MORAL INJURY IN CANADIAN ARMED FORCES AND PUBLIC SAFETY

MEASURING MORAL INJURY AND ITS IMPACTS IN CANADIAN ARMED FORCES AND PUBLIC SAFETY PERSONNEL

By

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Lay Abstract

Canadian Armed Forces (CAF) and Public Safety Personnel (PSP) are at elevated risk of both mental health disorders and potentially morally injurious experiences due to the nature of their professions. Morally injurious experiences are typically considered to be violations of one's own deeply held moral beliefs, and may be perpetrated by the individual, by others, or result from betrayals by trusted sources. Given the high rates of mental health disorders in CAF and PSP, it is crucial to understand how moral injury may contribute to the development of these disorders and to identify those at increased risk. This dissertation therefore outlines how morally injurious experiences may impact CAF and PSP, examines what factors may increase risk of moral injury within these populations, and how the presence of moral injury may impact the development of other mental health disorders.

Abstract

Military service has been previously identified as a risk factor for adverse mental health outcomes, including posttraumatic stress disorder (PTSD), major depressive disorder (MDD), and suicidal ideation. Existing literature confirms the heightened prevalence of these conditions among armed forces and public safety personnel (PSP) compared to the general population. However, to date there is limited research regarding the interplay between moral injury (MI) and other mental health conditions in Canadian Armed Forces (CAF) and PSP. Therefore, this body of research investigates the intersection of potentially morally injurious experiences (PMIEs) and mental health outcomes among CAF and PSP, contributing to the growing literature on MI.

The dissertation includes three studies presented as three separate articles which have undergone peer-review and publication. Collectively, through mixed-method investigation, the three studies highlight the pervasive impact of PMIEs on mental health outcomes among CAF and PSP populations. In the first study, I qualitatively explore the experiences of CAF members and PSP, highlighting the complex interplay between professional duties and personal well-being, while deepening our understanding of the subjective experiences of morally injurious experiences. Building upon these insights, the second study quantitatively identifies risk factors of moral injury in CAF personnel, including stressful deployment experiences, sexual trauma, and childhood maltreatment. Lastly, the third study examines the associations between moral injury and mental health disorders among CAF personnel and Veterans. Robust relations were found between MI and various mental health conditions, emphasizing the need for comprehensive support systems and tailored interventions to address these complex interplays.

Together, these findings elucidate the importance of identifying and addressing the distinct challenges faced by CAF and PSP, to promote well-being and resilience in high-stress occupational environments.

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Table of Contents

List of Tables

List of Abbreviations and Symbols

ACE: Adverse Childhood Experiences

CAF: Canadian Armed Forces

CAFVMHS: Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey

CBSA: Canadian Border Services Agency

CCHS-CF: Canadian Community Mental Health Survey-Mental Health and Well-being-Canadian Forces

CES: Walter Reed Army Institute of Research Combat Experiences Scale

CI: Confidence Interval

CIPSRT: Canadian Institute for Public Safety Research and Treatment

DASS: Depression Anxiety Stress Scale

DEX: Deployment Experience

DSM: Diagnostic and Statistical Manual of Mental Disorders

EMIS-M: Expressions of Moral Injury Scale-Military Version

EMS: Emergency Medical Service

GAD: Generalized Anxiety Disorder

GAD-7: Generalized Anxiety Disorder Scale

MDD: Major Depressive Disorder

MDE: Major Depressive Episode

MI: Moral Injury

MIES: Moral Injury Events Scale

MIOS: Moral Injury Outcome Scale

MIQ-M: Moral Injury Questionnaire-Military Version

MISS-M: Moral Injury Symptom Scale-Military Version

MSM: Military Sexual Misconduct

MST: Military Sexual Trauma

NCM: Non-Commissioned Member

NCO: Non-Commissioned Officer

PCL-5: Posttraumatic Stress Disorder Check List

PD: Panic Disorder

PHQ-9: Patient Health Questionnaire-9

PMIEs: Potentially Morally Injurious Experiences

PPTE: Potentially Psychologically Traumatic Events

PSP: Public Safety Personnel

PTSD: Posttraumatic Stress Disorder

REB: Research Ethics Board

SAD: Social Anxiety Disorder

SD: Standard Deviation

SE: Standard Error

SI: Suicidal Ideation

VAC: Veterans Affairs Canada

WHO: World Health Organization

WHO-CIDI: World Health Organization Composite International Diagnostic Interview

Declaration of Academic Achievement

This dissertation is comprised of three studies, each of which were led in full or in part by the student. The conceptualization and design of Study 1 was assisted by the student including the development of the qualitative interview guide. Data collection were conducted in part by the student in addition to assisting with transcription of qualitative audio recordings. The student led coding and analysis of Study 1 qualitative data and prepared the written manuscript. For Studies 2 and 3, the student assisted in conceptualization of study design and analyses, including covariates of interest, carried out interpretation of analytic findings, and prepared the manuscripts for publication. The student made all revisions to each manuscript based on advice and feedback from co-authors, journal reviewers, and journal editors. This dissertation research was completed between September 2018 and January 2023. To meet the requirements of the "sandwich thesis", the contributions of co-authors are described as follows.

The first dissertation study was co-authored by Dr. Andrea Brown, Ms. Heather Millman, Dr. Sherry Van Blyderveen, Dr. Ruth Lanius, Dr. Alex Heber, Dr. Margaret McKinnon, and Ms. Charlene O'Connor who each critically reviewed the manuscript prior to submission. Dr. Van Blyderveen, Dr. Brown, and Ms. Millman assisted in conducting focus groups and collecting data. Dr. Brown and Ms. Millman assisted with coding and interpretation of findings. Drs. Van Blyderveen, Brown, Heber, Lanius and McKinnon additionally provided clinical advice and support.

The second dissertation study was co-authored by Dr. Rachel Plouffe, Dr. Stephanie Houle, Dr. Aihua Liu, Dr. Andrea Ashbaugh, Dr. Natalie Mota, Dr. Tracie Afifi, Dr. Murray Enns, Dr. J. Don Richardson, Dr. Anthony Nazarov and Dr. Margaret McKinnon, who each critically reviewed and edited the manuscript prior to publication. Drs. Nazarov, Houle, Plouffe,

Richardson and McKinnon contributed to the conception and design of the project. Drs. Nazarov, Plouffe, Houle and Liu assisted in the creation of the conceptual analytic models. Dr. Liu conducted the analyses. The student led interpretation of the analysis, drafted, and edited the manuscript prior to submission, and during revisions.

The third dissertation study was co-authored by Dr. Rachel Plouffe, Dr. Stephanie Houle, Dr. Aihua Liu, Dr. Andrea Ashbaugh, Dr. Natalie Mota, Dr. Tracie Afifi, Dr. Murray Enns, Dr. J. Don Richardson, Dr. Anthony Nazarov and Dr. Margaret McKinnon, who each critically reviewed the manuscript prior to publication. Drs. Nazarov, Houle, Plouffe, Richardson and McKinnon contributed to the conception and design of the project. Drs. Nazarov, Plouffe, Houle and Liu assisted in the creation of the conceptual analytic models. Writing support was provided by Dr. Houle.

Chapter 1 | General Introduction

Morality is a concept, arguably, unique to humans, encompassing practices, beliefs, and values concerning right or wrong behaviour. While ethics encapsulates the standards of behaviour expected within a profession, morals refer to what is considered acceptable or "good" (Omery, 1989). Morality is influenced by religion, social interaction, cultural consensus, individual relationships, and a sense of justice which is further shaped by the environment in which we reside (Velez Garcia & Ostrosky-Solis, 2006). At their core, morality and moral values help us to identify and enact prosocial behaviours which benefit the collective good rather than solely the individual. Cultural ideology shapes moral beliefs and norms as to what is decidedly "right and wrong", and is not static; there are continual, gradual shifts in moral beliefs across time and history. For example, feelings of shame or guilt related to a 1900's etiquette code mishap (e.g., showing too much ankle while crossing the street), are likely to be nonexistent in current "Western" society. Even though culture is a driving force of what is considered "moral" at any given time, research suggests a base set of stable moral drivers, termed moral emotions, exist across cultural contexts. The primary functions of these emotions are to preserve social relationships and encourage prosocial, "moral" behaviours (Haidt, 2003; Tangney et al., 2007).

When moral standards are violated in a more extreme way, moral pain may develop to include a constellation of emotions and behaviours which are no longer adaptive for the individual. This collection of symptoms and their outcomes, together termed moral injury (MI), is the focus of the following dissertation work. The subsequent chapters will: 1) outline moral emotions, with a focus on negatively valenced moral emotions as they are most relevant to the current understanding of MI; 2) present three studies which aim to provide a more in depth characterization of individuals with MI within the Canadian Armed Forces (CAF) and public

safety personnel (PSP), and ascertain how MI may impact other facets of psychosocial well-being within this population.

1.1 Moral Emotion

While the subjective experience of moral emotions may be the same as the experience of their non-moral counterparts, for example, feeling disgust at the smell of rotting food and disgust due to corruption, there is a fundamental distinction which identifies an emotion as morally charged. Moral emotions are those which result from moral violation or motivate moral behaviour, and are those which encourage persons to be concerned with the interests of society or others aside from solely the individual experiencing the emotion (Haidt, 2003). Further, moral and immoral acts require both a moral agent, someone who is conducting the act, and a moral patient, or someone who is impacted by the act (Gray & Wegner, 2009), as well as judgment of the acts as "right" or "wrong" (Graham et al., 2009; Haidt & Graham, 2007). Even in situations where there is an isolated agent (i.e., someone not engaging with a separate person), there is still the implication of potential harm to hypothetical others (Gray & Wegner, 2011).

Due to the necessity of these components to create a morally valenced event which subsequently elicits moral emotions, recent research has posited that moral emotions can be identified using a four-quadrant approach where valence of the act (help or harm) and moral type (agent or patient) are the axes (Gray & Wegner, 2011). This framework then leads to four separate "types" of moral actors through which moral emotions can be described: Heroes, Beneficiaries, Villains, and Victims (Gray & Wegner, 2011). In this case, "heroes", where the person perpetrating the act (i.e., agent) is doing something beneficial either for another individual or society (i.e., helping), are perceived in a positive light which evokes emotions related to praising others, including gratitude or admiration (Gray & Wegner, 2011; Haidt, 2003).

