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ABSTRACT VS. CONCRETE MINDSETS IN MORAL INJURY

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Abstract

In the present study, we examined whether adopting an abstract versus a concrete mindset would influence maladaptive outcomes of potentially morally injurious events. Through the use of a hypothetical potentially morally injurious situation, researchers investigated two different construal level manipulations to determine if one would lessen the maladaptive outcomes that can result from being involved in such an experience. This study included 116 participants recruited from Amazon's MTurk. Participants completed a survey in which they were randomly assigned to either the concrete or abstract processing condition and answered a series of questions related to the experience of moral emotions (I.e., shame and guilt), moral injury, and their moral identity. It was found that those in the concrete condition reported experiencing significantly less moral injury and weaker symbolization as a moral identity subscale than did those in the abstract processing condition. There were no significant differences found across conditions for either of the moral emotion measures nor the moral identity subscale for internalization. The findings of the study suggest that the maladaptive outcomes that can result from experiencing a potentially morally injurious event can be lessened by processing the event in a concrete manner. Implications of the findings are discussed.

Keywords: Moral Injury, Moral Emotions, Moral Identity, Abstract, Concrete

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Introduction

The COVID-19 pandemic has had far reaching implications and consequences for people across the globe. In times marked by government-mandated stay-at-home orders, immense job loss, social isolation, and extreme disruptions in people's everyday routines, it seems almost inevitable that across the population, rates of anxiety, depression, substance use and abuse, worry, and stress have all increased (Panchal et al., 2021). One specific cohort of the population that has been a key focus group for researchers and the media over the last two years has been healthcare workers. These individuals are playing a very hands-on role during this extremely turbulent time working closely with COVID-19 patients. In one meta-analysis, it was found that healthcare workers are experiencing a high degree of anxiety, depression, stress, and insomnia due to the COVID-19 pandemic (Mamidipalli Sai et al., 2020). This effect was even stronger for those working more directly with COVID-19 patients in emergency units, intensive care units, and infectious disease wards (Naushad et al., 2019). While some researchers have concluded that these feelings of extreme exhaustion, stress, and guilt healthcare workers are experiencing are due to burnout, others have posited that it is the result of moral injury. Moral injury can occur after being involved in or bearing witness to an experience that violates deeply held moral beliefs and expectations and can ultimately have profound effects on emotional, psychological, behavioral, social, and/or spiritual functioning (Litz et al., 2009).

Although a growing body of literature has begun studying moral injury, more research is needed to explore possible ways in which the effects of moral injury can be lessened or mitigated. This is particularly important for individuals who are joining and working in high-stake professions including those in the health sector, the military, and child protective services. The present study explores the use of cognitive processing training to think about potentially

morally injurious situations in either an abstract or concrete manner. Engaging in more concrete processing of events may limit threats to moral injury, decreasing feelings of shame and guilt and creating a weaker moral identity following exposure to a potentially morally injurious situation.

Moral Injury

Although originally studied in military personnel, moral injury research has expanded to include healthcare workers as a result of the COVID-19 pandemic (Čartolovni et al., 2021; Litam & Balkin, 2021). A majority of moral injury literature focuses on combat veterans who have been exposed to potentially morally injurious events (PMIEs) including everything from committing or failing to prevent a moral transgression, to participating in acts that may seem innocuous at the time but might be perceived as a moral violation later on (Dursun & Watkins, 2018). These events or experiences are often referred to as "potentially" morally injurious because whether the personal outcome of the situation is moral injury is dependent on more than just the mere experience. In other words, not everyone who experiences a PMIE will experience moral injury. It has been suggested by researchers that moral injury results from the experience of a PMIE when our perceptions of such events are inconsistent with our core beliefs in a positive moral self (Litz et al., 2009; Nash et al., 2013). Having a positive moral self-regard means that an individual believes that they have strong virtuous and ethical morals (Schaumberg & Wiltermuth, 2013). In the case where the perception of a PMIE does violate moral beliefs and leads to moral injury, it often results in the experience of maladaptive moral emotions which may include feelings of shame and guilt (Litz et al., 2009).

Moral injury can be thought of in the context of healthcare workers as it has been discussed by some experts to include the experiences of individuals who work within an unethical system in which bad outcomes cannot be prevented. In terms of the pandemic, many healthcare workers

have reported that they are working overtime in an effort to help COVID-19 patients but are struggling to do so because of a lack of resources. This could include shortages for hospital beds in intensive care units, respirators, and personal protective equipment (PPE) (Maunder, et al. 2021; Rosenbaum, 2020). Due to the COVID-19 pandemic, healthcare systems and hospitals have been extremely overwhelmed for the last two years which has caused inefficacies for both patients and healthcare workers. As a result, not all patients have received the treatment they needed, which ultimately has violated many healthcare workers' morals and has caused moral injury for some.

