health workers, emergency services, police, government officials, and teachers). Within this paper we demonstrated configural, metric, and scalar invariance of the OMIS across these groups, as well as between men and women. Our results confirm that the OMIS items hold consistent meaning across groups and that scores can be reliably compared. Notably, we found differential mean scores between occupations, with government officials reporting the highest moral injury symptoms but the lowest functional impairment. This study not only validates the OMIS for cross-group and cross-gender comparisons, but also provides valuable insights into the distinct presentations of moral injury and its related impacts across various occupational settings, paving the way for further research and direct comparisons in this field.

Taken together, the research presented within this thesis has advanced our measurement of moral injury and our theoretical and conceptual understandings of the construct, particularly within civilian occupational contexts. Through the development, validation, and refinement of the OMIS scale, we have addressed critical gaps in the psychometric measurement of moral injury, offering one of the first comprehensive, cross-occupational scales that connect potential moral injury events (PMIEs) with their outcomes. Beyond measurement, we have also added to the growing body of literature on civilian occupational moral injury, offering novel insights on its differential presentation across various high-risk professions, and deepening our understanding of how moral injury manifests across diverse occupational settings and in relation to gendered experiences. We hope that with the addition of the OMIS scale, we offer an avenue for future researchers to more effectively measure and longitudinally track moral injury across occupational contexts, thus informing the development of targeted interventions and prevention strategies and contributing to a stronger evidence base for these. We hope that future research will build on these findings to further explore the diverse manifestations of moral injury across different occupational groups, particularly within high-risk civilian settings.

At our core, humans are social beings, reliant on connection, shared identity, and community to thrive. When our sense of trust and connection is broken or strained through moral violations, the consequences can be deep and lasting. The complexities of modern life and work have made it increasingly challenging to attune to and follow our moral instincts. Yet the instincts remain, and make themselves known with profound suffering when overridden or ignored – especially in high-risk occupations where the stakes are high. It is crucial for organisations to recognise the weight of suffering that comes with moral injury – to do all within their power to protect workers from harm, and to foster a climate where the ability to follow instinct is supported

and betrayal is minimised. In a world where moral challenges are inevitable, we must strive to ensure that those at the frontlines of our society are not asked to make impossible choices without the support of a system that values the worker as much as the work they are asked to do.

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Appendix A

Supplementary Materials for Chapter 2

Table A.1

Modifications between the MIES and MIES-C, and EMIS-M and EMIS-C

	MIES	MIES-C
Instructions	Please circle a number to indicate how much you agree or disagree with each of the following statements about your experiences at any time since joining the military.	Please think about your experiences over the last 6 months, and select a response to indicate how much you agree or disagree with each of the statements.
Item 8	I feel betrayed by fellow service members who I once trusted.	I feel betrayed by friends who I once trusted.
Item 9	I feel betrayed by others outside the U.S. military who I once trusted.	I feel betrayed by others outside my immediate circle who I once trusted.

	EMIS-M	EMIS-C
Instructions	Military service can entail doing or witnessing acts that may affect one's emotional well-being, relationships and later quality of life. When considering your own feelings, beliefs and behaviours related to things that you did/saw in the military, please indicate how much you personally agree or disagree with each statement.	Sometimes we commit or witness acts that may affect our emotional well-being, relationships and quality of life. Please consider your own feelings, beliefs, and behaviours related to your moral experiences, and indicate how much you personally agree or disagree with each statement
Item 1	I am ashamed of myself because of things that I did/saw during my military service.	I am ashamed of myself because of things that I have seen or done.
Item 2	I feel anger over being betrayed by someone who I had trusted while I was in the military.	I feel anger over being betrayed by someone who I had trusted.
Item 3	My military experiences have taught me that it is only a matter of time before people will betray my trust.	My experiences have taught me that it is only a matter of time before people will betray my trust.
Item 4	Because of things that I did/saw in the military, I doubt my ability to make moral decisions	Because of things that I have seen or done, I doubt my ability to make moral decisions

Table A.2

Results from the Confirmatory Factor Analysis Showing Item Loadings for the MIES-C

Item Label	Item Content	Factor Loading		
		1	2	3
Factor 1: Transgression - Other				
Item 1	I saw things that were morally wrong	.72		
Item 2	I am troubled by having witnessed others' immoral acts	.78		
Factor 2: Transgression - Self				
Item 3	I acted in ways that violated my own moral code or values		.77	
Item 4	I am troubled by having acted in ways that violated my own morals or values		.90	
Item 5	I violated my own morals by failing to do something I felt I should have done		.74	
Item 6	I am troubled because I violated my morals by failing to do something I felt I should have done		.78	
Factor 3: Betrayal				
Item 7	I feel betrayed by leaders who I once trusted			.69
Item 8	I feel betrayed by friends who I once trusted			.82
Item 9	I feel betrayed by others outside my immediate circle who I once trusted			.81

Note. All $p < .001$. N = 287. Error covariances between items 7 and 8, and between items 1 and 2 were freed.

Table A.3

Results from the Confirmatory Factor Analysis Showing Item Loadings for the Adapted EMIS-M

Item Label	Item Content	Factor Loading	
		1	2
Factor 1: Self-Directed Moral Injury			
Item 1	I am ashamed of myself because of things that I have seen or done	.50	
Item 4	Because of things that I have seen or done, I doubt my ability to make moral decisions	.56	
Item 5	In order to punish myself for things that I have seen or done, I often neglect my health and safety	.74	
Item 7	I feel guilt about things that happened during my life that cannot be excused	.63	
Item 8	Because of things that I have seen or done, I am no longer worthy of being loved	.69	
Item 11	I sometimes feel so bad about things that I have seen or done that I hide or withdraw from others	.76	
Item 12	Because of things that I have seen or done, I sabotage my best efforts to achieve my goals in life	.74	
Item 14	I am an unforgivable person because of things that I have seen or done	.73	
Item 16	I sometimes lash out at others because I feel bad about things I have seen or done	.69	
Factor 2: Other-Directed Moral Injury			
Item 2	I feel anger over being betrayed by someone who I had trusted		.55
Item 3	My experiences have taught me that it is only a matter of time before people will betray my trust		.60
Item 6	I sometimes enjoy thinking about having revenge on persons who wronged me		.50
Item 9	My experiences have caused me to seriously doubt the motives of people in authority		.67
Item 10	The moral failures that I have witnessed during my life have left a bad taste in my mouth		.72
Item 13	No matter how much time passes, I resent people who betray my trust		.64
Item 15	Things I have seen or done have caused me at times to lose faith in the basic goodness of humanity		.61
Item 17	When I look back on my life, I feel disgusted by things that other people did		.70

Note. All $p < .001$. N = 287. Error covariances between Items 1 and 7, and 8 and 14 were freed.

Table A.4

Results from the Confirmatory Factor Analysis Showing Item Loadings for the MISY

Item Label	Item Content	Factor Loading				
		1	2	3	4	5
Factor 1: Commission with Agency						
Item 1	I have done things to other people that I think are wrong	.77				
Item 2	I have done things to other people that break my own personal rules about what is right and wrong	.65				
Item 3	I have done things that hurt another person	.83				
Item 4	I have done bad things to someone	.87				
Item 5	I have done things to other people that I could be punished for	.72				
Item 6	I have done harm to other people	.74				
Factor 2: Commission under Duress						
Item 7	I have been forced to do things to others that I think are wrong		.66			
Item 8	I have been forced to do things to others that break my own personal rules about what is right and wrong		.64			
Item 9	Someone else has made me do a bad thing to another person		.80			
Item 10	Even though I didn't want to, others have forced me to do hurtful things to people		.89			
Item 11	People have made me do bad things to others even when I didn't want to		.88			
Factor 3: Acts of Omission						
Item 12	I let a bad thing happen to someone when I should have done something to stop it			.74		
Item 13	There have been times when I failed to do the right thing and someone else got hurt			.81		
Item 14	There are times when I have just stood by and let a bad thing happen to a person			.77		
Factor 4: Witnessing						
Item 15	I have seen people do things that break my own personal rules about what is right and wrong				.72	
Item 16	I have seen someone do bad things to other people				.81	
Item 17	I have seen other people do bad things				.88	
Item 18	I have seen people do things I think are wrong				.84	
Factor 5: Betrayal						
Item 19	I have been betrayed by people I once trusted					.83
Item 20	Someone I trusted did something I think is really wrong					.80
Item 21	There are people who have broken my trust					.87
Item 22	I have been let down by people I thought I could trust					.88
Item 23	Someone I should have been able to trust let me down badly					.85
Item 24	There are people I used to trust, but I found out it was a mistake to trust them					.76