Similarly, “beneficiaries”, using this quadrant model, are individuals who are helped by others and may evoke emotions such as relief (Gray & Wegner, 2011). “Villains”, or individuals who perpetrate harm against another may evoke emotions such as anger or disgust (Gray & Wegner, 2011; Haidt, 2003). Lastly, “victims” are individuals who have been perpetrated against in a negative way, and elicit emotions related to the suffering of others such as empathy or sympathy (Gray & Wegner, 2011; Haidt, 2003). When examining these four “types” of moral actors, the focus of this dissertation work relates largely to “immoral” or “harm” events, with less focus on acts of help, or “morally positive” situations. As such, MI concerns itself most frequently with agents and actors identified as falling under the “villain” and “victim” quadrants. These two quadrants are focused on negatively valenced moral emotions, specifically related to self-conscious emotions and emotions concerning others (Haidt, 2003).

While self/other is not an included dimension within the above theoretical model, moral emotions have previously been further categorized as either self-conscious or other-condemning (Haidt, 2003). Within this additional framework, other-condemning moral emotions include anger, contempt, and disgust, typically felt in response to moral transgressions when a behaviour is perceived to be outside of acceptable norms (Haidt, 2003; Miranda & Welbourne, 2021). Conversely, self-conscious emotions such as guilt, shame and embarrassment aid individuals in navigating social dynamic complexities and indicate to an individual that they have committed a potential group norm violation (Haidt, 2003; Miranda et al., 2020).

This additional component of examination (self vs. other) is an important construct which maps onto the quadrant model of moral emotions. For example, if an individual has perpetrated a negatively valenced behaviour against another person, which would be characterized by the “villain” archetype, this may evoke self-conscious emotions such as shame and guilt (Haidt,

2003), due to the belief that they have done something morally wrong. The moral emotions typically captured within these "villain" and "victim" quadrants remain critical to the understanding of moral pain.

1.1.1 Guilt

Depending on the situation, guilt and shame can be seen in both "victim" and "villain" archetypes, due to either the act of perpetration against another, or being perpetrated against. Guilt and shame are self-conscious emotions which provide an individual with information regarding their own behaviours, indicating the need for resolution following an action deemed "wrong" in some way. While these moral emotions overlap and serve as a basis for social understanding, they are often incorrectly labelled interchangeably (Gausel, 2012; Miceli & Castelfranchi, 2018; Shen, 2018; Tangney & Tracy, 2012; Taylor, 1985).

Guilt is an emotion evoked during experiences where an individual judges their own behaviour to be wrong or immoral, either through action or inaction, and feels responsible for the harm this behaviour will cause others, whether anticipated, actual, or perceived (Haidt, 2003; Lewis, 1995; Tangney, 1999; Tracey & Robins, 2007). Therefore, guilt is tied to the evaluation of behaviour rather than the evaluation of the self as immoral, and as such, is hypothesized to be the less painful and less threatening of the self-conscious emotions (Lewis, 1971; Tangney et al., 1996). Importantly, feelings of guilt can occur in anticipation of specific behaviours, or more typically, in response to already perpetrated behaviour, which upon reflection is considered to be immoral in some way (Fontaine et al., 2024). The experience of guilt has been shown to include transgression-related rumination and pre-occupation with how the individual may have acted differently. This focus on and regret surrounding the event may be more likely to lead to

proactive reparative behaviours, including apologies and attempts to undo harm, compared to other self-conscious moral emotions such as shame or embarrassment (Lewis, 1971; Tangney et al., 1996).

1.1.2 Shame

Conversely, shame has been shown to be the more painful and intense self-conscious moral emotion (Lewis, 1971). While still requiring the appraisal of actions or behaviours as morally wrong, shame focuses on the behaviour as a reflection of the self as a whole, leading to personal appraisal of the individual as "bad" or defective in some way (Giorgetta et al., 2023; Lewis, 1971; Tangney et al., 1996). This intense self-scrutiny has been shown to increase feelings of "smallness", worthlessness, and inferiority (Haidt, 2003; Tangney, 1993; Tangney et al., 1996). While shame is an important and acknowledged moral emotion, there is a dearth of literature regarding the behavioural action tendencies of shame when compared to guilt (Haidt, 2003). Shame, due to focus on immutable attributes of the individual as "bad" or "wrong", may decrease the likelihood of prosocial, reparative behaviours and instead lead to avoidant or defensive behaviours such as concealment or desire to escape (Giorgetta et al., 2023; Tangney et al., 1996). The differences between behavioural action tendencies of guilt and shame may further influence how an individual views themselves both as a result of the transgression, as well as the personal interpretation of their actions (i.e., reparative or concealment) following the transgression.

1.1.3 Anger

Distinct from self-conscious emotions, anger, when conceptualized as a moral emotion, is other-condemning (Lomas, 2019). However, it is important to note that not all anger is

considered moral, nor is it associated with unanimously beneficial outcomes. Both moral and non-moral anger may lead to a host of negative outcomes such as desire for retribution if the transgression is deemed by the victim as unfair, misplaced anger (e.g., in cases of intimate partner violence), or reduced prosocial qualities in the angry individual, such as lack of forgiveness or unwillingness to help (Gisi & Carl, 2000; Lomas, 2019; Negri, 2008). Anger as a non-moral emotion may occur in many contexts, including when something of value is lost, or where personal goals are blocked from being achieved (Agnew et al., 2002; Lomas, 2019), and may be expressed through decidedly antisocial methods including physical assault or murder in extreme cases.

Conversely to non-moral anger, moral anger can be connected to belief in an unjust world, and within that, appraisals in response to feelings of unfairness, transgressions of others, and violations of autonomy, including betrayals by trusted sources (Lomas, 2019; Royzman et al., 2014; Rozin et al., 1999). Several contextual factors may influence moral anger, including aggressor intentions and perceived victim blameworthiness. Typically, unprovoked transgressions where there is no clear delineation of "why" a transgression has occurred are seen as more deserving of moral anger than those which are provoked (Lomas, 2019; Smetana et al., 2003). Similarly, when victims of transgressions are considered to be undeserving of the transgression, increases in collective anger and offers of support are commonplace when compared to those who are seen as more "blameworthy" (Mitchell et al., 2015). Interestingly, moral anger has been described previously as "fuel" (Adams, 1986) which may prompt individuals to confront injustice, engage in protests, and advocate for equitable treatment (Adams, 1986; Braunsberger & Buckler, 2011; Lomas, 2019; Milsei & Alberici, 2018; Vilas & Sabucedo, 2012). When expressed responsibly and toward the appropriate target, moral anger

can become a driver of positive outcomes, instigate social change, and act as a driving force to encourage rectification of moral wrongdoing.

1.2 Occupational Morality

As mentioned previously, morals and values are largely shaped by the continually changing culture within which we are immersed, and driven by the need for prosocial interactions which promote the common good (Haidt, 2003; McCartney & Parent, 2015; Tangney et al., 2007). Due to their unique languages, rituals, behavioural norms, hierarchies, and values, CAF and public safety professions each have their own isolated cultures, and within that culture, additional morals or "moral codes" by which their members must abide. In fact, many such institutions have their own ethos, which encapsulate the values held in high esteem within these microcosms. For example, the CAF Ethos includes three ethical principles (respect the dignity of all persons, serve Canada before self, and obey and support lawful authority), six military values (loyalty, integrity, courage, excellence, inclusion, and accountability), and eight professional expectations (duty, accepting unlimited liability, fighting spirit, leadership, discipline, teamwork, readiness, and stewardship). These principles, values, and expectations describe the spirit of the CAF and encapsulate the type of member each person within the CAF "should" aspire to be (Government of Canada, n.d.). Similarly, the Ethical Framework for the Canadian Association of Chiefs of Police provides foundational principles to guide decisions made by chiefs of police (Canadian Association of Chiefs of Police, 2024), in the same way that the Mission, Values and Ethics Framework of the Correctional Service of Canada (CSC) promotes ethical organizational culture for all persons involved with CSC (Correctional Service Canada, 2018). Each of these guiding doctrines include moral "requirements" of their members, and explicitly state the goal of aligning their members to a standard of acting in a way which is

"good and right". In fact, the CAF Ethos delves into further detail regarding how different guiding principles may impact bonds between team members (e.g., cultivating fighting spirit through moral connection), and emphasizes the necessity of sound moral principles within its leadership (Government of Canada, n.d.).

1.2.1 Potentially Morally Injurious Experiences

Military and public safety organizations broadly, provide their members with numerous instances and examples where moral codes are critical for the institution's success, even positively influencing camaraderie within the ranks. However, they are limited when explicitly outlining the possibility that morally sanctioned actions required within these institutions may be at odds with the moral or ethical standards of broader society. This may lead to a conflict in moral or ethical principles within these individuals. For example, in the CAF Ethos, the second professional expectation outlined is "accepting unlimited liability", which is accepting that an individual may have to order others, or be ordered themselves, to come into harms way or harm another person during their duty as a member of the CAF (Government of Canada, n.d.). This sentiment is, as described by the CAF, the crux of members' service to Canada paramount to "mission success and military effectiveness." This tenet further describes that a leader's obligation is to mitigate unlimited liability where possible, while acknowledging that leaders within the CAF will also bear the moral burden of making choices that may result in casualties.

This exemplifies the complicated reality of military members and PSP who must abide by and ascribe to multiple simultaneous, and often conflicting, moral standards. In the case of accepting unlimited liability, an individual must accept that at an indeterminate time in their career, they may be required to end the life of another person, while simultaneously attempting to revoke the common moral standard akin to "killing is wrong". The balancing of multiple

moral codes may lead to an increased risk of violating personally held moral beliefs for individuals within these occupations. Especially when compounded by additional factors such as perceived fault or blame, the complexity of the aforementioned moral burden within these contexts is vastly understated. These situations, where an individual must abide by the rules of their institution while in conflict with their personal morals, may be considered a type of potentially morally injurious experience (PMIE).

While there is currently no singular, all-encompassing definition of what constitutes a PMIE, they are generally thought to be high stakes situations which result in the violation of an individual's deeply held moral beliefs (Litz et al., 2009; Shay, 1994; Shay, 2014). These moral violations are accepted as occurring by transgressions of the self, through acts of omission or commission, and transgressions of others, such as being betrayed by a trusted individual (Currier et al., 2017; Drescher et al., 2011; Jinkerson, 2016; Koenig & Al Zaben, 2021; Nash et al., 2013). These violations of moral standards, at their more extreme, may lead to maladaptive outcomes which are not otherwise adequately captured by current diagnoses that rely on fear-based mechanisms, such as posttraumatic stress disorder (Jinkerson, 2016).