The number of stressors that healthcare workers have experienced throughout the COVID-19 pandemic is significant. While believing that they have been unable to provide patients with the most optimal care due to a lack of resources, they are also continually exposing themselves to the virus (Shmerling, 2020). They have had to make decisions they know will lead to bad outcomes for some patients, fear that they are carrying the virus and could pass it on to loved ones at home, they're being faced with increasing demands at work, and are working longer hours than usual (Shmerling, 2020). Additionally, some healthcare workers are reporting that they have been tasked with things they would have never imagined themselves having to do when they decided to work in the medical industry (Shmerling, 2020). An example of this has been having to decide which patients get lifesaving care and which do not (Shmerling, 2020). In a survey conducted by Mental Health America (2021), a significant number of healthcare workers indicated that they are experiencing stress, anxiety, frustration, exhaustion, and feelings of being overwhelmed. Many reported experiencing difficulties sleeping, changes in appetite, and a number of physical symptoms including headaches, stomach aches, and compassion fatigue. Symptoms related to stress from COVID-19 as a healthcare worker have also been

reported to be higher among those in hospitals, intensive care units, COVID-19 units, and emergency departments (Maunder et al., 2020). It has also been found that nurses and younger healthcare professionals or trainees are at a greater risk for burnout (Maunder et al., 2020). Above all else, the most significant stressor experienced by a number of healthcare workers during the pandemic has been the fear of transmitting the virus from their workplace to their home and infecting their families (Rose et al., 2021).

Abstract vs. Concrete Thinking

When thinking about moral injury, the manner in which a PMIE is cognitively processed may have important implications for well-being. Certain forms of cognitive processing following exposure to PMIEs have been linked to various outcomes including having effects on mood and recovery, the development of anxiety and depression, post-decisional regret, and coping (Dey et al., 2018; Ehring et al., 2008; Shepherd & Wild, 2014; White & Wild, 2016). Because certain methods of cognitive processing are associated with more positive outcomes, it is possible that certain processing strategies could be adopted to protect individuals from experiencing the maladaptive outcomes that can come from experiencing PMIEs and moral injury.

Abstract and concrete thinking are two different methods of cognitive processing that each have advantages and disadvantages depending on how and when they are used. When we think about concrete information processing, this is a level of thinking that is very literal and focuses mostly on facts (Ylviasaker et al., 2006). It involves processing based on what is physically present, our immediate experiences, exact interpretations, and does not extend far beyond that (Stanborough, 2019). Piaget has explained that this is how young children and toddlers cognitively appraise and process the world around them (Stanborough, 2019). As we get older however, we begin to be able to cognitively process information in a more abstract manner

which enables us to make generalizations, contemplate philosophical concepts, and understand metaphors and emotions (Stanborough, 2019). Abstract processing involves a level of thinking removed from the facts and allows us to think about existing concepts that are not directly tied to something physically present or experienced, such as freedom or vulnerability (Stanborough, 2019). In terms of the benefits of concrete processing, this method of processing has been linked to fewer intrusive memories and lower emotional reactivity following traumatic events and less post-decisional regret (White & Wild, 2016; Dey et al., 2018). Further, it has also been related to less maintenance of PTSD symptoms including negative mood and arousal, and to better mood and recovery following upsetting events (Ehring, et al., 2008). However, without being able to think abstractly, we would not be able to understand humor, empathize with others, compute math problems, or write figuratively (Starborough, 2019). It is important to understand that engaging in too much abstract processing or using it in improper situations can lead to catastrophizing and counterproductive overgeneralizations (Stanborough, 2019).

Although PTSD and moral injury tend to co-occur, they are distinct experiences and should not be used interchangeably (Barnes et al., 2019). A significant difference between PTSD and moral injury is that PTSD is a diagnosable DSM-V mental disorder and moral injury is not. Cognitive Models of Posttraumatic Stress emphasize the role that certain cognitive processing methods can have on the development of PTSD (White & Wild, 2016). They suggest that dysfunctional information processing impedes on our ability to coherently process information, which ultimately results in the development and experience of intrusive memories and associated distress (White & Wild, 2016). Processes such as worry and rumination are associated with an abstract style of information processing, which has also been related to the development of PTSD (White & Wild, 2016). Some clinical studies have suggested that evidence-based

treatments for PTSD, of which one is cognitive processing therapy, may provide some reductions in moral injury symptoms such as shame or guilt (Barnes et al., 2019). Given that individuals' interpretations of PMIEs contribute to how much dissonance they experience in their belief systems and worldviews, how they process the information associated with the PMIE may be particularly important (Barnes et al., 2019).