Note. All $p < .001$. N = 287. Error covariances between items 7 and 8, and 1 and 2 were freed

Table A.5

MIES-C, EMIS-C and MISY Mean, Standard Deviation and Cronbach's Alpha Values by Demographic Group

Scale	Value	Students (N = 228)	Non-Students (N = 59)	Men (N = 88)	Women (N = 192)	Australian (N = 159)	Non-Australian (N = 127)
MIES-C Total	M	3.67	3.88	3.65	3.74	3.71	3.72
	SD	.94	.89	.90	.96	.93	.95
	α	.84	.86	.79	.86	.82	.86
MIES-C Other	M	4.10	4.27	4.03	4.17	4.14	4.13
	SD	1.12	1.15	1.19	1.10	1.19	1.04
	α	.70	.67	.62	.77	.75	.67
MIES-C Self	M	3.64	3.81	3.76	3.63	3.69	3.66
	SD	1.22	1.20	1.15	1.25	1.19	1.25
	α	.89	.90	.83	.92	.88	.90
MIES-C Betrayal	M	3.43	3.70	3.26[1]	3.61[1]	3.45	3.53
	SD	1.30	1.20	1.37	1.27	1.36	1.24
	α	.83	.81	.82	.81	.82	.81
EMIS-C Total	M	2.63	2.75	2.61	2.66	2.61	2.71
	SD	.72	.79	.75	.73	.70	.78
	α	.89	.90	.89	.90	.88	.91
EMIS-C Self	M	2.56	2.67	2.56	2.58	2.56	2.61
	SD	.74	.80	.76	.74	.70	.80
	α	.81	.84	.81	.82	.80	.84
EMIS-C Other	M	2.71	2.85	2.68	2.74	2.66	2.82
	SD	0.77	.83	.80	.78	.76	.81
	α	.79	.81	.78	.81	.78	.81
MISY Total	M	3.26	3.48	3.32	3.30	3.29	3.32
	SD	.61	.57	.71	.56	.59	.63
	α	.90	.92	.92	.90	.90	.92
MISY Commission	M	3.12	3.31	3.40[2]	3.05[2]	3.17	3.15
	SD	.93	.86	.96	.89	.89	.96
	α	.90	.84	.78	.89	.89	.91
MISY Duress	M	2.22	2.14	2.21	2.19	2.20	2.20
	SD	.89	.93	1.02	.82	.86	.94
	α	.89	.91	.91	.88	.87	.91
MISY Omission	M	3.33	3.51	3.37	3.38	3.37	3.36
	SD	.96	.92	.97	.97	.94	.98
	α	.81	.83	78	.85	.81	.83
MISY Witnessing	M	4.02[3]	4.33[3]	4.01	4.13	4.04	4.14
	SD	.76	.66	.89	.67	.78	.68
	α	.87	.88	88	.88	.88	.88
MISY Betrayal	M	3.73[4]	4.17[4]	3.69	3.90	3.79	3.86
	SD	.95	.81	1.06	.87	.99	.88
	α	.92	.92	92	.93	.94	.92

Note. M = mean, *SD* = standard deviation, α = Cronbach's alpha. Significant mean difference comparisons are highlighted in bold with numbered superscript. *P* values for each significant mean difference are: 1 = .037, 2 = .003, 3 = .005, 4 = .00

Table A.6

Full Correlations Between All Subscales – Chapter 2

	MISY Duress	MISY Omiss	MISY Witness	MISY Betrayal	EMIS-C Self	EMIS-C Other	MIES-C Other	MIES-C Self	MIES-C Betrayal	DASS Dep	DASS Anx	DAR-5 Anger	PFQ Shame	PFQ Guilt	PCL-C PTSS	WEMWBS Wellbeing
MISY Agency	.39***	.51***	.39***	.25***	.31***	.20**	.24***	51***	.25***	.16**	.11	.21***	.20**	.18**	.13*	-.14*
MISY Duress	-	.30***	.13*	.16**	.39***	.30***	.15*	.21**	.23***	.12	.17**	.22***	.19**	.18**	.23***	-.11
MISY Omission		-	.46***	.23***	.27***	.28***	.28***	.45***	.29***	.11	.15**	.19**	.24***	.17**	.08	-.10
MISY Witness			-	.50***	.08	.24***	.32***	.31***	.25***	.17**	.10	.19**	.13*	.05	-.09	-.16**
MISY Betrayal				-	.14*	.39***	.30***	.17**	.56***	.24***	.15*	.29**	.12	.11	.02	-.15**
EMIS-C Self					-	.52***	.24***	.41***	.31***	.51***	.49***	.58***	.48***	.54***	.43***	-.37***
EMIS-C Other						-	.28***	.23***	.46***	.46***	.39***	.52***	.41***	40***	.41***	-.36***
MIES-C Other							-	.43***	.29***	.08	.09	.18**	.09	.11	.07	-.08
MIES-C Self								-	.33***	.24***	.26***	.28***	.23***	.25***	.17**	-.21**
MIES-C Betrayal									-	.30***	.28***	.33***	.26***	.23***	.18**	-.24***
DASS Dep										-	.66***	.67***	.54***	.52***	.37***	-.73***
DASS Anx											-	.71***	.58***	.54***	.40***	-.48***
DAR-5 Anger												-	.64***	.59***	.45***	-.52***
PFQ Shame													-	.70***	.40***	-.40***
PFQ Guilt														-	.38***	-.37***
PCL-C PTSS															-	-.26***
WEMWBS																-

Note. *** p <.0003, ** p <.01, * p <.05

Priming Statement and Exercise

Sometimes we experience an inconsistency between the people we want to be and the people we are. In today's world we often see things that violate our core beliefs on what is right. Knowing what to do and how to do it can be difficult, meaning we can fall short of living up to our moral values. Other times we may act in ways that go against what we believe to be right, intentionally or unintentionally.

The failure to make a moral difference or breaking of your own moral code can lead to feelings of distress. Moral distress is experienced differently by different people, but may cause feelings of shame, guilt, anger, anxiety or sadness, and may affect the way we see the world. These feelings may be experienced in different levels of intensity and for a short or longer amount of time, according to the moral violation/s you experience.

Please take a moment to think about some of the recent times you have experienced or saw something morally distressing or failed to act in accordance with your values of right and wrong.

Briefly describe the experience/s that have come to mind below:

Fact (what occurred?)

Feeling (what did you feel?)

Action (what did you do, or not do?)

Reason for Action (why did you act, or not act in this way?)

Appendix B

Supplementary Materials for Chapter 3

Table B.1

Operational Definitions of Each Factor of the OMIS – Original and Revised

Factor	Original Definition (Study 1)	Revised Definition (Study 2)
Betrayal	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from the violation of a presumptive contract, trust or confidence by a previously trusted individual in the workplace, or by the workplace organisation itself	No changes
Commission Under Duress	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from being directed or pressured to commit acts in the workplace that transgress one's own deeply held moral beliefs and expectations	No changes
Commission With Agency	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from committing acts in the workplace that transgress one's own deeply held moral beliefs and expectations	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from freely committing acts in the workplace that transgress one's own deeply held moral beliefs and expectations
Act of Omission	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from personally failing to act when witnessing transgressions of one's own deeply held moral beliefs and expectations in the workplace.	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from ~~personally failing~~ choosing not to intervene ~~act~~ when witnessing transgressions of one's own deeply held moral beliefs and expectations in the workplace, despite having agency to do so

Witnessing	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from witnessing others commit acts that transgress one's own deeply held moral beliefs and expectations in the workplace.	Negative psychological outcomes (guilt, shame, anger, loss of trust, or existential conflict) that result from witnessing others commit acts that transgress one's own deeply held moral beliefs and expectations in the workplace, without any ability to stop them

Table B.2

Operational Definitions of Each Primary Marker of Moral Injury of the OMIS

Moral Injury Primary Marker	Operational Definition
Guilt	The painful feeling of being remorseful and regretful because of one's actions, which violate one's own standards.
Shame	The painful, negative evaluation of the self, caused by one's acts or experiences which are perceived to violate societal standards of morality or decency.
Anger	A strong feeling of displeasure, dissatisfaction, or annoyance, generally combined with antagonism or hostility towards a particular cause or object.
Loss of Trust (*in self, others or organisation*)	Loss of confidence or faith in the reliability, truth, or ability of someone or something.
Existential Conflict	Questioning whether your life and/or work has meaning, purpose, or value, and being negatively impacted by the contemplation.