1.3 Moral Injury

To appropriately characterize the impact of moral stressors and their associated outcomes, Litz and Kerig (2019) conceptualized a hypothetical "continuum of moral stressors and outcomes", wherein the extent and type of moral conflict directly influence the impact and magnitude of the individual's response, with that response simultaneously moderated by cultural context and individual variance in social, psychological, and biological factors (Litz & Kerig, 2019). Using this continuum as our baseline to delineate differences in the magnitude of moral pain, moral challenges may be experiences that have no immediate self-relevance, which prompt

feelings of moral frustration but do not lead to any lasting psychosocial impairment, such as worries about "the state of the world." Moral distress is described as being caused by moral stressors directly relevant to the individual which evoke moral emotions and cause short term increases in distress (Farnsworth et al., 2017; Litz & Kerig, 2019). While these moral emotions and their behavioural action tendencies are induced by experiences such as being lied to or stolen from, they are unlikely to leave lasting impacts on the individual's sense of self or functional capabilities.

At the most extreme end of this continuum are PMIEs, which may lead to longstanding changes in psychosocial and functional domains (Litz & Kerig, 2019). PMIEs are events which are higher stakes, personally relevant, and occur least frequently out of all moral stressors on this continuum, due both to their extreme nature and the chronic negative impacts that these experiences may have on individuals. Moral injury, therefore, is a constellation of symptoms related to the violation of personal morals through PMIEs, the aftermath of which includes psychological, behavioural, social, and spiritual or existential impacts which re-define an individual's perceptions of themselves or others (Farnsworth et al., 2014; Griffin et al., 2019; Jinkerson, 2016; Litz & Kerig, 2019). Psychological impacts of MI include moral emotions of guilt, shame, and anger, which may then lead to behavioural and social challenges such as avoidance, loss of trust in others, loss of meaning in life, re-orientation of personal values, or even a loss of religious identity (Koenig et al., 2020; Koenig & Al Zaben, 2021).

1.3.1 PTSD and Moral Injury

Until recently, moral injury has been most frequently studied within military contexts to better understand how to appropriately address and treat the perpetration of moral transgressions (Litz et al., 2009; Litz & Kerig, 2019; Maguen et al., 201; Shay, 1994). As such, MI has been

historically studied within settings where extreme trauma and bearing witness to human suffering are commonplace. This led to initial challenges regarding conceptual definitions of MI due to its overlapping characteristics with PTSD. While there is some overlap in symptom presentation, MI may occur with or without the experiencing of a Criterion A trauma (i.e., exposure to actual or threatened death, serious injury, or sexual violence to the individual or learning about this happening to someone that they are close to; American Psychiatric Association, 2022) which is the defining feature of PTSD. While re-experiencing (e.g., nightmares; Criterion B), avoidance (Criterion C), negative emotional affect (e.g., anger; Criterion D), and hyperarousal symptoms (e.g., hypervigilance; Criterion E) may be present for both PTSD and MI, moral injury further includes explicit feelings of guilt and shame, loss of meaning or sense of identity, spiritual or existential concerns, and difficulty with forgiveness (either of others or self), which are not explicitly identified as symptoms of PTSD using current diagnostic criteria (Koenig et al., 2020; Koenig & Al Zaben, 2021). Furthermore, recent research indicates that while MI and PTSD frequently co-occur, there are different neurophysiological mechanisms for these separate responses (Barnes et al., 2019; Sun et al., 2019).

Even with increasing research pointing to the appropriate differentiation of MI and PTSD as separate constructs, there remains disagreement regarding whether MI should be considered as a unique diagnosis or subsumed within the diagnostic label of PTSD. Exposure to a high stakes event is a necessary component for both PTSD and MI to develop, with the important caveat that exposure itself is insufficient to assume outcomes of either PTSD or MI (Litz & Kerig, 2019). MI has been proposed as a way to identify and capture symptoms experienced following moral transgressions, whereas PTSD has been characterized as primarily a fear-based disorder, and requires the experiencing of a definitional traumatic event (i.e., Criterion A trauma).

Unlike Criterion A trauma with PTSD, there is currently no singular accepted definition of PMIE, nor are there agreed upon comprehensive criteria for MI symptomatology (Litz & Kerig, 2019). In fact, some researchers argue that to consider MI as a diagnostic clinical condition may pathologize a normal human reaction to moral violations (Farnsworth et al., 2017). As such, to affirm the need for MI as an explicit mental health diagnosis seems premature. However, while not currently diagnostic in nature, it is clear that MI as a clinical syndrome is important to identify and intervene where possible. While no current "gold standard" treatment exists explicitly for MI, there are a number of new treatments currently being assessed (Cenkner et al., 2021; Farnsworth et al., 2017; Gray et al., 2012).

1.3.2 Current Interventions

Current approaches to the treatment of MI typically involve treatments for trauma-related disorders, which include the use of exposure, and cognitive restructuring techniques. Cognitive Processing Therapy (CPT; Resick et al., 2017), is one of the most broadly used interventions for PTSD in military settings (Hoge & Chard, 2018; Koenig & Al Zaben, 2021). CPT addresses psychological conflicts, or "stuck points" implicated in PTSD, and involves a combination of cognitive behavioural therapy techniques to process negative beliefs regarding the traumatic event and how it impacted the individual's life. CPT, while not explicitly designed to address moral injury, does include a focus on certain symptoms of MI including feelings of guilt and shame related to transgressions, self-condemnation related to blame, and trust in others.

Prolonged Exposure (PE), though originally developed as a therapeutic intervention strategy to mitigate symptoms of PTSD, has recently been used to treat MI with some success (Paul et al., 2014). PE requires the use of repeated in-vivo and in-vitro exposures with the goal of developing habituation to those situations which cause symptoms related to PTSD, or in more

recent cases, related to MI. While some evidence has shown these interventions to be effective at reducing guilt and shame (Clifton et al., 2017; Resick et al., 2002), they may be less effective long term due to the focus on fear or threat-based experiences and appraisals, rather than focusing on moral violations and transgressions (Larsen et al., 2019).

While designed for combat-stress injuries, Adaptive Disclosure (AD) does explicitly discuss MI as a targeted treatment goal, in addition to traumatic loss and military service in war. Grey et al. (2012) administered a six-session, 90 minute weekly manualized AD protocol to 44 active-duty Marines and Navy Corps personnel from the United States military. Findings from this study show that individuals receiving AD had improvements related to depressive symptoms, posttraumatic cognitions, and posttraumatic growth, while also being considered an acceptable intervention by participants.

Another intervention focusing on MI that has been recently assessed is Acceptance and Commitment Therapy (ACT) adapted for moral injury. Due to ACT's focus on personal values and the creation of meaningful life experiences, it is an intervention that lends itself to working with moral pain and the internal experiences of moral injury. Farnsworth et al. (2017) found that using a six-session ACT protocol focusing on moral injury was well tolerated and beneficial according to participants. While this pilot study enrolled eleven participants to assess feasibility and acceptability, the preliminary findings indicate that ACT for MI may show promise and should be studied more rigorously.

Most recently, Moral Injury Group Intervention was investigated by Cenkner at al. (2021). This 12-week intervention was led by a psychologist and a chaplain, with the goal of reducing spiritual, moral, and psychological distress related to military MI. Ninety-minute group sessions provided information about MI, explored topics such as moral emotions and moral

dilemmas, and provided a supportive environment for participants to reflect on the spiritual or religious experiences within the military. The overarching goal of this program was stated as normalizing moral pain as a result of combat. Forty Veterans were enrolled in the pilot study, with findings indicating increases in psychological health and self-compassion post-intervention.

While these novel treatments show promise and provide insight into the perceived necessity of intervention for MI to alleviate the burden of moral pain within military populations, there are important gaps which must be addressed prior to identification of "gold standard" treatments for MI. All aforementioned developing treatments are hindered by the field's current disparate definitions of PMIEs, inconsistent identification of what constitutes definitive symptoms of MI, and differing efforts to measure MI within and external to military populations. Without unification and consensus in these areas, identification of most appropriate interventions will be challenging at best. Therefore, it is critical to ascertain a more nuanced understanding of moral injury, how it impacts specific populations, and the subsequent interplay between MI and psychosocial well-being. As such, this dissertation focuses on the impact of MI within CAF and PSP populations.

1.4 Dissertation Objectives

The following chapters aim to further elucidate the experience of MI and its implications for mental well-being within Canadian military and public safety contexts. Chapter Two includes the foundational qualitative work conducted which underscored the importance of further examining MI and its implications in a treatment-seeking sample. Qualitative focus groups are used herein to investigate the subjective psychosocial impacts of military and public safety careers. Chapter Three subsequently describes the identification of risk factors for MI in CAF personnel using a representative sample. Chapter Four describes how MI impacts the odds of other past-year

mental health disorders in CAF members. Finally, Chapter Five is a discussion of the primary findings of the dissertation, limitations, and future directions.

Chapter 2 | Study One

General Purpose

Military and public safety professions are inherently demanding, repeatedly exposing individuals to potentially psychologically traumatic events (PPTE) and high levels of stress. However, the subjective toll of these careers remains understudied, particularly in the context of treatment-seeking individuals within these populations. To effectively treat the unique challenges of military and public safety personnel, it is crucial to understand the subjective experiences of occupational factors and their influence on psychosocial outcomes. Therefore, Study One sought to obtain a more in-depth understanding of the experiences of treatment-seeking public safety and CAF members that may be implicated in mental health considerations. Data were collected during inpatient treatment at a private mental health hospital using semi-structured focus groups, and qualitatively analyzed using interpretive phenomenological analysis.

The findings of this study have significant implications for both research and mental health treatment among military and public safety populations. Importantly, potentially morally injurious experiences, and potential moral injury, were identified by participants as critical outcomes of service without explicit prompting by the study team. Results further impart the importance of addressing themes such as relationships, identity, and potential moral injury during therapeutic intervention as a method to enhance treatment effectiveness in this population. Understanding the distinct cultures and identities associated with military and PSP professions is essential for clinicians and policymakers, as this may assist in informing more culturally relevant interventions and supports during treatment.

Title and Authorship

Title: The mental health experience of treatment-seeking military members and public safety personnel: a qualitative investigation of trauma and non-trauma-related concerns

Authors: Bethany Easterbrook, Andrea Brown, Heather Millman, Sherry Van Blyderveen, Ruth Lanius, Alex Heber, Margaret McKinnon, Charlene O'Connor.

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2.1 Abstract

Introduction: Paramedics, firefighters, police officers and other public safety personnel (PSP) as well as Canadian Armed Forces (CAF) members are frequently exposed to stressors and demanding work environments. Although their specific work-related tasks may vary, a commonality between these occupations is the significant likelihood of repeated exposure to potentially psychologically traumatic events (PPTE) over the course of their careers. Due in part to these repeated exposures, CAF members and PSP are at an elevated risk of mental health concerns including posttraumatic stress disorder. The purpose of this study was to obtain a more in-depth understanding of the trauma- and non-trauma-related experiences of active or retired PSP and CAF members that may be implicated in mental health issues and resultant treatment and recovery.