In one study conducted by White & Wild (2016), researchers trained participants to adopt either a concrete or abstract mode of cognitive processing to use after being exposed to a traumatic film. One week later, researchers asked participants to report any intrusive memories they had experienced after watching the film and as predicted, those in the concrete condition reported significantly fewer intrusive memories than did those in the abstract condition. These participants also showed lowered emotional reactivity to the post-training film. These researchers also found that abstract information processing was linked to the development of anxiety and depression. In another study, Dey and colleagues (2018) tested how abstract and concrete rumination influenced the experience of post-decisional regret. After thinking about a personally important decision that participants regretted making in the last six months, it was found that those who were asked to think about their decision in an abstract manner reported more regret than did those who thought about it in a concrete manner. The authors suggest that these findings may alleviate post-decisional regret in more depressed individuals if they engage in concrete rumination rather than abstract rumination. Finally, Ehring and colleagues (2008) examined maintenance factors of posttraumatic stress disorder and found that engaging in abstract thinking led to significantly longer maintenance of negative mood and arousal than did concrete thinking. They also found that concrete thinking was linked to better mood and recovery from upsetting events.

The Current Study

The current study examined whether adopting a concrete method of information processing to think about a PMIE will lead to less feelings of shame and guilt, less moral injury, and weaker moral identity relative to abstract information processing. Although most of the moral injury literature has focused on military populations and the outcomes of moral injury, it is important to determine if there are any buffers to prevent or reduce the severity of moral injury related outcomes among other populations. To some extent, the PMIEs that some workers experience in high-stake occupations are inevitable and necessary aspects of the job. Therefore, understanding how these individuals could be protected from the maladaptive outcomes of moral injury would be extremely valuable.

In the present study, we examined whether concrete information processing yields fewer maladaptive moral injury-related outcomes than abstract information processing. To do this, participants were asked to imagine themselves in the position of a healthcare worker during the pandemic. They read an excerpt about the experiences that some of these frontline workers may be having from both a personal and professional perspective throughout the pandemic. The excerpt described a situation that can be thought of as a precursor for moral injury. It describes how healthcare workers are trying to provide care to COVID-19 patients but are being prevented from doing so because of a lack of resources. It also touches on how some healthcare workers feel as if they are being faced with competing demands between their professional and personal life. By asking participants to put themselves in the position of the healthcare worker, it was our hope that they were able to exhibit empathy and understand what the individual in the scenario was feeling and experiencing. Using a hypothetical scenario ensured that all participants were thinking about, reflecting on, and processing the same event. This avoided any potential

differences across participants that could have resulted from reflecting on their own personal experiences with moral injury. Half of the participants were asked to think about and answer a series of questions that focused on the facts and objective information regarding COVID-19 and the healthcare worker scenario ultimately framing participants to think in a more concrete manner. The other half of the participants were asked to reflect on a series of questions that were more subjective and involved a deeper level of thinking which framed them to think in a more abstract manner. To assess the different moral-injury related outcomes, all participants then answered a series of questions assessing their feelings of moral emotions, moral identity, and moral injury.

With this method, we expected that the manipulation (i.e., the nature in which participants cognitively process the PMIE) would affect participants' reported feelings of moral injury, moral emotions, and moral identity. It was hypothesized that individuals who engaged in concrete information processing will report less feelings of moral injury, moral emotions (ie. guilt and shame), and weaker moral identity following exposure to a hypothetical potentially morally injurious event than those who engage in abstract information processing. Engaging in concrete information processing may act as a protective factor against moral injury, which has been evidenced to lead to fewer intrusive memories, better mood and recovery from upsetting events, less post-decisional regret, and less anxiety and depression (White & Wild, 2016; Ehring et al., 2008). If this hypothesis is supported, our study could yield potential implications for training programs for those who work in high stake environments to protect them from the potential maladaptive outcomes of moral injury. The predictions and data analysis plans for this study were pre-registered at aspredicted.org (#89261).