Table B.3

Study 1 - Fit Indices for total sample VS sample with deleted 'unspecified/other' participants of the OMIS

Participant Group	*df*	χ^2	χ^2/df	*p*-value	RMSEA	95% CI	CFI	TLI	SRMR	AIC	BIC
Total (*N* = 744)	241	699.30	2.90	< .001	.05	.046-.055	.97	.97	.03	60125.85	60513.53
Deleted unspecified (*N* = 672)	241	663.68	2.75	< .001	.05	.047-.056	.97	.97	.03	54240.21	54618.94

Figure B.1

Study 1 - Item Information Curves for Items within Each OMIS Factor, with 'unspecified/other' participants deleted

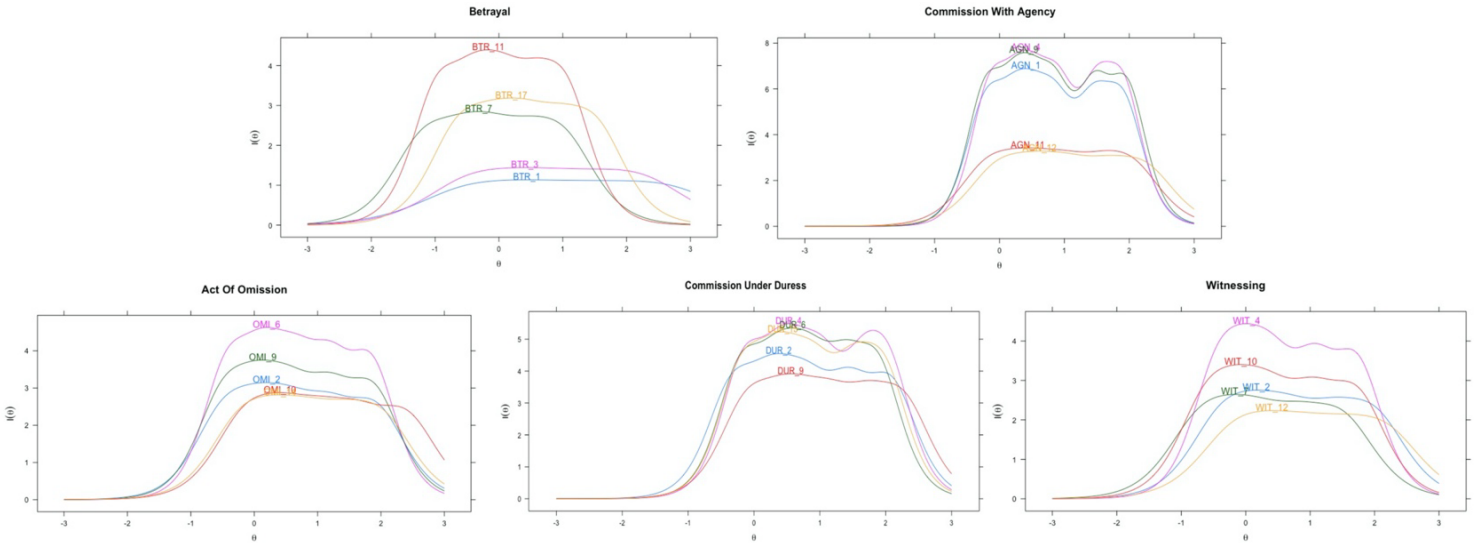

Table B.4

Study 2 - Fit Indices for total sample VS sample with deleted 'unspecified/other' participants of the OMIS

Participant Group	*df*	χ^2	χ^2/df	*p*-value	RMSEA	95% CI	CFI	TLI	SRMR	AIC	BIC
Total ($N = 710$)	141	421.411	2.99	< .001	.05	.047-.059	.98	.97	.06	45263.51	45578.51
Deleted unspecified ($N = 641$)	141	431.641	3.06	< .001	.06	.047-.056	.97	.96	.06	40731.02	41038.86

Figure B.2

Study 2 - Item Information Curves for Items within Each OMIS Factor, with 'unspecified/other' participants deleted

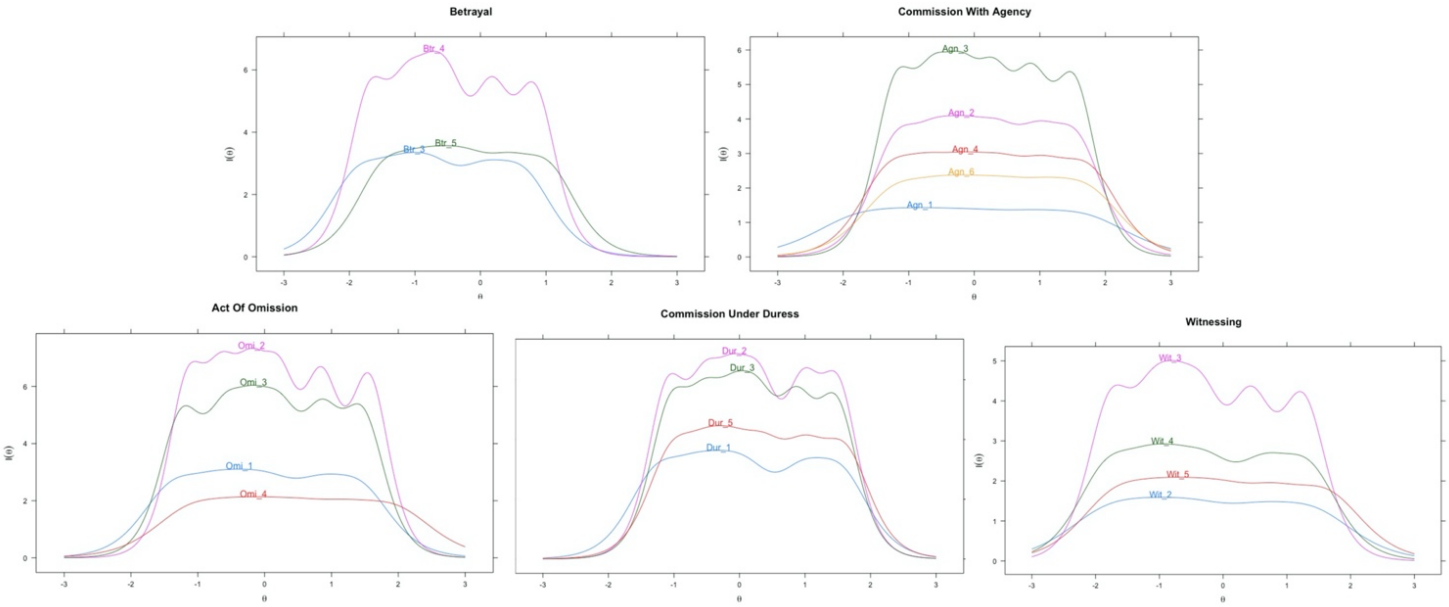

Table B.5

Results from the Bifactor Confirmatory Factor Analysis Showing Standardised Item Loadings in Study 1