Methods: Study participants were recruited during inpatient treatment at a private mental health and addictions inpatient hospital in Canada. We conducted and audiotaped semi-structured focus groups and transcribed the discussions. Interpretive phenomenological analysis and thematic coding generated a coding scheme from which to identify concepts and linkages in the data.

Results: Analysis generated four primary themes: interpersonal relationships, personal identity, mental health toll and potential moral injury. A variety of subthemes were identified, including family dynamics, inability to trust, feelings of professional/personal betrayal, stigma within the CAF/PSP culture, increased negative emotions about self/others, and a reliance on comradery within the service.

Conclusion: The information gathered is critical to understanding the perspectives of PSP and military members as the career stressors and related exposure to PPTE of these occupations are unique.

2.2 Background

Public safety personnel (PSP), including but not limited to police officers, firefighters, correctional officers, dispatchers and paramedics (Oliphant et al., 2016) as well as members of the armed forces, have higher exposure to potentially psychologically traumatic events (PPTE) and report higher rates of mental health disorders than the general population. The 2018 Canadian Armed Forces members and Veterans Mental Health Follow-up Survey found that 44% of those surveyed had experienced symptoms consistent with anxiety or depression at some point between 2002 and 2018, while 25% of respondents had experienced symptoms consistent with both (Statistics Canada, 2018). The prevalence of past-year posttraumatic stress disorder (PTSD) for members of the Canadian Armed Forces (CAF) also increased from 2.8% in 2002 to 5.3% in 2013. In 2016, 16.4% of surveyed Regular Force veterans released between 1998 and 2015 self-reported a diagnosis of PTSD (Til et al., 2017).

Similar increased rates of mental health disorders, compared to the general population, have been found for PSP. A recent national survey of almost 6000 Canadian PSP found that 44.5% screened positive for symptom clusters consistent with one or more mental health disorders (Carleton et al., 2018). The frequency of positive screens among active and veteran military and public safety personnel (~44%) is significantly higher than the prevalence of diagnosed mental health disorders in the general Canadian population (~10%) (Pearson et al., *n.d.*). While the specific demands of each career differ widely, commonalities between military and public safety occupations include the increased chance of repeated exposure to on-the-job traumatic experiences (Galloucis et al, 2000; McCaslin et al, 2006; Sareen et al., 2007), and an elevated risk of mental health concerns, including alcohol dependence, depression, PTSD and potential moral injury(Fullerton et al., 2004; Kleim et al., 2011; Nazarov et al., 2019). Moral injury refers

to the psychological distress or difficulties with functioning that individuals experience as a consequence of situations during which they or others have betrayed personal moral beliefs (Lewis, 1971; Litz et al., 2009). Individuals exposed to events that transgress their personal morals commonly report symptoms of shame and guilt, which may influence the development of PTSD and other mental health disorders (Nazarov et al., 2015; Statistics Canada, 2013). These feelings of shame and guilt can be associated with acts of the self, such as actions leading to loss of life, and actions of others, including seeing ill or injured people they are unable to help, a common experience during deployment (Nazarov et al., 2018).

Although successful evidence-based treatments for PTSD exist, their effectiveness seems to be reduced in combat-exposed individuals, who are more likely to be diagnosed with PTSD than the general public (Statistics Canada, 2018; Stewart et al, 2009). Treatment dropout rates among military samples are higher than the general population, with one in four veterans not completing residential treatment and many others refusing to seek treatment because of perceived and experienced stigma, misconceptions about treatment and structural barriers (Smith et al., 2019; Sudom et al., 2012). The high dropout rates indicate there is a missing component to effective treatment of military personnel with mental health concerns. Moreover, although data on treatment dropout rates among PSP are unavailable, commonalities (e.g. long shifts, stressful environments, high-risk situations) with the military suggest that dropout rates could be similar.

The literature is scarce on the mental health concerns of active and retired CAF members and PSP seeking treatment for PTSD and substance use disorders. By gaining in-depth understanding of the unique trauma and non-trauma-related issues among military and public safety personnel, we can work to enhance the effectiveness of focused treatment programs designed for active and retired CAF members and PSP.

The purpose of this study was to gain a comprehensive understanding of the experiences of treatment-seeking individuals in these occupations. Our sample included CAF members on medical leave, CAF veterans and PSP, all seeking inpatient mental health treatment.

This article provides a descriptive overview of the themes and issues identified as most relevant for PSP and military members and veterans relating to moral injury and their mental health.

2.3 Methods

2.3.1 Design

We used a phenomenological focus group–based approach to better understand participants' first-hand experiences in their military/PSP careers and the impact of these experiences on their relationships and mental health. We used focus group discussions to draw out participants' lived experiences as CAF members and PSP, to elucidate how subjective experiences can reveal shared nuances and themes within these professions (Bush et al., 2019). We paired this method of data collection with a thematic analysis of the data, to descriptively identify similarities and differences in the data set, and to highlight key shared features (Nowell, et al., 2017).

2.3.2 Ethics Approval

We obtained institutional ethics approval from Homewood Health Centre (REB #18-08).

2.3.3 Setting

We conducted the study in a private mental health and addictions inpatient residential treatment facility in Canada. The facility offers group-based treatment to adults (18+ years old) for substance use disorders, trauma and anxiety-related disorders. Treatment included emotion regulation skills, cognitive behavioural skills, dialectical behavioural interventions, group and individual therapy sessions, and creative activities such as gardening.

2.3.4. Demographics

We conducted 26 focus groups with 63 self-identified active or retired CAF members and PSP receiving treatment for trauma and/or substance use disorders. Participant recruitment was conducted in the treatment units. The only reason for exclusion from the focus groups was that participants could not be in their first week of inpatient treatment, to allow for a period of emotional adjustment to the facility environment.

Eligible individuals interested in participating in the focus groups were asked to meet with one of the researchers beforehand to learn about the purpose of the focus group interviews and to give informed consent. In total, 48 men and 15women participated in at least one focus group, though many individuals participated in multiple groups.

Three different sets of question guides were used for the focus groups. The question guides were rotated each week, which is why some participants chose to engage in multiple focus group sessions. Of note, 2 male participants did not provide demographic data (see Table 1). Of the remaining participants, 19 were police officers (including municipal forces, provincial police services and Royal Canadian Mounted Police); 10 were CAF members/veterans, 10 were correctional officers; 9 were paramedics; 7 were in the "other" category, meaning that they had multiple PSP roles (e.g. began career in CAF, then became a police officer; emergency dispatch); and 6 were firefighters. Active and retired PSP and CAF members took part in the study. The median age of participants was 45.5 (range: 29–80) years.

Focus groups were conducted once per week, lasted approximately one hour, and included 4 to 16 participants each. Because anyone who had consented to participate was welcome to attend as frequently as they wanted, the focus groups included a mix of occupations, ages (18+) and sex/genders.

Groups were facilitated by two clinicians (CO and SV) trained to a master's or doctoral level, with multiple years of experience working with these populations. Interviewers adopted a facilitative rather than interrogative stance to encourage rich discussion and participation. While one researcher facilitated, the other observed, noting any non-verbal cues; the observer was also available for any questions to do with the research study.

The clinicians facilitated the focus groups using semi-structured question guides. The discussions were audio-recorded with participant consent, and the recordings professionally transcribed verbatim. The questions asked about specific challenges and stressors associated with participants' jobs that affected their lives, including effects on relationships, stigma, potential moral injury, treatment expectations and treatment experiences.

In addition to informed consent forms, participants were asked to complete a demographics form, the PTSD checklist for the Diagnostic and Statistical Manual of Mental Disorders (PCL-5) (Weathers et al., n.d) and the Adverse Childhood Experiences (ACE) questionnaire (Felitti et al, 1998). The PCL-5 is a 20-item self-report questionnaire assessing symptoms of PTSD as per Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria (Weathers et al, *n.d.*; Wortmann et al, 2016). The ACE questionnaire is a 10-item self-report measure designed to identify experiences of childhood abuse and neglect (Felitti et al, 1998). These questionnaires were included as part of the treatment intake battery to clarify participants' history of trauma. Results of these self-report questionnaires are included in order to account for the severity of trauma history in this sample.

2.3.5. Data Analysis

We used an inductive, interpretive phenomenological approach to qualitatively examine the transcripts for further thematic analysis. Interpretive phenomenology is commonly used to

explore insights from a given person on how a phenomenon relates to personally significant experiences. We chose a phenomenological approach because we were particularly interested in understanding participants' interpretations of their experiences as CAF members and/or PSP. This approach allowed us to group together individual interpretations of events to establish a broader understanding of the daily life conditions of members of these populations using an inductive approach (Webb et al., 2019). Sampling was purposive, as participants were chosen because of their experience as military members or PSP and their current engagement in inpatient psychiatric care.

Three members of the research team (AB, BE, HM) independently assessed transcripts, noting initial ideas for terms that represented dominant themes in the data. A coding scheme was developed using Miles and Huberman's techniques of data reduction, data display and conclusion drawing/verification (Miles & Huberman, 1994). The researchers identified primary themes based on participant discussions throughout the process; they included these into a coding scheme once all three coders reached consensus agreement. Any disagreements between coders were resolved through team discussion. Independent parallel coding was conducted, with two coders evaluating the same sample of raw text to revise and refine the category system, ensuring transferability, dependability and conformability of the coding scheme.

2.4 Results

2.4.1. Demographics

Of the 59 participants who completed the questionnaires (4 individuals chose not to), the mean (standard deviation [SD]) total score on the PCL-5 was 53 (14.75). Of these 59 participants, 53 (90%) scored above the cutoff of 33 that indicates symptoms consistent with probable PTSD (Weathers et al, *n.d.*). In addition, 50 (85%) met the DSM-5 criteria for a

provisional diagnosis of PTSD. The mean (SD) score on the ACE was 3.1 (2.42) out of 10 positive indications; 48 (82%) participants selected one or more items, and 24 (41%) selected four or more items. Individuals who experience four or more adverse childhood categories, when compared to those who experience none, have a 4- to 12-fold increased risk for substance use disorders, depression and other mental health disorders (Felitti et al., 1998).

2.4.2 Qualitative Themes

We extracted four primary themes from the data with supporting quotes: relationships; identity; mental health toll; and potential moral injury.

2.4.3 Relationships

Participants discussed relationships at length during the focus groups. The discussions were multifaceted, and experiences in one relationship domain (e.g. family) often seemed to blend into others (e.g. peers). Issues to do with trust and feelings of isolation and lack of understanding were pervasive throughout all relationship domains, while support from peers provided the benefit of understanding without judgment.