Method

Participants

A total of 119 participants were recruited from Amazon's Mechanical Turk (MTurk) crowdsourcing platform. To participate in our study, MTurk workers needed to be 18 years or older, have an approval rating of 95% or higher, and reside in the US, Canada, or the UK. CloudResearch (cloudresearch.com) was used to screen MTurk workers who met the inclusion criteria. Furthermore, 3 participants who did not follow the instructions of the study were excluded from data analysis. The final sample of participants included in the current study and our analysis (N = 116) consisted of 65 men and 51 women between the ages of 21 and 76 years (M = 40.58, SD = 12.17). The majority of the participants identified as White (77.6%), Black (9.5%), Latin American (3.4%), and other (9.5%). Approximately half of the participants were in the abstract condition (n = 56) and half in the concrete (n = 60) condition. Participants were compensated for their participation based on the U.S. national minimum wage of 7.25 USD per hour. Because it was estimated that the present study would take 10 minutes to complete, participants received $1.20 USD.

Materials

Healthcare worker scenario. This hypothetical scenario describes day-to-day experiences that some healthcare workers may be having during the COVID-19 pandemic as a result of working in an unethical system in which bad outcomes cannot be prevented. The scenario focuses on a healthcare worker within a hospital setting and speaks to some of the challenges that come with working in an overwhelmed system. It describes how this causes personal difficulties associated with finding time for self-care and having a work-life balance for the healthcare worker. The scenario can be described as a PMIE because it is an experience that

has the potential to cause moral injury as this healthcare worker is having to behave in a way that does not align with their morals due to a lack of resources.

Moral Emotions Scale. The Moral Emotions Scale (MES) used in the current study was developed by Wright and Gudjonsson (2007). The scale measures offense-related feelings of shame and guilt. Participants were asked to indicate their level of agreement with 10 items of which 5 assessed feelings of guilt and 5 assessed feelings of shame related to their interpretations of the PMIE that was presented to them. After adapting the measure to make it relevant to the healthcare worker scenario, the 5-item scale that measured guilt associated with the potentially morally injurious event included statements such as "If I was the healthcare worker, I would never forgive myself for what I have done". The shame-related items included statements such as "If I was the healthcare worker, I can't help worrying about what people must think of me after what I would have to do". Participants rated their level of agreement with each statement on a scale from 1 (strongly disagree) to 7 (strongly agree). Participant's responses to the guilt and shame-related items were averaged separately to determine a score for each, with higher scores indicating a higher degree of experienced guilt and shame.

Moral Injury Appraisals Scale. The Moral Injury Appraisals Scale (MIAS) created by Hoffman and colleagues (2018) measures the extent to which an event is perceived as morally injurious when it is committed by the self versus others. For the purpose of this study, only the items relevant to the self were used. Participants were provided with 5 statements about their perceptions of moral transgressions such as "I am troubled because I did things that were morally wrong" and were asked to indicate their level of agreement with each statement on a scale from 1 (not at all) to 7 (very much).

The Moral Identity Scale. The Moral Identity Scale (MIS; Hardy et al., 2010) includes 10 items of which 5 assess *internalization* (how central moral traits are to one's self-concept) and 5 assess *symbolization* (the degree to which the participants express a social identity based on the moral traits). Participants were first shown a list of 9 moral characteristics (e.g., caring, compassionate, fair) and were asked to think of a person who possesses those traits. Keeping this in mind, they responded to 10 statements on a scale from 1 (completely disagree) to 7 (completely agree). Sample items include "Being someone who had these characteristics is an important part of who I am" and "I would be ashamed to be a person who had these characteristics". The means of the items were calculated, with higher scores indicating that "being moral" is an important part of one's identity

Procedure

From Amazon's MTurk crowdsourcing platform, participants were directed to a Qualtrics survey where they were presented with a letter of information for the present study. Participants were not made aware that set of questions they would receive in response to the hypothetical healthcare worker scenario (either the abstract or concrete set) was intended to influence their responses to our dependent variables (ie. moral injury, moral emotions, and moral identity). Thus, mild deception was used in an attempt to reduce expectancy effects. Participants who provided consent to participate in our study after reading the Letter of Information were then randomly assigned into the abstract or concrete condition.