Item label	Item content	Factor loading						
		Gen	F1	F2	F3	F4	F5	IECV
Factor 1: Betrayal								
Btr_1	I feel guilty since I found out it was a mistake to trust my employer	.59	.44					.64
Btr_3	I feel shame about being betrayed by my workplace	.57	.47					.60
Btr_7	I am angry because my workplace expects a lot from employees but does not look after us in return	.25	.84					.08
Btr_11	Experience has shown me that I cannot rely on my workplace to look after me	.33	.81					.14
Btr_17	The way my workplace has failed to look after me makes me question my career	.48	.65					.35
Factor 2: Commission Under Duress								
Dur_2	I feel guilty over things I've had to do at work that I don't morally agree with	.48		.74				.30
Dur_4	I'm ashamed of myself because of things I've had to do at work that go against my conscience	.61		.61				.50
Dur_6	I'm angry because I've been made to do things in the workplace that go against my beliefs about right and wrong	.55		.68				.39
Dur_9	The morally questionable things I've had to do as a part of my job have broken my trust in myself and others	.66		.52				.62
Dur_15	It's difficult for me to find meaning in the morally questionable things I've been made to do at work	.57		.67				.42
Factor 3: Commission with Agency								
Agn_1	I feel guilty for having done things at work that go against my conscience	.46			.79			.25
Agn_4	I'm ashamed of having done things in my job that go against my beliefs about right and wrong	.51			.76			.31
Agn_9	I feel anger when I think about things I've done at work that don't align with my moral values	.53			.72			.35
Agn_11	I question whether I can trust others because of workplace decisions I've made that go against my conscience	.60			.58			.51
Agn_12	I've lost faith in my profession because of things I've done at work that go against my beliefs about right and wrong	.67			.52			.63
Factor 4: Act of Omission								
Omi_2	I feel guilt over times at work when I wasn't able to act to correct something I knew was morally wrong	.36				.77		.18

Omi_6	I've let myself down by doing nothing to stop things I knew were not right from happening in the workplace	.49	.74	.24
Omi_9	I'm angry that I haven't done more at work to stand up against things that go against my beliefs about right and wrong	.41	.75	.23
Omi_10	Ignoring my conscience in order to do my job has made it hard for me to trust myself	.61	.53	.57
Omi_14	Allowing things that go against my conscience to continue happening at work has made me question my choice of profession	.66	.53	.61
Factor 5: Witnessing				
Wit_2	I experience a lot of guilt over things I have seen others do in the workplace that go against my values about right and wrong	.45	.66	.31
Wit_4	I am ashamed of the unethical behaviour I've seen from others in my workplace	.38	.77	.20
Wit_7	I feel angry when I see others do things at work that go against my values about right and wrong	.27	.77	.11
Wit_10	Seeing people do things I don't morally agree with in the workplace has made me wary of trusting others	.47	.68	.33
Wit_12	The unethical behaviour I've seen at work has broken the sense of purpose I used to have	.68	.49	.67

Gen = General moral injury Factor; Individual Explained Common Variance (IECV)

Table B.6

Comparative Fit Indices for Regular CFA - Study 1

CFA Model	*df*	χ^2	χ^2/df	*p*-value	RMSEA	95% CI	CFI	TLI	SRMR
5-factor	265	1007.322	3.80	< .001	.06	.057-.065	.81	.79	.11
4-factor	269	1043.613	3.88	< .001	.06	.058-.066	.80	.78	.12
3-factor	272	1160.47	4.26	< .001	.07	.058-.066	.77	.75	.14

Table B.7

Comparative Fit indices for Hierarchical CFA - Study 1

HCFA Model	*df*	χ^2	χ^2/df	*p*-value	RMSEA	95% CI	CFI	TLI	SRMR
5-factor	270	1463.6	5.42	< .001	.08	.073-.081	.93	.92	.06
4-factor	271	1656.58	6.11	< .001	.08	.079-.087	.92	.91	.05
3-factor	272	1882.157	6.91	< .001	.09	.076-.083	.90	.90	.05

STUDY 1: Item Response Theory Information Parameters for Each Factor of the OMIS Shortlist

Betrayal

There were 744 complete cases for the OMIS Betrayal five-item subscale. EFA revealed that the first two eigenvalues were 3.01 and 0.22, suggesting a unidimensional construct. The first factor accounted for 60% of the total variance. Yen's Q3 suggest that Item 11 had high residual correlations with other items 1, 3 and 17 (> 0.3). However, some local dependence 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). The five items of the Betrayal scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.8. None of the items had an S-χ^2 value significant at .001 level, suggesting the model predicted the responses of all items well. The discrimination parameters (α) ranged from 2.031 to 3.275, suggesting all final items had strong discrimination power.

Table B.8

Parameter Estimates of the Graded Response Model for the Betrayal Subscale – Study 1

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Btr_1	2.031	0.451	0.153	0.564	1.211	1.876	2.502	77.000	71	0.293
Btr_3	2.146	-0.422	0.125	0.480	1.014	1.671	2.196	89.975	75	0.114
Btr_7	2.988	-1.093	-0.573	-0.308	-0.020	0.534	1.031	78.881	63	0.086
Btr_11	3.513	-0.929	-0.437	-0.169	0.127	0.607	1.072	74.396	62	0.134
Btr_17	3.275	-0.585	-0.112	0.220	0.487	0.977	1.477	72.082	70	0.409

Commission under Duress

There were 744 complete cases for the OMIS Commission under Duress five-item subscale. An EFA revealed that the first two eigenvalues were 3.72 and 0.03, suggesting a

unidimensional construct. The first factor accounted for 74.5% of the total variance. Yen's Q3 suggest that Duress Item 4 had a high residual correlation (> 0.3) with other Duress item 15 – However, some local dependence 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). The remaining 5 items of the Duress scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.9. Three of the items had an S-χ^2 value significant at .001 level, however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 3.563 to 4.303, suggesting all final items had strong discrimination power.

Table B.9

Parameter Estimates of the Graded Response Model for the Commission under Duress Subscale – Study 1

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Dur_2	3.784	-0.304	0.190	0.416	0.798	1.401	2.058	87.146	49	0.001
Dur_4	4.303	-0.149	0.344	0.598	1.014	1.612	2.010	69.906	45	0.010
Dur_6	4.245	-0.197	0.312	0.556	0.857	1.367	1.848	88.130	51	0.001
Dur_9	3.563	-0.096	0.397	0.669	1.124	1.711	2.186	88.907	54	0.002
Dur_15	4.290	-0.19	0.257	0.493	0.899	1.488	1.926	86.558	49	0.001

Commission with Agency

There were 744 complete cases for the OMIS Commission with Agency five-item subscale. An EFA revealed that the first two eigenvalues were 3.79 and 0.06, suggesting a unidimensional construct of the Commission with Agency scale. The first factor accounted for 75% of the total variance. Yen's Q3 suggest that Commission Item 9 had a high residual correlation (> 0.3) with Commission items 1 and 4. However, some local dependence 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). The remaining five items of the Commission with Agency scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.10. Three of the items (1, 11, 12) had an S-χ^2 value significant at .001 level, however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 3.282 to 5.208, suggesting all final items had strong discrimination power.

Table B.10

Parameter Estimates of the Graded Response Model for the Commission with Agency Subscale – Study 1

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Agn_1	4.949	-0.203	0.224	0.460	0.812	1.429	1.851	88.403	43	0.000
Agn_4	5.208	-0.141	0.252	0.491	0.858	1.467	1.874	51.842	39	0.082
Agn_9	4.892	-0.208	0.232	0.460	0.829	1.433	1.907	64.944	42	0.013
Agn_11	3.427	-0.186	0.244	0.558	0.990	1.548	2.004	98.769	57	0.001
Agn_12	3.282	-0.030	0.407	0.687	1.067	1.624	2.180	122.238	58	0.000

Omission

There were 744 complete cases for the OMIS Omission five-item subscale. An EFA revealed that the first two eigenvalues were 3.40 and 0.09, suggesting a unidimensional construct of the Act of Omission scale. The first factor accounted for 68% of the total variance. Yen's Q3 suggest that no items had a high residual correlation (> 0.3) with any other. The remaining five items of the Omission scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.11. Three of the items had an S-χ^2 value significant at .001 level – however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023).