Family was a central point of discussion throughout many of the focus groups. Participants reported that demanding work schedules reduced their participation in family dynamics and made it difficult to separate work experiences from home life. They attributed the difficulties in separating work and home life to shift work, long hours and the constant stress associated with the critical, typically time-sensitive decision-making often required in their work. Participants described their jobs as physically and emotionally exhausting, which made it difficult to be empathetic at home as the challenges faced in civilian life seemed trivial in comparison. As one participant explained:

You don't have empathy for [your spouse's problems at home] because you spend all day crushing all your feelings and empathy because you have to, because that's your job, so you

don't—it's not like a switch you can turn on and off, it's too big of a stretch and a demand to be able to do that. You'd almost need a split personality to have an effective work life and an effective home life.

This quote exemplifies the frustration felt when trying to communicate with family and friends. Participants reported frequent communication breakdowns as it became increasingly challenging to interact and communicate with loved ones while coping with work-related stress. Many described a decrease in empathy, leading to noticeably reduced tolerance of others.

Relationships with friends and acquaintances were difficult to navigate for many participants, partly because they felt their occupations became their primary identity when they were in social situations. Many said that they had been asked to describe "the worst thing you've ever seen," a potential trigger for those who have experienced PPTEs. The inability to escape the perception that their sole identity was as military or public safety personnel led many to feel that their civilian friends and acquaintances could not truly understand them because their experiences were "impossible" for civilians to relate to. Feeling misunderstood by the civilian community left many with a sense of isolation.

Many participants explicitly described difficulties drawing on their emotions to connect with others. Some explained that they used "dark humour," such as jokes about dying or other PPTE, as a type of coping mechanism, which they felt further isolated them from their civilian counterparts who saw no humour in such expressions.

Many participants found their coworkers and individuals in other military or public safety services to be a significant source of support. Several explained that their lived experiences were only truly understood by other military members or veterans and first responders, which made it easier to maintain these friendships. Many said that they could "be themselves" around others within CAF/PSP because they understood what it was like to work in high-stress environments where exposure to PPTE was common. Conversely, some individuals indicated that colleagues

could also become sources of stress or triggers because their relationships with them centred around shared experiences.

2.4.4 Identity

Overwhelmingly, participants said that their occupations had become a critical part of their identity. Many had a great sense of pride in their work and an ingrained need to help others even if they were no longer on active duty. Feeling that their identity was so closely tied to their job made some feel unsure of their identity when they were no longer able to perform work-related duties. One participant's statement provided insight into how crucial individuals considered their identity as CAF members or PSP, especially those who were on medical leave and hoping to eventually return to work: *"Firefighting is who I am and it's what I do, and when I can no longer do it … life ends."*

Alongside a shift in identity, many participants described how their job had changed their view of the world. For example*, "It's almost like you have a filter for the outside world now and your filter changes because it's been blocked by this [work experiences] and you can't help but see the world differently."*

Participants specifically noted that the challenges of their jobs had led them to hold a more negative world view than before they began their career in the CAF or as PSP. Many now expected the worst from the individuals with whom they interacted, and they were cynical of both the system in which they worked and of those whom they helped. In some, this lack of trust and cynicism decreased their capacity to be empathetic, *"…like a callus over your emotions, just like you would get from lifting, you know, calluses on your hands. It's the same thing, like a callus over your emotions."* This quote exemplifies the difficulty in expressing emotions that some participants felt was related to the PPTEs to which they were repeatedly exposed. The

participants indicated that this difficulty expressing emotions was not something they had always had, but that it had developed over the course of their careers and caused them to become embittered about the utility of discussing their emotional reactions.

2.4.5 Mental Health Toll

Participants described the mental health toll of PSP and military careers as overwhelmingly negative. Many described having symptoms typically associated with emotional dysregulation, such as hypervigilance, agitation and disproportional anger:

> *Say the regular everyday stuff that people go through that is traumatic to them—whether it's my spouse or friends or somebody else—and they're talking about some stress that they've gone through and then I get angry because I think, "Well, that's your problem?! That's what your worst day is?!"*

Some participants acknowledged that this "flip of the switch" anger was disproportional to the "inconsequential" stressors. Some individuals said that their emotional outbursts were driven by the need to protect loved ones, including attempting to shelter family from their symptoms of PTSD. "I'd rather be a disaster inside," a 30-year-old participant imparted, *"than have, you know, my [spouse] or my family members be a disaster by having them see it as well."*

Research indicates there may be an association between severity of veterans' PTSD symptoms and degree of intimate partners' caregiver burden (Beks et al., 2016; Calhoun et al., 2002). As 90% of focus group participants (n = 53/59) scored above threshold levels for symptoms of PTSD, it is likely that their intimate partners experienced caregiver burden, even if the participant attempted to shield their family from their PTSD symptoms. Although participants believed that keeping their work experiences from their family protected them from vicarious trauma, this secrecy also reduces the family's ability to provide support (Regehr et al., 2009). As levels of perceived support decrease, levels of depression and traumatic stress symptoms among PSP appear to simultaneously increase (Regehr et al., 2009).

Another emotional symptom discussed at length was the participants' current feeling of isolation. Participants said that they typically did not discuss their traumas with their families for fear of "burdening" them with the details, and that when their CAF/PSP colleagues were unavailable it was "just very isolating." While some said they understood the difficulties their peers face in reaching out, they nevertheless longed for a sense of connectedness. As many felt that their social circle primarily comprised individuals in the same career, lack of contact from those within the organizations, especially while the participant was in treatment or on medical leave, only served to increase feelings of isolation and abandonment related to their mental health diagnosis.

The participants talked about the different mechanisms used to cope with the mental health toll of their occupations, including the culture of using alcohol to deal with negative emotions surrounding difficult events. Although the participants were unanimous about the mental health toll of coping with exposure to PPTE, some of the coping mechanisms they had adopted, such as dark humour, had led to further isolation from relationships as these coping mechanisms were considered neither commonplace nor appropriate in civilian relationships.

2.4.6 Potential Moral Injury

Many participants said they had feelings of shame and guilt across relationships, mental health and sense of identity, as well as an overwhelming sense of betrayal by many different entities, including management. Feelings of shame and guilt were frequently identified in relation to decisions made while on the job or the inability to make critical decisions due to "red tape" and other administrative constraints. Such feelings of shame and guilt have been identified as crucial components of moral injury (Bryan et al., 2016).

Some participants described potentially morally injurious situations and events they had experienced, including witnessing tragic outcomes or having to make decisions that resulted in loss of life. Others felt that it was the high frequency of difficult decisions made over time that lead to their feelings of shame and guilt. For example, one participant explained how the consequences of smaller decisions made over the course of years could have a large, cumulative effect:

> *It's that moral, those moral injuries right…it's not one trauma, I liken it to, it's that getting that little rock in your shoe where you can walk 10 steps and kick it out, and it's okay, 10 more steps you get another pebble in your shoe… You do that over 10 years, you walk around with those pebbles in your shoes, it's going to irritate you after a while, and that's what I find in my experience, that's what kills me. And some of the big things are the straw that breaks the camel's back, [but] sometimes it's small.*

A feeling of betrayal was a concept brought up in many different forms. Some participants said they felt that their organization did not care about them as people. According to one, *"…they squeeze as much out of you as they can, then when you break, they just throw you away*." Others felt a distinct difference between the supports purported to be offered and the supports that they received or that were available: *"Like, just having the lack of support. Like, they say they do all these great things for us and, they don't. They don't care one single bit."* These feelings of betrayal exacerbated their frustration with the "political red tape" associated with careers in the CAF and public safety organizations. These insights provide evidence that potential moral injuries incurred during service in these professions may be prevalent in treatment-seeking populations, even if not explicitly discussed.

2.5 Discussion

The objective of this study was to gain a comprehensive understanding of the experiences faced by treatment-seeking active and retired military members and PSP who attended a single inpatient psychiatric facility. In this article, we provide an overarching synopsis of themes

related to moral injury and mental health. To enhance the effectiveness of treatments for active and retired CAF members and PSP, it is critical to consider these themes (i.e. relationships, identity, mental health toll and potential moral injury) throughout treatment and recovery, and to consider the role of these themes in successful therapeutic interventions in these populations.

2.5.1 Relationships

Research on the work–family lives of PSP is lacking (Cowlishaw et al., 2010; Roth et al, 2009). Existing research indicates that PSP employment has a negative impact on families, partners and relationships (Cowlishaw et al, 2010; Roth et al., 2009; Shreffler et al, 2011). Aspects of PSP employment that affect family life include occupational stress, exposure to PPTE and shift work (Cowlishaw et al., 2010; Roth et al., 2009; Shreffler et al., 2011). These factors are also associated with higher parenting stress and lower parenting satisfaction (Shreffler et al., 2011).

Our study expands current knowledge of work–family lives of PSP by providing details about the impacts PSP and military careers have on relationships and sense of personal identity. Our research also describes the importance of relationships developed within these occupations. Many participants described the social support of other military or public safety personnel as a positive influence through their ability to empathize without judgment and provide opportunities for emotional disclosure. Of note, interpersonal conflicts with coworkers and role-related stressors were both considered to be significant in affecting mental health. This aligns with current research showing that the social support of peers appears to be extremely beneficial, while interpersonal conflict with coworkers is associated with negative mental health outcomes, including increased rates of PTSD and substance use disorders (Ketcheson et al., 2018; Pfanz et al., 2006). Social supports have also been cited as a robust factor negatively associated with

PTSD symptoms (Proescher et al., 2020) and positively associated with better dyadic functioning (Cederbaum et al., 2017). Specific social supports associated with protective effects are therefore a critical area for future research in CAF and PSP populations.

Lack of mutual understanding was another relational factor echoed by participants in our focus groups; they had difficulty understanding "civilian problems," and loss of meaning in life following discharge or retirement from service was commonplace. The perceived lack of understanding between military members/PSP and civilians may serve to isolate people in these occupations and increase their feelings of identity loss when transitioning into civilian life.

2.5.2 Identity

This study provides insight into how being in public safety or military occupations can affect one's identity. Participants frequently mentioned how their careers had shaped their personal identities and that no longer actively participating in CAF/PSP duties was tied to feelings of uncertainty and loss. Such feelings may be compounded by the perception of profound differences between CAF/PSP culture and civilian life, where caregiving, thrill seeking and sense of duty are less common career components (Donnelly et al., 2015). For CAF veterans, successfully adjusting back into civilian society is often impeded by having negative perceptions of civilian society, feeling excluded as a result of their military service, feeling the loss of a military "brotherhood" and having difficulties with finding meaning in the civilian world (Orazem et al., 2017; Zoli et al., n.d.). It is therefore imperative that individuals transitioning to non-military or non-public safety careers reframe their views of and relationship with civilian life. Key areas of support include encouragement in shaping identities outside of the CAF/PSP spheres, and improving perceptions of civilian group belonging.