Participants in both the abstract and concrete conditions were asked to imagine themselves as a healthcare worker during the COVID-19 pandemic and read the healthcare worker scenario describing some of the challenges that may be experienced by these persons during the pandemic. All participants were asked to continue imagining themselves as healthcare

workers during the pandemic and those in the abstract group answered five "why/how" questions and those in the concrete condition answered five "what" questions relating to the pandemic. Examples of questions that were included in the abstract condition were "why do people have to get sick from COVID-19?" and "how would I get back to normal life after the COVID-19 pandemic?". For the concrete condition, example questions include "what factors contribute to COVID-19 being so threatening?" and "what would help me and hinder me from getting over COVID-19?". Both groups then answered questions from the perspective of the healthcare worker assessing moral emotions (ie. guilt and shame), their feelings of moral injury, and moral identity. Participants were then asked to indicate on a Likert-type rating scale the ease at which they were able to imagine the healthcare worker scenario on a scale from 1 (very easy) to 7 (very difficult).

At the end of the study, participants were presented with a series of demographic questions which included questions pertaining to their age, gender, ethnicity, and occupation. They were also provided with an MTurk code to obtain the compensation and a debriefing letter which concluded their participation in the study. The debriefing letter outlined the purpose of the study, a brief introduction to the background literature, as well as region-specific mental health resources in case participating in the study made participants uncomfortable or upset.

Results

Preliminary Analyses

To examine whether our cognitive processing manipulation was effective, participants' responses to the open-ended questions were coded by a rater who was blind to the hypotheses of the study. Participants responses were given a score on a scale from 1 (concrete) to 7 (abstract) with the midpoint indicating that the responses had an equal degree of abstract and concrete. An

independent samples t-test was used to compare the degree of abstractness or concreteness in the responses across the two conditions. It was found that those in the concrete condition (M = 3.18, SD = 1.56) did elicit significantly more concrete responses than did those in the abstract condition (M = 4.02, SD = 1.73), $t(114) = 2.95$, $p = .004$, $d = .55$. This suggests that the mindset manipulation questions were effective in making participants think in either an abstract or concrete way.[1,2] Next, we examined how easily participants could imagine the hypothetical healthcare worker scenario. An independent samples t-test showed that the ease with which participants could imagine the healthcare worker scenario did not differ significantly between the abstract (M = 3.27, SD = 1.71) and concrete groups (M = 3.02, SD = 1.68), $t(114) = .80$, $p = .21$, $d = .04$. Participants in both conditions rated the scenario as relatively easy to imagine.

Main Analyses

To test the main hypotheses, independent samples t-tests were conducted to examine whether there were any differences in moral injury, shame and guilt, and the two moral identity subscales of internalization and symbolization between the abstract and concrete conditions. As expected, moral injury was significantly lower when participants processed the scenario with a concrete mindset (M = 2.78, SD = 1.65) compared to an abstract mindset (M = 3.36, SD = 1.74), $t(114) = 1.85$, $p = .033$, $d = .34$. In terms of moral emotions, shame did not differ significantly between the abstract (M = 3.26, SD = 1.54) and concrete condition (M = 3.26, SD = 1.64), $t(114) = .002$, $p = .50$, $d = .04$. Similarly, guilt did not differ between the abstract (M = 3.88, SD = 1.42) and concrete condition (M = 3.58, SD = 1.62), $t(114) = 1.04$, $p = .15$, $d = .19$. Interestingly, the moral identity measure of internalization (i.e., how central moral traits are to one's self-concept)

[1] This analysis was not included in our pre-registration.
[2] These findings should be interpreted with caution as the responses to the open-ended questions were only coded by a single rater.

did not differ significantly between the abstract (M = 6.10, SD = 1.05) and concrete condition (M = 5.98, SD = 1.10), $t(114) = .583$, $p = .281$, $d = .11$. However, the moral identity subscale of symbolization (i.e., the degree to which the participants express a social identity based on the moral traits) did differ significantly between the abstract (M = 5.06, SD = 1.56) and concrete conditions (M = 4.38, SD = 1.73), $t(114) = 2.21$, $p = .015$, $d = .41$. In other words, there was a significant difference in the extent to which participants express a social identity based on their moral traits between the abstract and concrete conditions, but not in the degree to which their moral traits are central to their self-concept.

Correlational Analyses

Correlational analyses were conducted to identify the relationships amongst moral injury, moral emotions, and moral identity associated with the perceived hypothetical experience of a potentially morally injurious event. Moral injury was found to be significantly correlated with both of the moral emotion scales for shame, $r(114) = .64$, $p < .001$ and guilt, $r(114) = .74$, $p < .001$. Moral injury was also found to be significantly correlated with the moral identity measure of symbolization, $r(114) = .22$, $p = .016$ but not with internalization scores, $r(114) = -.12$, $p = .197$. The moral emotion scores for shame and guilt were also found to be significantly correlated, $r(114) = .84$, $p < .001$. Also, the two subscales within the moral identity measure (ie. symbolization and internalization) were not significantly correlated, $r(114) = .11$, $p = .264$ so we kept them as separate measures for the purposes of the analyses.