The discrimination parameters (α) ranged from 3.031 to 3.790, suggesting all final items had strong discrimination power

Table B.11

Parameter Estimates of the Graded Response Model for the Omission Subscale – Study 1

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Omi_2	3.250	-0.449	0.035	0.238	0.550	1.144	1.845	125.633	60	0.000
Omi_6	3.790	-0.438	0.027	0.249	0.653	1.193	1.798	106.205	56	0.000
Omi_9	3.496	-0.473	-0.046	0.187	0.574	1.156	1.816	86.510	58	0.009
Omi_10	3.031	-0.152	0.256	0.549	1.065	1.589	2.266	111.306	61	0.000
Omi_14	3.031	-0.216	0.202	0.456	0.870	1.421	1.976	81.130	61	0.043

Witnessing

There were 744 complete cases for the OMIS Witnessing five-item subscale. An EFA revealed that the first two eigenvalues were 3.24 and 0.10, suggesting a unidimensional construct of the Witnessing scale. The first factor accounted for 64% of the total variance. Yen's Q3 suggest that Witnessing Item 10 had a high residual correlation (> 0.3) with Witnessing items 2 and 4. However, some local dependence 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). The remaining five items of the Witnessing scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.12. All of the items had an S-χ^2 value significant at .001 level – however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 2.653 to 3.810, suggesting all final items had strong discrimination power.

Table B.12

Parameter Estimates of the Graded Response Model for the Witnessing Subscale – Study 1

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Wit_2	3.039	-0.351	0.016	0.256	0.659	1.333	1.909	125.633	60	0
Wit_6	3.810	-0.416	-0.112	0.106	0.413	1.057	1.673	106.205	56	0
Wit_9	2.864	-0.694	-0.370	-0.117	0.185	0.833	1.470	86.510	58	0
Wit_10	3.240	-0.572	-0.243	-0.007	0.341	1.000	1.643	111.306	61	0
Wit_14	2.657	-0.181	0.197	0.481	0.956	1.555	2.161	81.130	61	0

Table B.13

Mean and Standard Deviation Values According to Demographic Group – Study 1

Demographic Group	Value	Betrayal	Commission	Duress	Omission	Witnessing	Total OMIS
Men (N = 260)	*M*	3.37	3.15	2.95	3.21	3.37	3.21
	SD	1.55	1.45	1.39	1.52	1.55	1.43
Women (N = 479)	*M*	3.43	3.19	3.00	3.31	3.42	3.27
	SD	1.68	1.56	1.48	1.61	1.67	1.54
Police (N = 199; 93 women, 105 men, 1 non-binary)	*M*	3.41	3.21	2.97	3.25	3.40	3.25
	SD	1.63	1.51	1.47	1.59	1.65	1.52
First Responders (N = 90; 46 women, 42 men, 2 non-binary)	*M*	3.60	3.32	3.11	3.51	3.56	3.42
	SD	1.51	1.36	1.19	1.44	1.56	1.32
Allied Health (N = 114; 95 women, 19 men)	*M*	3.54	3.28	3.07	3.41	3.56	3.37
	SD	1.67	1.60	1.53	1.58	1.62	1.53
Frontline Health (N = 171; 125 women, 45 men, 1 non-binary)	*M*	3.47	3.17	3.03	3.34	3.48	3.30
	SD	1.61	1.49	1.41	1.50	1.58	1.45
Admin/Hospital (N = 33; 27 women, 5 men, 1 non-binary)	*M*	2.92	2.82	2.65	2.82	2.82	2.81
	SD	1.59	1.67	1.54	1.72	1.57	1.57
Other Medical (N = 64; 41 women, 23 men)	*M*	3.30	2.93	2.87	3.13	3.34	3.11
	SD	1.69	1.45	1.53	1.69	1.64	1.54
< 5 Years of Service (N = 310)	*M*	3.18	3.01	2.86	3.07	3.16	3.06
	SD	1.62	1.48	1.43	1.57	1.61	1.48
5-10 Years of Service (N = 210)	*M*	3.56	3.23	3.02	3.35	3.52	3.34
	SD	1.61	1.48	1.36	1.53	1.56	1.44
11-20 Years of Service (N = 157)	*M*	3.60	3.43	3.17	3.49	3.68	3.47
	SD	1.66	1.61	1.53	1.62	1.67	1.56
> 20 Years of Service (N = 67)	*M*	3.61	3.24	3.10	3.54	3.57	3.41
	SD	1.65	1.53	1.59	1.64	1.69	1.56

Table B.14

Mean and Standard Deviation Values According to Demographic Group – Study 2

Demographic Group	Value	Betrayal	Commission	Duress	Omission	Witnessing	Total OMIS
Men (N = 245)	*M*	4.65	3.84	3.67	3.61	4.37	4.03
	SD	1.76	1.55	1.70	1.64	1.48	1.29
Women (N = 456)	*M*	4.87	3.95	3.91	4.05	4.63	4.28
	SD	1.62	1.45	1.63	1.56	1.38	1.22
Police (N = 148; 69 women, 78 men, 1 transgender man)	*M*	4.70	3.42	3.30	3.33	4.49	3.85
	SD	1.75	1.48	1.68	1.58	1.50	1.31
Emergency/First Responders (N = 109; 57 women, 50 men, 1 non-binary, 1 transgender man)	*M*	4.87	4.30	4.36	4.24	4.58	4.47
	SD	1.71	1.54	1.56	1.61	1.41	1.30
Allied Health (N = 145; 113 women, 29 men, 2 transgender women, 1 transgender man)	*M*	4.76	3.84	3.98	3.93	4.35	4.17
	SD	1.61	1.36	1.58	1.42	1.36	1.10
Frontline Health (N = 168; 125 women, 41 men, 1 non-binary, 1 prefer not to say)	*M*	5.07	4.09	3.93	4.05	4.80	4.39
	SD	1.57	1.39	1.61	1.50	1.31	1.15
Admin/Hospital (N = 25; 18 women, 6 men, 1 transgender woman)	*M*	4.61	3.85	3.69	3.66	4.30	4.02
	SD	1.69	1.67	1.78	1.76	1.61	1.37
Other Medical/Health (N = 44; 24 women, 20 men)	*M*	4.73	3.84	3.53	3.91	4.20	4.04
	SD	1.83	1.67	1.75	1.88	1.68	1.48
< 5 Years of Service (N = 275)	*M*	4.57	3.89	3.79	3.94	4.43	4.12
	SD	1.70	1.46	1.65	1.58	1.39	1.25
5-10 Years of Service (N = 206)	*M*	5.01	4.01	3.89	4.04	4.68	4.33
	SD	1.49	1.44	1.61	1.53	1.33	1.17
11-20 Years of Service (N = 149)	*M*	4.96	3.81	3.90	3.79	4.54	4.20
	SD	1.73	1.49	1.67	1.62	1.52	1.27
> 20 Years of Service (N = 80)	*M*	4.82	4.00	3.83	3.71	4.63	4.20
	SD	1.79	1.68	1.77	1.78	1.54	1.41

Table B.15

Full Correlations Between OMIS Subscales and Validity Criteria Subscales in Study 1