2.5.3 Mental Health Toll

Focus group participants described their difficulties with regulating emotions and actively engaging with others, being hypervigilant in scenarios where such behaviour was unnecessary and using substances as a method of coping with exposure to PPTE. The primary symptoms captured in the phenomenological experiences of this treatment population largely map onto the DSM-5 symptom criteria of PTSD and substance use disorders (American Psychiatric Association, 2013). Specifically, participants described intrusion symptoms, avoidance reactions, marked changes in reactivity and negative alterations in their cognitions and mood following exposure to PPTEs throughout their careers. These experiences emerging as primary themes further validate the necessity of appropriate treatment strategies that adequately identify and mitigate these symptoms.

Further, avoidance of social interaction, which was a commonly discussed outcome in this study, may affect participants' families in the form of ambiguous loss, that is, the experience of psychological absence while a loved one is physically present (Boss et al., 2007). Ambiguous loss has been associated with psychological distress in intimate partners (Yambo et al., 2016), and could further exacerbate feelings of isolation, as well as increase strain on familial relationships.

2.5.4 Potential Moral Injury

Participant discussions suggest that they may have been coping with potential moral injuries developed as a result of their experiences in the field. Many participants described pervasive feelings of shame, guilt, anger and betrayal due to their experiences during their time as CAF members or PSP; these feelings are critical components of moral injury (Litz et al., 2009).

Previous studies indicate that 70.5% of CAF members know someone who was seriously injured or killed, and that 43% have seen "ill or injured women or children whom [they] were unable to help" (Nazarov et al., 2018) during deployment. Similarly, surveyed law enforcement officers have reported that harming others (perpetrators or colleagues) would be the most stressful experience to cope with in their line of duty (Chopko et al., 2015; Weiss et al., 2010). Severely injuring a perpetrator has also been identified as a risk factor for development of PTSD among police officers (Komarovskaya et al., 2011). Emergency Medical Service (EMS) personnel have also described seeing a family member or friend at the scene of an accident or seeing someone seriously injured or killed as extremely distressing (Donnelly et al., 2014).

Violent PPTEs are commonly considered the most distressing events for both CAF and PSP personnel, and may be involved in the development of moral injury and other mental health disorders in both populations (Carleton et al., 2019; Carleton et al., 2020). In addition, occupational stressors may further exacerbate mental health symptoms (Carleton et al., 2020). Although empirical evidence regarding prevalence of moral injury in PSP is lacking, many of our participants indicated feelings of shame or guilt related to events that could be classified as morally injurious. These analogous experiences provide anecdotal insights into the potential moral injuries associated with service in the CAF or as PSP and highlight the importance of further examination of moral injury in both contexts. This also exemplifies the need to explicitly address moral injury during therapeutic treatment in CAF/PSP populations.

2.5.5 Limitations and Future Directions

Because research participants were inpatients recruited using a purposive sampling method, our findings cannot be generalized to all military members, veterans or PSP seeking inpatient psychiatric treatment. Secondly, the intent of a phenomenological approach is to examine how

individuals perceive meaning of an event or phenomenon, rather than develop theories or generalizations about entire populations. In this case, we examined how active and retired CAF members and PSP, regardless of sex/gender or age, perceived their careers as influencing different areas of their lives. Critically, the conclusions of phenomenological inquiry depend on the participants chosen; as such, this study may have excluded information regarding experiences in different branches, municipalities or deployments.

Finally, we chose to combine the experiences of active and veteran military and public safety personnel because they were receiving treatment in a single, combined program, and because many of their difficulties were similar across careers (CAF vs. policing vs. firefighters). Despite responses being similar across occupations, research shows that CAF treatment outcomes differ from that of the general population and therefore may also differ from PSP expectations and outcomes (Straud et al., 2019). As such, combining data from CAF veterans and PSP may have unintentionally diluted specific treatment experiences and concerns of each profession. Further research into treatment-seeking CAF and PSP populations is necessary to elucidate whether differences exist between them.

This article provides an overarching view of the areas that active and retired military members and PSP identify as having the greatest impact on their mental health. As the mean total score on the PCL-5 was 53 and a typical cutoff score for provisional diagnosis of PTSD is between 31 to 33 (Weathers et al, n.d.), it is clear this sampled population was experiencing severe trauma-related symptoms. Future research should examine whether the themes discussed are equally important to active and retired military members and PSP, and to those experiencing less acute distress. In addition, each of these themes requires further exploration. Future research is also

needed to understand how to best include families and spouses in treatment to address the feelings of isolation participants identified.

2.6 Conclusion

Participants discussed relationships, identity, mental health toll and potential moral injury as critical areas that affect self-perception, evaluation of their role in society, and their ability to connect with civilians. These areas were identified as crucial to participants' recovery and should be addressed specifically during mental health treatment for these populations. Our findings affirm that treatment-seeking individuals view specific mental health programming for active and retired CAF members and PSP as beneficial, due, in part, to the unique challenges they face throughout their careers.

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Appendices | Study One

Table 1: Focus Group Demographics

Demographics	n (%)
Sex [n=63]*	
Male	48 (76)
Female	15 (24)
Marital Status	
Married	34 (56)
Separated/Divorced	14 (23)
Single	9 (15)
Declined to Respond	4 (6)
Occupation	
Police	19 (31)
Canadian Armed Forces/Veteran	10 (17)
Corrections Officer	10 (17)
Paramedic	9 (15)
Firefighter	6 (9)
Other (e.g., emergency dispatch, CBSA)	7 (11)
Age (median)	45.5 (range: 29 to 80)
Work Status	
Full-Time/Disability	45 (74)
Retired/Suspended/Unemployed	11 (18)
Declined to Respond	5 (8)
Ethnicity	
Caucasian	50 (83)
Other	6 (9)
Declined to Respond	5 (8)
Mean PCL-5 Score (+/-SD) [n=59]	53 (+/-14.75)
Mean ACE Score (+/-SD) [n=59]	3.1(+/-2.42)

*63 focus group participants provided sex, 2 did not provide any other demographic information therefore unless noted, all other rows n=61; CBSA=Canada Border Services Agency

Chapter 3 | Study Two

General Purpose

Study Two emphasizes the importance of addressing moral injury within military contexts and further highlights the need for tailored interventions to mitigate its adverse effects. Through the use of Statistics Canada collected data, representative of the CAF, it underscores that deployment experiences, childhood maltreatment, and military-related sexual trauma are significant predictors of elevated moral injury scores among previously deployed personnel. Notably, rank within the CAF also played a significant role, with junior non-commissioned members exhibiting higher moral injury scores compared to senior officers.

Further, this study underscores the need to address deployment experiences and military sexual trauma with military personnel, with interventions tailored to address the unique needs of vulnerable groups. Study Two contributes to our understanding of moral injury in military populations and underscores the importance of addressing this phenomenon to promote the mental well-being of service members. By identifying key risk factors associated with moral injury, Study Two provides valuable insights for the future development of targeted interventions aimed at mitigating its adverse effects among military personnel who are at highest risk.

Title and Authorship

Title: Risk Factors for moral injury among Canadian Armed Forces personnel

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3.1 Abstract

Objectives: The traumatic nature of high-risk military deployment events, such as combat, is well-recognized. However, whether other service-related events and demographic factors increase the risk of moral injury (MI), which is defined by consequences of highly stressful and morally-laden experiences, is poorly understood. Therefore, the objective of this study was to examine determinants of MI in Canadian Armed Forces (CAF) personnel.

Methods: Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS; unweighted n=2,941). To identify military characteristics, sociodemographic variables, and deployment-related factors associated with increased levels of MI, a series of multiple linear regressions were conducted across deployed and non-deployed groups.

Results: When all variables were considered among the deployed personnel, rank, experiencing military related sexual trauma, child maltreatment (i.e., physical abuse, emotional abuse and neglect), and stressful deployment experiences were significant predictors of increased MI total scores (β=.001 to β=.51, p<.05). Feeling responsible for the death of an ally and inability to respond in a threatening situation were the strongest predictors of MI among stressful deployment experiences. Within the non-deployed sample, experiencing military-related or civilian sexual trauma and rank were significant predictors of increased MI total scores (β=.02 to β=.81, p<.05).

Conclusion: Exposure to stressful deployment experiences, particularly those involving moral-ethical challenges, sexual trauma, and childhood maltreatment were found to increase levels of MI in CAF personnel. These findings suggest several avenues of intervention, including

education and policies aimed at mitigating sexual misconduct, as well as pre-deployment training to better prepare military personnel to deal effectively with morally injurious experiences.

3.2 Introduction

Military service has been associated with an elevated risk of negative mental health outcomes including posttraumatic stress disorder (PTSD), depression, substance use, and suicidal behaviors globally (Boulos & Zamorski, 2013; Van Til, Sweet, Poirier, McKinnon & Pedlar, 2017; Norman, Haller, Hamblen, Southwick & Pietrzak, 2018; Arenson et al., 2018; Ramchand, Rudavsky, Grant, Tanielian, & Jaycox, 2015). This finding holds in the Canadian context, with higher prevalence of mental disorders observed in Canadian Armed Forces (CAF) personnel compared to civilian populations (Fikretoglu, Liu, Zamorski, & Jetly, 2016; Rusu, Zamorski, Boulos, & Garber, 2016), with 44% of surveyed CAF members experiencing symptoms consistent with a depressive or anxiety- related disorder at some point between 2002 and 2018 (Statistics Canada, 2018).

Although stressful deployment experiences such as combat have been associated with increased negative mental health outcomes in military populations (Boulos & Zamorski, 2013; Sareen et al., 2007), combat experiences are not the sole type of psychologically traumatic events military members may encounter. Exposure to stressful or difficult events with moral-ethical implications is also common (Nazarov et al., 2015; Nazarov, Fikretoglu, Liu, Thompson, & Zamorski, 2018; Thompson, 2015), but the psychological distress associated with these experiences is less well understood. Therefore, it is critical to understand the pre-, peri- and post-deployment, as well as non-deployment experiences that are associated with moral injury in the CAF.