Exploratory analyses were also conducted to examine the relationships between the degree of abstract and concrete response ratings with the moral emotion, moral identity, and moral injury scores. The degree of abstract and concrete response ratings was found to be significantly correlated with the moral identity subscale for internalization, $r(114) = .24$, $p < .001$,

but not symbolization, $r(114) = .06$, $p < .001$. The degree of abstract and concrete response ratings was not found to be significantly correlated with shame, $r(114) = -.04$, $p < .001$, guilt, $r(114) = -.007$, $p < .001$, or moral injury, $r(114) = -0.10$, $p < .001$.

Discussion

The results of this study provide insight into the influence that different cognitive processing methods can have on our likelihood of experiencing moral injury and other moral-related outcomes. As predicted, for some of the outcomes related to moral injury, those in the concrete condition did report experiencing significantly less maladaptive moral-related outcomes after processing our hypothetical PMIE compared to those in the abstract condition. While it was hypothesized that there would be significant differences in moral emotions, moral identity, and moral injury, there were only significant differences found in moral injury scores and one subscale of the moral identity measure between conditions. Those in the concrete processing group reported experiencing significantly less moral injury and lower symbolization scores than did those in the abstract condition. The difference in scores for shame, guilt, and internalization did not differ significantly across the two conditions.

As hypothesized, it was found that engaging in concrete processing of the potentially morally injurious event led to significantly lower reported moral injury scores than did engaging in abstract processing. This is a finding that has replicated what other studies looking at construal level manipulations for abstract versus concrete processing have also found. Concrete processing has been found to result in less post-decisional regret, fewer intrusive memories, and fewer PTSD symptoms than has abstract processing (Dey et al., 2018, White & Wild, 2016). While it appears that no other studies have looked at how construal level manipulations can influence the likelihood of experiencing moral injury specifically, the symptomology for moral injury is quite

similar to some of the outcomes these studies have discussed. For example, in a study conducted by White and Wild (2016), participants in the concrete processing condition reported less severe PTSD symptoms than did those in the abstract condition. While moral injury and PTSD are very separate experiences, they do have some core features that overlap with one another. Moral injury has also been found to be significantly associated with PTSD, depression, and suicidal ideation (Williams et al., 2021).

In order to understand how well our manipulation worked and to what degree participants adopted either an abstract or concrete mindset, participants' responses to the framing questions were coded and analyzed. Our findings showed that those in the concrete condition did have significantly more concrete responses to the framing questions than did those in the abstract condition, which suggests that the manipulation was effective. By asking participants to focus on either the why or the how versus the what, researchers were able to frame participants' mindset into one where they would cognitively process the PMIE in either an abstract or concrete way, respectively. Whereas the concrete framing questions tended to elicit responses from participants that were largely straight to the point and surface level, the abstract framing condition has responses that go more in depth and discuss implications and other considerations related to the COVID-19 pandemic. The degree of abstract or concrete ratings were also significantly correlated with the moral identity subscale for internalization but were not correlated with the moral emotion scales, symbolization, or moral injury. Because lower scores are more indicative of concrete responses, this means that concrete responses were significantly related to lower internalization scores and more abstract responses were related to higher internalization scores. As previously mentioned, internalization refers to the more internal piece of moral identity and how central one's morality is to their self-concept, it is unsurprising that concrete responses were

related to lower internalization scores. Thus, this finding provides some evidence to support our hypothesis such that concrete cognitive processing is associated with weaker moral identity, specifically, internalization.

Looking specifically at moral emotions as an outcome, it was found that participants' scores for shame and guilt were positively correlated with reported feelings of moral injury. This finding was unsurprising, since shame and guilt have been identified as core features of moral injury (Norman & Maguen, 2021). Therefore, regardless of what condition participants were assigned to, if they reported experiencing a high degree of moral injury in response to the hypothetical scenario was associated with more feelings of shame and guilt. However, contrary to what was hypothesized in the present study, participants' scores for shame and guilt measures did not differ significantly between the abstract and concrete conditions. In hindsight, it is possible that using a hypothetical potentially morally injurious scenario was not immersive enough of an experience to have participants in either condition to evoke feelings of shame or guilt. Past research looking at moral emotions as a consequence of PMIEs often ask participants to reflect on their own experiences (Dey, et al., 2018) rather than hypothetical scenarios. When participants were instructed to think about this healthcare worker scenario, they were being asked to put themselves in the shoes of someone else who is being faced with something that likely many of our participants have never had to experience. One of the demographic questions that participants answered asked about their occupation and out of all 116 participants, only five identified themselves as working within the health sector. Therefore, it may have been difficult for participants to empathize with the emotions that healthcare workers may have experienced during the pandemic. The descriptive statistics from the moral emotion scales seem to support this idea. Participants' moral emotions were measured using 7-point scales and looking at the