	OMIS Total	OMIS Betrayal	OMIS Duress	OMIS Commission	OMIS Omission	OMIS Witnessing	MIES Total	MIES Other	MIES Self	MIES Betrayal
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***	.86*	**-**	**-**	**-**
MIES Self	.73*	.41*	.69*	**.71***	.70*	.65*	.89*	.68*	-	-
MIES Betrayal	.68*	.61*	.56*	.56*	.57*	**.65***	.84*	.64*	.55*	**-**
PCL Total	.38*	.28*	**.35***	**.35***	.34*	.33*	.40*	.33*	.36*	.35*
PCL Re-experiencing	.35*	.23*[1]	**.33***[1]	.32*	.32*	.31*	.36*	.29*	.32*	.30*
PCL Avoidance	.29*	.18*	.27*	**.28***	.25*	.25*	.30*	.24*	.26*	.27*
PCL Negative Cog/Mood	.35*	.28*	**.32***	**.32***	.31*	.29*	.37*	.31*	.33*	.32*
PCL Hyperarousal	.35*	.27*	**.32***	**.32***	.31*	.29*	.37*	.31*	.33*	.31*
ProQOL Total	.33*	.29*	.29*	.28*	.26*	**.31***	.37*	.33*	.30*	**.34***
ProQOL Compas. Satisfact	-.28*	**-.37***[2,3,4]	-.27*[4]	-.22*[3]	-.22*[3]	-.14*[2]	-.15*	-.09	-.15*	-.14*
ProQOL Burnout	.45*	**.53***[5,6,7]	.40*[7]	.35*[6]	.35*[6]	.32*[5]	.37*	.29*	.31*	.36*
ProQOL Second. Trm Strs	.40*	.36*	**.38***	-.34*	.31*	.34*	.40*	.35*	.34*	.35*
PSC Total	-.42*	**-.67***[8,9,10]	.-.32*[10]	-.26*[8]	-.28*[9]	-.28*[9]	-.35*	-.27*	-.21*	-.43*
PSC Mgmt Commitment	-.41*	**-.64***[11,12,13,14]	-.31*[14]	-.26*[11]	-.27*[12]	-.28*[13]	-.34*	-.28*	-.21*	-.42*
PSC Mgmt Priority	-.41*	**-.65***[15,16,17]	-.31*[17]	-.26*[15]	-.28*[16]	-.28*[16]	-.35*	-.28*	-.21*	-.43*
PSC Org Commitment	-.38*	**-.63***[18,19,20]	-.28*[20]	-.23*[18]	-.25*[19]	-.25*[19]	-.33*	-.25*	-.20*	-.41*
PSC Org Participation	-.35*	**-.55***[21,22,23,24]	-.28*[24]	-.22*[22]	-.24*[23]	-.21*[21]	-.27*	-.20*	-.17*	-.34*
Wellbeing	-.32*	**-.38***[25,26,27]	-.27*[27]	-.25*[26]	-.25*[26]	-.24*[25]	-.25*	-.17*	-.24*	-.23*

Table B.15 Continued

	PCLTotal	PCL Re-Exper	PCL Avoid	PCL Neg Cog/Md	PCL Hyperar	ProQOL Total	ProQOL Compass.	ProQOL Burnout	ProQOL Sec. TS	PSC Total
OMIS Betrayal	-	-	-	-	-	-	-	-	-	-
OMIS Duress	-	-	-	-	-	-	-	-	-	-
OMIS Commission	-	-	-	-	-	-	-	-	-	-
OMIS Omission	-	-	-	-	-	-	-	-	-	-
OMIS Witnessing	-	-	-	-	-	-	-	-	-	-
MIES Total	-	-	-	-	-	-	-	-	-	-
MIES Other	-	-	-	-	-	-	-	-	-	-
MIES Self	-	-	-	-	-	-	-	-	-	-
MIES Betrayal	-	-	-	-	-	-	-	-	-	-
PCL Total	-	-	-	-	-	-	-	-	-	-
PCL Re-experiencing	.89*	-	-	-	-	-	-	-	-	-
PCL Avoidance	.79*	.75*	-	-	-	-	-	-	-	-
PCL Negative Cog/Mood	.93*	.74*	.65*	-	-	-	-	-	-	-
PCL Hyperarousal	.89*	.69*	.59*	.77*	-	-	-	-	-	-
ProQOL Total	.55*	.47*	.42*	.48*	.54*	-	-	-	-	-
ProQOL Compas. Satisfact	-.11	-.03	-.03	-.15*	-.10	.23*	-	-	-	-
ProQOL Burnout	.39*	.25*	.22	.41*	.41*	.50*	-.63*	-	-	-
ProQOL Second. Trm Strs	.61*	.54*	.49*	.54*	.58*	.87*	-.13*	.54*	-	-
PSC Total	-.14*	-.62	-.07	-.16*	-.15*	-.12	.41*	-.49*	-.17*	-
PSC Mgmt Commitment	-.12*	-.05	-.07	-.14*	-.14*	-.12*	.38*	-.47*	-.17*	.93*
PSC Mgmt Priority	-.13*	-.06	-.07	-.14*	-.14*	-.12*	.37*	-.46*	-.16*	.95*
PSC Org Commitment	-.14*	-.07	-.07	-.16*	-.16*	-.11	.39*	-.45*	-.17*	.94*
PSC Org Participation	-.12*	-.05	-.05	-.15*	-.13*	-.07	.38*	-.43*	-.19*	.91*
Wellbeing	-.43*	-.30*	-.24*	-.48*	-.41*	-.26*	.53*	-.67	-.35*	.35*

Table B.15 Continued

	PSC Mgmt Commitment	PSC Mgmt Priority	PSC Org Commitment	PSC Org Participation	Wellbeing
OMIS Betrayal	-	-	-	-	
OMIS Duress	-	-	-	-	
OMIS Commission	-	-	-	-	
OMIS Omission	-	-	-	-	
OMIS Witnessing	-	-	-	-	
MIES Total	-	-	-	-	
MIES Other	-	-	-	-	
MIES Self	-	-	-	**-**	
MIES Betrayal	-	-	-	-	
PCL Total	-	-	**-**	**-**	
PCL Re-experiencing	-	-	**-**	-	
PCL Avoidance	-	-	-	**-**	
PCL Negative Cog/Mood	-	-	**-**	**-**	
PCL Hyperarousal	-	-	**-**	**-**	
ProQOL Total	-	-	-	-	
ProQOL Compas. Satisfact	-	-	-	-	
ProQOL Burnout	-	**-**	-	-	
ProQOL Second. Trm Strs	-	-	**-**	-	
PSC Total	-	-	-	-	
PSC Mgmt Commitment	-	-	-	-	
PSC Mgmt Priority	.88*	-	-	-	
PSC Org Commitment	.82*	.84*	-	-	
PSC Org Participation	.76*	.81*	.83*	-	
Wellbeing	.31*	.31*	.36*	.34*	

Note. $N = 744$. * = significant at Bonferroni-corrected $p < .0003$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. Significant differences in correlation values between OMIS factors are marked with superscript .

Table B.16

Revisions Made to OMIS Item Shortlist – Study 2

Factor	Revised Items
Betrayal	All items remained the same
Commission Under Duress	I feel guilty over things I've ~~had~~ been made to do at work that I don't morally agree with I'm ashamed of myself because of things ~~I've had~~ I'm pressured to do at work that go against my conscience I'm angry because I've been ~~made~~ forced to do things in the workplace that go against my beliefs about right and wrong The morally questionable things ~~I've had to do as a part of~~ my job asks of me have broken my trust in myself and others It's difficult for me to find meaning in the morally questionable things I've been made to do at work NEW: I feel guilty over times I've had to hurt another person in order to do my job NEW: I feel ashamed of being made to discipline someone who didn't deserve it at work
Commission With Agency	I feel guilty for ~~having done~~ choosing to do things at work that go against my conscience I'm ashamed of ~~having done things~~ choices I've made in my job that go against my beliefs about right and wrong I feel anger when I think about things I've ~~done~~ decided to do at work that don't align with my moral values I question whether I can trust others because of workplace decisions I've made that go against my conscience I've lost faith in my profession because of things ~~I've done~~ I chose to do at work that go against my beliefs about right and wrong NEW: Choosing to act against my own moral values in my job has made it hard for me to find meaning in my work