Moral injury (MI) refers to the psychological, spiritual, behavioral or social distress that follows from situations in which individuals have committed, witnessed, or failed to prevent acts that transgress one's personal moral beliefs (Litz et al., 2009; Lewis, 1971). These feelings of

distress may include shame, guilt, anger, and disgust, which may be associated with acts perpetrated by the self, such as actions leading to loss of life, or acts perpetrated by others, including betrayal, witnessing inappropriate acts by colleagues, or inappropriate acts by individuals in positions of power (Nazarov et al., 2015; Nazarov et al., 2018; Thompson, 2015; Litz et al., 2009; Lewis, 1971; Wisco et al., 2017). Morally injurious experiences, such as betrayal from a trusted peer, may prompt a variety of psychological, social, and behavioral consequences, including relational strain, fundamental shifts in core beliefs (e.g., beliefs about the world), spiritual/existential challenges, alterations in perceptions of the self, as well as feelings of guilt, shame or anger (Nazarov et al., 2015; Wisco et al., 2017; Smith-MacDonald, Morin, & Brémault-Phillips, 2018). Although evidence is currently limited, recent research indicates that potentially morally injurious experiences (PMIEs) are common, and may have a unique impact on post-deployment outcomes in military populations. A representative survey of United States (U.S.) military combat veterans found that approximately 25% of respondents reported witnessing transgressions of others, 25% reported experiencing betrayal during their careers, and 10% reported that they transgressed their personal morals (Wisco et al., 2017). In a representative survey of CAF members deployed to the mission in Afghanistan, Nazarov et al. (2018) found that over half of the population indicated experiencing at least one PMIE. The authors found that individuals indicating exposure to PMIEs were more likely to report experiencing past-year major depressive disorder (MDD) and past-year posttraumatic stress disorder (PTSD) while adjusting for other relevant variables such as age, sex, and deployment-related factors (Nazarov et al., 2018).

Although these findings provide evidence that certain PMIEs may increase the risk of negative mental health outcomes in deployed military members, there are specific limitations to

the current body of research examining MI among military personnel. In the aforementioned study by Nazarov et al. (2018), MI was not directly assessed using a validated measure; rather, mental health outcomes were assessed in relation to proxy deployment experiences used to indicate exposure to PMIEs (Nazarov et al., 2018). Wisco et al. (2017) used the Moral Injury Events Scale (MIES) to assess MI, but because this study was conducted in a U.S. combat sample, the results may not generalize to the CAF due to cultural and structural differences between the two Armed Forces (Wisco et al., 2017). Additionally, although both studies examined the impact that deployment PMIEs had on the development of other mental health disorders, the authors did not focus on factors that may increase the risk of development of MI among non-deployed personnel. Although this evidence suggests that PMIEs occur frequently during military combat and deployment operations, scant evidence exists regarding factors that may contribute to the development of MI in non-deployed CAF personnel. Understanding risk factors that contribute to the development of MI within both deployed and non-deployed CAF personnel is critical to appropriately target resilience-building interventions to mitigate development of MI.

3.2.1 Aims of the Study

The aim of this study was to identify the military, deployment, and sociodemographic factors that are associated with increased MI in a nationally representative sample of CAF personnel and veterans. We hypothesized that deployment experiences and childhood maltreatment variables will significantly predict elevated MI scores in CAF personnel.

3.3 Materials and Methods

3.3.1 Participants and Data Collection

Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS)(Afifi et al., 2020). The CAFVMHS used a longitudinal survey design to resample individuals who initially participated in the 2002 Canadian Community Mental Health Survey—Mental Health and Well-being—Canadian Forces (CCHS-CF) (Sareen et al., 2007). 5,155 CAF Regular Force personnel participated in the CCHS-CF in 2002, and 4,299 individuals were eligible to be contacted for follow-up interview. The target sampling frame for CAFVMHS were individuals who had completed the CCHS-CF and were full-time Regular Force members at the time of 2002 administration. At the time of 2018 data collection, personnel could be actively serving or veterans.

Of those who participated in the 2002 CCHS-CF and were eligible for follow-up (n = 4,299), 2,941 individuals participated in the CAFVMHS. Longitudinal weights were then created to produce representative estimates of the target population in 2002 and rounded to the nearest base of twenty. Therefore, the weighted survey sample represents 18,120 active duty and 34,380 released CAF personnel from the 2002 survey. As our analyses aimed to determine independent risk factors for the development of MI, and morally injurious experiences may differ between deployed and non-deployed personnel, the data were split into two groups: ever deployed outside North America and never-deployed groups. Data collection was conducted by Statistics Canada between January and May of 2018 using computer-assisted personal interviews. Participation was voluntary, and all participants provided informed consent. All data were collected in accordance with Statistics Canada procedures and approved by relevant review boards. For more

information regarding the CAFVMHS rationale and methodology, please refer to (Afifi et al., 2020; Bolton et al., 2021).

3.3.2 Measures

Moral Injury: MI was evaluated using the Moral Injury Events Scale (Nash et al., 2013), which uses a six-point Likert scale to assess event experiences. Participants were provided a series of nine statements (e.g., "I am troubled by having witnessed others' immoral acts") and were asked to indicate their level of agreement (1 = strongly disagree, 6 = strongly agree). Of note, logic skipping, wherein a participant selecting strongly disagree for certain items automatically imputed strongly disagree for a subsequent item, was used during administration [for more information, please see Plouffe et al., 2021]. Mean MIES scores were calculated and used as an outcome variable in our models, with higher mean scores indicating increased endorsement of MI. Past research has shown that while it is not without limitations (Plouffe et al., 2021), the MIES has strong evidence for internal consistency reliability and convergent validity (Nash et al., 2013; Plouffe et al., 2021).

Deployment Experiences: Deployment experiences (DEX) were captured using a survey module that evaluated lifetime exposure and exposure since 2002 to eight stressful deployment experiences using dichotomous (yes/no) scoring (e.g., "known someone seriously injured or killed"). These items were adapted by the Canadian Department of National Defense (DND) from the Combat Experiences Scale (Guyker et al., 2013). The eight items were chosen by the initial survey developers from the original Combat Experiences Scale instrument based on conceptual considerations (Nazarov et al., 2018).

Child Maltreatment: Participants were asked to retrospectively recall types of childhood adversity that they had been exposed to before the age of sixteen. Childhood physical abuse,

sexual abuse, emotional abuse, exposure to intimate partner violence, and neglect were captured using nine items that were adapted from the Childhood Experiences of Violence Questionnaire (Walsh, MacMillan, Trocme, Jamieson, & Boyle, 2008). This measure has been used previously in population-level research to assess degree/severity of exposure to childhood adversity (Nazarov et al., 2018; Afifi et al., 2014). Of note, childhood sexual trauma was removed from the multivariate models due it theoretically being captured as a sub-category of lifetime sexual trauma.

Lifetime Sexual Trauma: Participants were asked if they had ever experienced sexual trauma in their lifetime. Sexual trauma was endorsed if they answered yes to one or more of eight dichotomous questions (e.g., "unwanted touching"). Further questions probed whether the event occurred while at a CAF workplace, while on deployment, or whether it was perpetrated by a CAF member/DND employee (Afifi et al., 2020). If the respondent answered yes to any of these questions, these events were coded as military-related sexual trauma. If not, they were coded as non-military-related sexual trauma.

Military Variables: Previous research has shown that certain military variables may be associated with the presence of MI (Nazarov et al., 2015). As such, military variables, including force type, service environment (Army, Navy or Air Force), rank (junior non-commissioned member, senior non-commissioned officer, junior officer, senior officer), and number of years in the military, were included as covariates in our analyses (Afifi et al., 2020). A dichotomous deployment variable was used to split the sample into CAF members who had deployed outside of North America and those who had not previously deployed. Separate models were created for deployed and non-deployed samples to independently assess how deployment-related variables impacted the endorsement of MI.

Demographic Covariates: Based on previous research that has shown associations between certain sociodemographic factors and MI, we adjusted for marital status, age, sex, and highest level of completed education in our analyses (Nazarov et al., 2018; Wisco et al., 2017). These variables were measured by self-report.

3.3.3 Statistical Methods

First, we evaluated descriptive statistics across both samples, as well as simple linear regressions with MIES score as the outcome variable. Next, multiple linear regression models were conducted to assess military, deployment, and sociodemographic-related predictors of MI scores. Survey sample weights calculated by Statistics Canada were used in all analyses to ensure survey sample representativeness. Furthermore, to account for the complex survey design, confidence intervals were calculated using 500 bootstrapped weights provided by Statistics Canada. Based on Statistics Canada's vetting rules, reported frequencies used sample weights and were rounded on a base of twenty, with percentages calculated based on the weighted frequencies following rounding. Statistical analyses were conducted using SAS Version 9.4 (SAS Institute Inc., Cary, NC, USA).

3.4 Results

The unweighted sample of 2,941 total participants represented 18,120 active duty and 34,380 released CAF personnel from the original 2002 survey. Over 90% (n = 39,600) of the deployed sample and 74% (n = 6,500) of the non-deployed sample were male. The majority of the deployed (69%, n = 30,300) and non-deployed (62%, n = 5,500) personnel were between the ages of 45–60 years at the time of the 2018 survey administration. Among those who deployed, stressful deployment experiences were commonly reported. Specifically, 62% endorsed knowing someone who had been seriously injured or killed, 46% had ever received incoming artillery,

rocket or mortar fire, and 44% reported seeing injured or ill women or children they were unable to help (Table 1). Simple linear regressions with MIES total score as the outcome variable among deployed and non-deployed samples are displayed in Tables 2, 3, respectively. Force element (i.e., Army, Navy or Air Force) was a statistically significant predictor of MIES score in the deployed sample, though not in the non-deployed sample. Rank was a statistically significant predictor in both deployed and non-deployed samples.

Multiple linear regression models to determine independent risk factors for increased MI score are reported in Tables 4, 5. The independent variables accounted for approximately 25% of the variance in MI scores in the deployed sample and 17% in non-deployed CAF personnel. Rank, years in military, military-related sexual trauma, childhood physical and emotional abuse, childhood neglect, and stressful deployment experiences were predictors of increased MI score in the deployed sample (Table 4). When all variables were included in the model, the strongest deployment-related predictors of higher MI score were feeling responsible for the death of an ally and inability to respond in a threatening situation due to rules of engagement. Within the non-deployed sample, rank, experiencing sexual trauma (military or civilian), years in the military, and childhood neglect were the only significant predictors of increased MI scores (Table 5).

3.5 Discussion

This is the first study to identify factors associated with increased MI using a representative survey of Canadian military personnel. Among non-deployed CAF personnel, experiencing either military-related or civilian sexual trauma, and junior non-commissioned member rank (compared to senior officer) were significantly associated with increased MI total scores. Among the previously deployed CAF personnel, child maltreatment (i.e., neglect,

physical abuse and emotional abuse), experiencing military-related sexual trauma, and stressful deployment experiences (e.g., feeling responsible for the death of an ally) were significant predictors of MI total scores.