means of these items, they seem to fall around the midpoint of 4 which was indicative of "neither disagree nor agree". The mean guilt and shame scores for the abstract group were 3.88 and 3.26 respectively and for our concrete group they were 3.58 and 3.26. These data points suggest that the healthcare worker scenario didn't create strong feelings or shame and guilt for the participants which could be the result of the situation not being immersive enough of an experience.

Interestingly, in terms of moral identity, internalization scores did not differ significantly between conditions, but the symbolization scores did. Those in the abstract group reported significantly higher symbolization scores than did those in the concrete group. Considering the definition of symbolization (i.e., the degree to which an individuals' social identity is shaped by their morality), it seems unsurprising that in past research, symbolization has been found to be more related to serving others and giving back to the community compared to internalization. In a study conducted by Aquino and Reed (2002), it was found that both moral identity subscales were related to recalled volunteerism, but symbolization was a stronger predictor than was internalization for the effect. It has also been found that symbolization scores have predicted past charitable donations, but internalization scores have not (Reynolds & Ceranic, 2007). Whereas internalization refers to the more internal, personal aspect of moral identity, the symbolization piece explains the extent to which your morals are demonstrated in an outward way. Similar to volunteerism and giving charitable donations, being a healthcare worker involves this outward display of character. Therefore, when participants were being asked to reflect on this healthcare worker scenario, they were imagining the outward display of this person's morals and not so much how their morals could be tied to their own self-concept. Perhaps it was easier for participants to think about the symbolization piece where the healthcare workers' behaviors and

outward displays are being analyzed and thought of than it was to think about the internalization piece where the idea of a self-concept comes into play. If the participant was not a healthcare worker themselves during the pandemic, it may have been very difficult to empathize with the thought of a healthcare worker's self-concept and it could have been easier to think about the aspect of serving others in an unethical system where bad outcomes cannot be prevented.

Implications

The current study contributes to a growing body of research that extends moral injury literature beyond the military context. Whereas most research related to moral injury focuses on military personnel and examines populations who have witnessed or committed acts that violate deeply held moral values, the current study used a hypothetical scenario involving healthcare workers during the pandemic and involves looking at individuals' experiences when they are part of an unethical system such that bad outcomes are unpreventable (Talbot & Dean, 2018). The latter is an understudied form of the onset of moral injury and by using a hypothetical scenario, all participants were thinking about the same event so that the only true discrepancy between conditions was their construal level.

By using a general population sample, we are better able to understand how moral injury affects all persons rather than only military personnel and healthcare workers, groups that serve as the predominant focus in the current literature. Because this area of moral injury research focusing on people who work within an unethical system is new to the field, it is possible that there are other professions or individuals who are at risk for experiencing moral injury that have not yet been studied. Speaking specifically to moral injury affecting persons who work within an unethical system in which bad outcomes cannot be prevented, other possible at-risk groups have been discussed to include social workers (Sugrue & Haight, 2017). With this in mind, it is

important to understand methods and practices for how we can protect ourselves from experiencing moral injury because of the threatening outcomes that can arise such as experiencing feelings of guilt and shame, an inability to self-forgive, engaging in self-sabotaging behaviors, PTSD, depression, and suicidal ideation (Norman & Maguen, 2021; Williams, et al., 2021). I would also argue that situations where an individual may feel obligated to compromise their morals may occur to a lesser degree in a more everyday environment. In situations where social pressures arise, such as peer pressure, we may be inclined to compromise our morals and act in a way that is inconsistent with our core beliefs in a positive moral self, ultimately creating the potential of experiencing moral injury.

Understanding how reported feelings of moral injury can be lessened after exposure to a PMIE through the use of different cognitive appraisal strategies creates potential to inform the development of concrete thinking training programs that could be used by individuals who are at risk of experiencing moral injury. This could be because they work in an unethical system in which bad outcomes cannot be prevented or because they are at risk of witnessing or committing behaviors that go against their morals. Although more research needs to be conducted on these cognitive appraisal strategies for PMIEs, the current research provides some support for further research on how these strategies may play a role in reducing negative outcomes. Future research can replicate and extend the current work to examine whether abstract and concrete processing lead to similar results for real experiences of PMIEs.