Act of Omission	I feel guilty about times I stood back and allowed bad things to continue happening in my workplace I've let myself down at work by allowing ~~doing nothing to stop~~ things I knew were not right ~~from~~ to continue happening ~~in the workplace~~ I'm angry that I haven't ~~done more at work~~ chosen to stand up against the things that go against my beliefs about right and wrong at work Ignoring my conscience in order to do my job has made it hard for me to trust myself Choosing to allow~~ing~~ things that go against my conscience to continue happening at work has made me question my choice of profession NEW: I feel guilty for choosing to look the other way rather than standing up for another's rights at work
Witnessing	I ~~experience a lot of~~ feel guilty when ~~over~~ ~~things~~ I ~~have~~ see~~n~~ others do things in the workplace that go against my values about right and wrong Even though it's outside of my control, ~~I am ashamed of~~ the unethical behaviour I've seen from others in my workplace makes me ashamed ~~I feel~~ It makes me angry ~~when I see~~ that I cannot stop others from doing things at work that go against my values ~~about right and wrong~~ ~~Seeing~~ Being unable to stop people from do things I don't morally agree with in the workplace ~~it~~ has made me ~~wary of~~ less trusting of others Witnessing ~~the~~ unethical behaviour ~~I've seen~~ at work without being able to change it has broken the sense of purpose I used to have NEW: Having no power to do anything about the unethical ways I see others behave at work makes me angry NEW: Seeing behaviour I morally disagree with in my organisation without any ability to stop it has affected my ability to trust others

STUDY 2: Item Response Theory Information Parameters for Each Factor of the OMIS Shortlist

Betrayal

There were 710 complete cases for the OMIS Betrayal five-item subscale. EFA revealed that the first two eigenvalues were 2.23 and .04, suggesting a unidimensional construct. The first factor accounted for 75% of the total variance. Yen's Q3 suggest that the three items of the final Betrayal factor had a high residual correlations with each other (> 0.3). However, some local dependence 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). The three items of the Betrayal scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.17. None of the items had an S-χ^2 value significant at .001 level, suggesting the model predicted the responses of all items well. The discrimination parameters (α) ranged from 3.269 to 4.490, suggesting all final items had strong discrimination power.

Table B.17

Parameter estimates of the Graded Response Model for the Betrayal Subscale

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Btr_3	3.269	-1.861	-1.303	-0.904	-0.678	0.066	0.688	28.345	19	0.077
Btr_4	4.490	-1.699	-1.117	-0.734	-0.476	0.190	0.843	13.341	16	0.648
Btr_5	3.347	-1.437	-0.939	-0.518	-0.156	0.455	1.041	24.316	19	0.184

Commission under Duress

There were 710 complete cases for the OMIS Commission under Duress five-item subscale. An EFA revealed that the first two eigenvalues were 3.03 and 0.01, suggesting a unidimensional construct. The first factor accounted for 76% of the total variance. Yen's Q3

suggest that several items had a high residual correlation (> 0.3) with other items – However, some local dependence 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). The remaining 4 items of the Duress scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.18. Again, several items had an S-χ^2 value significant at .001 level, however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 3.279 to 4.835, suggesting all final items had strong discrimination power.

Table B.18

Parameter estimates of the Graded Response Model for the Commission under Duress Subscale

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Dur_1	3.279	-1.260	-0.733	-0.313	0.097	0.954	1.553	73.028	34	0.000
Dur_2	4.835	-1.087	-0.550	-0.117	0.300	0.976	1.500	83.197	27	0.000
Dur_3	4.555	-1.045	-0.539	-0.101	0.264	0.863	1.455	50.218	29	0.009
Dur_5	3.753	-1.040	-0.509	-0.144	0.365	1.011	1.605	63.673	33	0.001

Commission with Agency

An EFA revealed that the first two eigenvalues were 3.29 and 0.07, suggesting a unidimensional construct of the Commission with Agency scale. The first factor accounted for 66% of the total variance. Yen's Q3 suggest that several items had high residual correlations (> 0.3) with each other. However, some local dependence 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). The final five items of the Commission with Agency scale

were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.19. Again, several items had an S-χ^2 value significant at .001 level, however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 2.097 to 4.672, suggesting all final items had strong discrimination power.

Table B.19

Parameter estimates of the Graded Response Model for the Commission with Agency Subscale

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Agn_1	2.097	-1.797	-1.150	-0.640	0.040	0.875	1.654	131.196	66	0.000
Agn_2	3.626	-1.209	-0.624	-0.159	0.361	0.989	1.552	86.124	49	0.001
Agn_3	4.672	-1.201	-0.648	-0.215	0.276	0.876	1.517	70.045	44	0.008
Agn_4	3.133	-1.302	-0.732	-0.188	0.366	1.031	1.693	104.941	52	0.000
Agn_6	2.787	-1.239	-0.600	-0.115	0.442	1.095	1.669	127.372	58	0.000

Omission

An EFA revealed that the first two eigenvalues were 2.90 and 0.04, suggesting a unidimensional construct of the Omission scale. The first factor accounted for 72.5% of the total variance. Yen's Q3 suggest that one item had high residual correlations (> 0.3) with two others. However, some local dependence 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). The remaining four items of the Omission scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.20. Two of the items had an S-χ^2 value significant at .001 level – however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023).

The discrimination parameters (α) ranged from 2.613 to 5.096, suggesting all final items had strong discrimination power.

Table B.20

Parameter estimates of the Graded Response Model for the Omission Subscale

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Omi_1	3.161	-1.364	-0.800	-0.389	0.052	0.786	1.376	55.745	38	0.032
Omi_2	5.096	-1.163	-0.667	-0.236	0.173	0.819	1.541	37.633	27	0.084
Omi_3	4.341	-1.251	-0.624	-0.219	0.188	0.811	1.454	59.862	30	0.001
Omi_4	2.613	-1.096	-0.504	-0.029	0.500	1.185	1.873	116.081	42	0.000

Witnessing

An EFA revealed that the first two eigenvalues were 2.54 and 0.06, suggesting a unidimensional construct of the Witnessing scale. The first factor accounted for 63.5% of the total variance. Yen's Q3 suggest that one item had high residual correlations (> 0.3) with two others. However, some local dependence 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). The remaining four items of the Witnessing scale were fitted to a GRM. The item parameter estimates and item fit statistics are displayed in Table B.21. One item had an S-χ^2 value significant at .001 level – however increased type I errors of items incorrectly flagged for misfit is known to be high in shorter tests (Glas & Falćon, 2003; Han et al., 2023). The discrimination parameters (α) ranged from 2.219 to 3.990, suggesting all final items had strong discrimination power.

Table B.21

Parameter estimates of the Graded Response Model for the Witnessing Subscale

Item	α	β1	β2	β3	β4	β5	β6	S-χ^2	*df*	*p*
Wit_2	2.219	-1.788	-1.288	-0.831	-0.386	0.594	1.375	83.242	47	.001
Wit_3	3.990	-1.750	-1.144	-0.786	-0.362	0.416	1.230	37.594	32	.228
Wit_4	3.089	-1.802	-1.227	-0.774	-0.268	0.597	1.310	44.418	34	.109
Wit_5	2.486	-1.704	-1.102	-0.594	-0.034	0.787	1.63	46.409	40	.225

Table B.22
Correlations Between All Subscales in Study 2

	OMIS Total	OMIS Betrayal	OMIS Duress	OMIS Commission	OMIS Omission	OMIS Witnessing	SD3 Narcissism	SD3 Machiavel	SD3 Psychopath	MINI IPIP Neurot
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	.28*	-	-	-
SD3 Psychopathy	.16*	.10	**.20***	.15*	.14*	.06	.35*	.53*	-	-
MINI IPIP Neuroticism	.10	.07	.09	.05	**.10**	.09	.10	.16*	.07	-
SSGS Guilt	.31*	.21*[2]	**.32***[1,2]	.28*	.27*	.16*[1]	-.04	.26*	.25*	.04
SSGS Shame	.34*	.28*	**.32***	.28*	.28*	.22*	-.10	.24*	.22*	.01
DAR-5 Anger	.31*	**.27***	**.27***	.26*	.22*	.24*	.09	.43*	.42*	.14*
GTS Trust	-.13	**-.21***[3,4,5]	-.10[5]	-.08[4]	-.05[3]	-.12	.01	-.21*	-.23*	.04
MILQ Presence of Meaning	-.15*	**-.22***[6,7,8]	-.11[8]	-.10[7]	-.11[8]	-.08[6]	.24*	-.10	-.11	.15*
MILQ Search for Meaning	.16*	.12	.14	.12	**.15***	.14	.11	.12	.05	.02
PHQ-9 Depression	.38*	**.34***	.33*	.29*	.31*	.28*	-.08	.30*	.22*	.01
MIOS Shame	.45*	.28*[10]	**.43***[9,10]	.41*	.39*	.27*[9]	-.08	.32*	.34*	.04
MIOS Trust Violation	.43*	37*	**.38***	.32*	.31*	**.38***	-.00	.34*	.32*	.06
MIOS PTSD	.30*	**.28***	.27*	.22*	.24*	.23*	-.03	.13*	.14*	.01