In terms of directions for future research, it would be extremely valuable for a scale to be developed that assesses moral injury beyond the military context and is a generalizable measure that could be used for the general population. Scales such as the 20-Item Moral Injury Questionnaire (MIQ), 9-Item Moral Injury Events Scale (MIES), and the 17-Item Expression of

Moral Injury Scale (EMIS) all assess moral injury but do so by asking about military experiences. By having all measures of moral injury design, themselves around one specific context, it is possible that there are other elements of the moral injury experience from other situations being excluded in the current available measures. For example, when we compare the PMIEs that military personnel and healthcare workers during the COVID-19 pandemic may be experiencing, something that these current measures are missing are the more personal implications that may further feelings of moral injury for healthcare workers during the pandemic. The current measures would be capturing the fact that healthcare workers are committing acts and bearing witness to things that go against their morals, but they aren't capturing implications that extend beyond the workplace that could be furthering the feelings of moral injury. This could include things like experiencing burnout, the fear of bringing home the virus to their families, being unable to book appointments for self-care and having to miss out on important personal events such as a family members birthday because they are being overworked. These are all factors that we captured in the healthcare worker scenario but are less likely to be assessed in the current moral injury measures available. Therefore, creating a measure that is more general and includes more than items regarding specific acts could be extremely valuable to further moral injury literature.

Another direction for future research would be to use a similar method as the present study but include a control group in which participants are framed to process the PMIE in neither a concrete nor abstract manner. In order to use a very similar method to the other two conditions, this could be done by having participants in the control condition _____. Looking at the present study, it is unclear whether those in the concrete group reported experiencing significantly less moral injury and internalization scores than did those in the abstract group

because they were thinking concretely or because they were not thinking abstractly. It is possible that what caused the participants in the abstract condition to report significantly higher moral injury and internalization scores than those in the concrete condition was because they were processing the PMIE in an abstract manner. In other words, adding in a control condition could allow for researchers to see if it was truly the concrete processing that reduced the maladaptive outcomes of experiencing a PMIE or if it was that abstract processing increased the maladaptive outcomes of experiencing a PMIE.

This study truly demonstrates how different cognitive processing methods can influence the outcomes we experience following a situation in which our morals are compromised. Working to expand moral injury literature to include all groups of people would be extremely valuable because the potential outcomes of moral injury can be quite detrimental. Thus, it is important that we understand how moral injury can arise and affect people of all professions. By researching ways in which we can protect ourselves from the maladaptive outcomes of moral injury, training programs and workshops could be created to train people to think or cognitively process in a more concrete manner in situations where feelings of moral injury could arise. This would be particularly valuable for individuals who work in environments where it is somewhat inevitable that their morals be compromised such as those in the healthcare system, military personnel, and social workers.

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Appendix I

Imagine yourself as a healthcare worker during the height of the COVID-19 pandemic.

While the government has imposed a stay-at-home order and encouraged schools and organizations to shift their practices online, you being at work now is more important than ever before. You've arrived at work and just like every other day, you gear up in your uniform of scrubs, a protective gown, an N-95 mask, medical gloves, and a face shield. Each shift feels like a new and different battle as you continue to expose yourself to the virus in an effort to help others.

Your day has just started and as a very well-regarded and long-standing worker at your hospital, one of the ICU nurses rushes towards you (the person with the most seniority) and says "we have five COVID patients in distress and all of them need a higher level of care, four of them urgently. We only have one bed available, you pick." You never anticipated having to make decisions surrounding bed allocations in the ICU, this isn't what you signed up for. A few hours have passed and as you walk by one of the rooms where one of the patients who wasn't chosen to get the ICU care is, you overhear a nurse say that they passed away about 10 minutes before they had the chance to make a last call to their family. They had deteriorated so quickly that by the time the nurse had gotten back into their room with a notepad and pen to make notes about what messages the patient wanted to pass along to their family, they had already died.

At the end of your shift, you go to the calendar to request a day off for a family member's birthday but just as you begin to do so, your boss approaches you and asks if you can work a double shift that same day since your co-worker has just fallen ill with the virus. You and your coworkers are exhausted, burnt out, overworked and in need of some serious self-care. Worse, whenever you try to book an appointment with your massage therapist, chiropractor, or other

wellness provider, you are denied because you are deemed as having been in close contact with a COVID-19 case. You don't know how much longer you and your co-workers can hold out as the COVID-19 cases keep coming in.

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