Table B.22 Continued

	SSGS Guilt	SSGS Shame	DAR-5 Anger	GTS Trust	MILQ Presence	MILQ Search	PHQ-9 Depression	MIOS Shame	MIOS Trust
OMIS Betrayal	-	-	-	-	-	-	-	-	-
OMIS Duress	-	-	-	-	-	-	-	-	-
OMIS Commission	-	-	-	-	-	-	-	-	-
OMIS Omission	-	-	-	-	-	-	-	-	-
OMIS Witnessing	-	-	-	-	-	-	-	-	-
SD3 Narcissism	-	-	-	-	-	-	-	-	-
SD3 Machiavellianism	-	-	-	-	-	-	-	-	-
SD3 Psychopathy	-	-	-	-	-	-	-	-	-
MINI IPIP Neuroticism	-	-	-	-	-	-	-	-	-
SSGS Guilt	-	-	-	-	-	-	-	-	-
SSGS Shame	.85*	-	-	-	-	-	-	-	-
DAR-5 Anger	.57*	.58*	-	-	-	-	-	-	-
GTS Trust	-.13*	-.21*	-.22*	-	-	-	-	-	-
MILQ Presence of Meaning	-.22*	-.32*	-.22*	.26*	-	-	-	-	-
MILQ Search for Meaning	.16*	.19*	.16*	.04	-.01	-	-	-	-
PHQ-9 Depression	.60*	.71*	.57*	-.25*	-.36*	.25*	-	-	-
MIOS Shame	.60*	.62*	.48*	-.20*	-.30*	.19*	.58*	-	-
MIOS Trust Violation	.39*	.46*	.46*	-.37*	-.24*	.13*	.54*	.62*	-
MIOS PTSD	.38*	.40*	.30*	-.14*	-.16*	.18*	.46*	.46*	.47*

Note. $N = 710$. * = significant at Bonferroni-corrected $p < .0005$. The values in bold represent the largest correlation of a variable with a subscale of the OMIS. Significant differences in correlation values between OMIS factors are marked with superscript

OCCUPATIONAL MORAL INJURY SCALE (OMIS) – FINAL SCALE

Below are some statements that describe how people may feel about difficult experiences in their workplace. Please choose a response to indicate how much you agree or disagree with each of the statements in relation to your own experience.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I'm angry because my workplace expects a lot from employees but does not look after us in return	1	2	3	4	5	6	7
2. Experience has shown me that I cannot rely on my workplace to look after me	1	2	3	4	5	6	7
3. The way my workplace has failed to look after me makes me question my career	1	2	3	4	5	6	7
4. I feel guilty for choosing to do things at work that go against my conscience	1	2	3	4	5	6	7
5. I'm ashamed of choices I've made in my job that go against my beliefs about right and wrong	1	2	3	4	5	6	7
6. I feel anger when I think about things I've decided to do at work that don't align with my moral values	1	2	3	4	5	6	7
7. I question whether I can trust others because of workplace decisions I've made that go against my conscience	1	2	3	4	5	6	7
8. Choosing to act against my own moral values in my job has made it hard for me to find meaning in my work	1	2	3	4	5	6	7
9. I feel guilty over things I've been made to do at work that I don't morally agree with	1	2	3	4	5	6	7
10. I'm ashamed of myself because of things I'm pressured to do at work that go against my conscience	1	2	3	4	5	6	7
11. I'm angry because I've been forced to do things in the workplace that go against my beliefs about right and wrong	1	2	3	4	5	6	7
12. It's difficult for me to find meaning in the morally questionable things I've been made to do at work	1	2	3	4	5	6	7
13. I feel guilty about times I stood back and allowed bad things to continue happening in my workplace	1	2	3	4	5	6	7
14. I've let myself down at work by allowing things I knew were not right to continue happening	1	2	3	4	5	6	7
15. 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	1	2	3	4	5	6	7
16. Ignoring my conscience in order to do my job has made it hard for me to trust myself	1	2	3	4	5	6	7
17. Even though it's outside my control, the unethical behaviour I've seen from others in my workplace makes me ashamed	1	2	3	4	5	6	7
18. It makes me angry that I cannot stop others from doing things at work that go against my values	1	2	3	4	5	6	7
19. Being unable to stop people from doing things I don't morally agree with in the workplace has made me less trusting of others	1	2	3	4	5	6	7
20. Witnessing unethical behaviour at work without being able to change it has broken the sense of purpose I used to have	1	2	3	4	5	6	7

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?

Not at all	Mildly	Moderately	Very Much	Extremely
1	2	3	4	5

Appendix C

Supplementary Materials for Chapter 4

Table C.1

Bifactor CFA Fit Indices for Combined Sample (N = 1,431)

df	χ^2	*p*-value	RMSEA	95% CI	SRMR	CFI	TLI
141	774.416	< .001	.056	.052-.060	.064	.977	.969

Table C.2

BCFA Correlations Between the OMIS Latent Factors in Combined Sample (N = 1,431)

	OMIS Betrayal	OMIS Witnessing	OMIS Omission	OMIS Duress
OMIS Witnessing	.34*			
OMIS Omission	-.02	.38*		
OMIS Duress	.09	.32*	.54*	
OMIS Commission	-.00	.26*	.55*	.87*

Note: *N* = 1,431. * = *p* > .001; ** = *p* < .05.

Table C.3

OMIS BCFA Factor Loadings in Combined Sample (N = 1,431)

		Factor loading					
Item label	Item content	Gen	F1	F2	F3	F4	F5
Factor 1: Betrayal							
OMIS_1	I'm angry because my workplace expects a lot from employees but does not look after us in return	.54	.66				
OMIS_2	Experience has shown me that I cannot rely on my workplace to look after me	.49	.71				
OMIS_3	The way my workplace has failed to look after me makes me question my career	.57	.67				
Factor 2: Witnessing							
OMIS_4	Even though it's outside my control, the unethical behaviour I've seen from others in my workplace makes me ashamed	.56		.58			
OMIS_5	It makes me angry that I cannot stop others from doing things at work that go against my values	.52		.76			
OMIS_6	Being unable to stop people from doing things I don't morally agree with in the workplace has made me less trusting of others	.62		.58			
OMIS_7	Witnessing unethical behaviour at work without being able to change it has broken the sense of purpose I used to have	.74		.39			
Factor 3: Act of Omission							
OMIS_8	I feel guilty about times I stood back and allowed bad things to continue happening in my workplace	.57			.64		
OMIS_9	I've let myself down at work by allowing things I knew were not right to continue happening	.63			.66		
OMIS_10	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	.60			.64		
OMIS_11	Ignoring my conscience in order to do my job has made it hard for me to trust myself	.71			.39		
Factor 4: Commission under Duress							
OMIS_12	I feel guilty over things I've been made to do at work that I don't morally agree with	.69				.53	
OMIS_13	I'm ashamed of myself because of things I'm pressured to do at work that go against my conscience	.70				.57	
OMIS_14	I'm angry because I've been forced to do things in the workplace that go against my beliefs about right and wrong	.67				.61	
OMIS_15	It's difficult for me to find meaning in the morally questionable things I've been made to do at work	.71				.51	
Factor 5: Commission with Agency							
OMIS_16	I feel guilty for choosing to do things at work that go against my conscience	.68					.61
OMIS_17	I'm ashamed of choices I've made in my job that go against my beliefs about right and wrong	.69					.62
OMIS_18	I feel anger when I think about things I've decided to do at work that don't align with my moral values	.72					.56
OMIS_19	I question whether I can trust others because of workplace decisions I've made that go against my conscience	.78					.39
OMIS_20	Choosing to act against my own moral values in my job has made it hard for me to find meaning in my work	.83					.31