Specific military variables, including deployment experiences and individual rank, were independently associated with MIES score in deployed personnel. These experiences, such as seeing ill or injured children and being unable to help, may be categorized as PMIEs as they are situations that may lead to the violation of moral values (Currier, Drescher & Nieuwsma, 2021), a precursor to MI. Further, in both deployed and non-deployed samples, rank was independently associated with MIES score, which is consistent with previous findings (Nazarov et al., 2018). Interestingly with regards to rank, being a junior non-commissioned member, regardless of deployment status, conferred the strongest association with MIES scores when compared to senior officers. This could be due to a multitude of factors, including differences in duties, increased likelihood of deployment related PMIEs, and power structure dynamics inherent in the military rank system.

Importantly, sexual trauma was a significant predictor of MIES score in the simple linear regression models for both deployed and non-deployed CAF members, perhaps due to feelings of perceived betrayal from these experiences (Bryan et al., 2015). However, when all variables were considered together, military sexual trauma was the only sexual trauma variable significantly associated with MIES score in deployed CAF personnel. Military sexual trauma perpetrated by CAF personnel or DND staff or at a CAF workplace, defined in this study as unwanted touching or sexual assault, was a significant predictor of increased MIES score in both the deployed and non-deployed samples. These definitions largely overlap with the concept of

Military Sexual Misconduct (MSM), which has been associated with adverse mental and physical health outcomes, including PTSD, in U.S. military populations (Skinner et al., 2000; El-Gabalawy, Blaney, Tsai, Sumner, & Pietrzak, 2018). In 2018, 70% of CAF respondents reported experiencing targeted MSM during the previous 12 months of military service (Cotter, 2019), indicating that this is a pervasive and preventable risk factor for the development of MI. Although civilian sexual trauma was not a significant predictor of MI in deployed CAF personnel, it did significantly predict MI scores in the non-deployed sample and among both simple linear regression models. It is plausible that there was overlapping variance between, for example, civilian sexual trauma and other variables (e.g., childhood maltreatment) that rendered these associations non-significant in the full deployed model. Additional research regarding the relative risk of civilian and military-related sexual trauma and their overlap in both deployed and non-deployed samples is warranted. Such studies are likely to shed additional light on the mechanisms and contextual factors associated with the development of MI.

Our analyses further indicated that childhood physical and emotional abuse and childhood neglect were positive predictors of increased MI scores in deployed CAF personnel, though only childhood neglect was a positive predictor in non-deployed personnel. The deployed sample results were consistent with previous findings in treatment-seeking CAF Veteran convenience samples (Battaglia, et al., 2019). Consistent with our findings, a history of childhood abuse and its implications for negative mental and physical health outcomes in adults has been well-documented (Bifulco, Bernazzi, Moran, & Ball, 2000; Felitti et al., 1998; Ferguson & Dacey, 1997; Kessler & Magee, 1994; Widom, 1999; Kendler et al., 2000). In the same way that research has shown that childhood/earlier traumatic experiences increase risk for exposure to future trauma and PTSD (Afifi et al., 2014), these findings indicate that the same

may be true for PMIEs and MI, with increased exposure to PMIEs in childhood possibly increasing the risk for exposure to other PMIEs or development of MI later in life. Although childhood trauma variables except neglect were not significant predictors of increased MI in non-deployed personnel, there were significant associations between childhood maltreatment variables and MIES scores in the simple regression models. It is plausible, then, that child maltreatment shared common variance with non-military-related sexual trauma that attenuated the associations between childhood maltreatment variables and MIES scores.

3.5.1 Limitations

Although the findings of this study provide novel information regarding predictors of MI in deployed and non-deployed CAF personnel, we acknowledge several limitations. Due to the longitudinal nature of the CAFVMHS, the 2018 sample is representative of the original 2002 CAF sample that took part in the initial survey and is not necessarily representative of current CAF demographics. In addition, because the sample was primarily composed of men, this limited our ability to assess how sex and gender may be associated with moral distress in the CAF. Furthermore, variables included in the analyses are not an exhaustive list of potential predictors of MI, especially given that the study of MI remains in its infancy. Importantly, psychological traumas external to military experiences aside from sexual assault were not included in analysis, as the MIES alludes exclusively to military experiences. There is also the possibility that other peri-deployment or post-deployment experiences captured in this survey that were not included in the analyses may have influenced the endorsement of MI. Due to response bias, there may also be unknown differences between survey responders and non-responders, which may theoretically have altered findings of this study. However, previous research on attrition in this sample found that military status, mental health disorders, traumatic

experiences and childhood adversity were not associated with loss to follow-up (Bolton et al., 2021).

Childhood maltreatment was also assessed retrospectively during adulthood in this survey, which may introduce recall bias. However, research indicates that this is unlikely, as retrospective recall of childhood trauma seems to be reliable (Bolton et al., 2021; Hardt & Rutter, 2004; Hardt, Sidor, Bracko, & Egle, 2006). Although relevant literature points to a strong correlation between childhood sexual abuse and negative mental health outcomes (Hardt, Vellaisamy, & Schoon, 2010; Amado, Arce, & Herraiz, 2015; Chen et al., 2010; Maniglio, 2013; Hillberg, Hamilton-Giachritsis, & Dixon, 2011; Lindert et al., 2014), childhood sexual trauma was not included in the regression models due to being captured by the item endorsing lifetime sexual trauma. This precluded us from determining how or whether childhood sexual trauma may influence MI endorsement in this population.

Although it is currently the most widely used measure of MI, the MIES has been previously criticized for conflating MI exposure and subjective experience without differentiating between the constructs during scoring, which may inadvertently introduce extraneous variance when attempting to determine severity of MI (Plouffe et al., 2021). The subjective self-report nature of the measure, as well as the logic skipping that was used during Statistics Canada administration may also have introduced response biases in the survey. The CAFVMHS 2018 MIES scoring logic, wherein a participant selecting strongly disagree for certain items automatically imputed strongly disagree for a subsequent item, could have created issues with total MIES scoring. However, following previous research (Plouffe et al., 2021) regarding MIES response patterns in this population, we believe that it is unlikely that this logic skipping introduced bias within the survey.

3.5.2 Future Directions and Conclusions

Future directions should include assessing MI using a scale that focuses on the expressed outcomes that make up the MI construct (e.g., spiritual struggles, guilt) and investigate the nuances present in how exposures and outcomes are related. Since the time that data were collected for this study, a number of measures that clearly differentiate outcomes of PMIEs from exposures to PMIEs have been developed, although additional psychometric validation for these measures is warranted. Future research should also consider separate risk factors for endorsement of MI that were not captured in this survey, such as personality traits. Finally, while consensus is amounting that MI is a clinically useful construct [e.g., (Drescher et al., 2011; Yeterian et al., 2019)], additional research is needed to establish effective screening and intervention strategies within military and other populations at heightened risk of MI. Implications of these results indicate that specific care should be taken to incorporate discussion surrounding MI, and tailored treatments to reduce symptoms of MI (e.g., anger, shame) within treatment-seeking military contexts. Focus of future interventions should also be placed on pre-deployment training and preparation for military personnel to effectively understand and cope with morally injurious experiences.

Notwithstanding these limitations, this is the first study to evaluate predictors of MI endorsement in a representative sample of CAF personnel. Our findings emphasize the critical importance of explicitly screening for and addressing deployment experiences and military sexual trauma in the context of evaluating and addressing MI in military populations. Results also point to several demographic and developmental factors that should be further investigated in future research aiming to understand individual vulnerability to MI.

References | Study Two

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Tables | Study Two

Table 1: Sociodemographic and military characteristics of weighted study sample

	Deployed		Never deployed	
	n	Mean/Percentage (95%CI)	n	Mean/Percentage (95%CI)
Age				
33-44	9240	21.14% (19.15% - 23.13%)	1800	20.45% (16.27% - 24.64%)
45-60	30300	69.34% (67.21% - 71.46%)	5500	62.50% (58.02% - 66.98%)
61-75	4160	9.52% (8.52% - 10.52%)	1500	17.05% (14.25% - 19.84%)
Sex				
Male	39600	90.66% (90.14% - 91.18%)	6500	73.86% (71.09% - 76.64%)
Female	4080	9.34% (8.82% - 9.86%)	2300	26.14% (23.36% - 28.91%)
Education				
Secondary or lower	19480	44.82% (42.50% - 47.14%)	2900	32.95% (28.75% - 37.16%)
Postsecondary or higher	23980	55.18% (52.86% - 57.50%)	5900	67.05% (62.84% - 71.25%)
Marital status				
Married	30080	69.18% (67.23% - 71.13%)	5900	67.05% (62.69% - 71.40%)
Common law	6240	14.35% (12.77% - 15.93%)	1040	11.82% (8.85% - 14.78%)
Separated/widowed/divorced	4460	10.26% (8.91% - 11.60%)	1280	14.55% (11.38% - 17.71%)
Single	2700	6.21% (5.11% - 7.31%)	580	6.59% (4.36% - 8.83%)
Military factors				
Force type †				
Regular	38760	88.82% (87.60% - 90.04%)	7200	81.63% (78.45% - 84.81%)
Reserve	4880	11.18% (9.96% - 12.40%)	1620	18.37% (15.19% - 21.55%)
Rank †				
Junior NCM	11620	26.61%, (24.53% - 28.70%)	3120	35.54%, (31.10% - 39.97%)
Senior NCO	22160	50.76%, (48.68% - 52.83%)	2900	33.03%, (29.08% - 36.98%)
Junior officer	3200	7.33%, (6.31% - 8.35%)	1020	11.62%, (9.43% - 13.81%)
Senior officer	6680	15.30%, (14.31% - 16.29%)	1740	19.82%, (17.04% - 22.59%)
Service Environment				
Air Force	12420	28.46% (26.55% - 30.38%)	4820	54.77% (50.32% - 59.23%)
Army	23020	52.75% (50.54% - 54.96%)	2540	28.86% (24.59% - 33.14%)
Navy	8200	18.79% (16.98% - 20.60%)	1440	16.36% (13.09% - 19.64%)
Years in military (mean)		25.98 (25.68 - 26.28)		24.64 (23.73 - 25.56)

Sexual trauma				
Place/person				
No trauma	35420	81.61% (79.94% - 83.28%)	6620	75.92% (72.49% - 79.35%)
Military related ‡	3980	9.17% (8.03% - 10.31%)	1020	11.70% (9.54% - 13.86%)
At other place or by others	4000	9.22% (7.94% - 10.50%)	1080	12.39% (9.57% - 15.21%)
Child Maltreatment				
Physical abuse	19640	45.17% (42.85% - 47.49%)	3460	39.41% (34.95% - 43.87%)
Sexual	4960	11.43% (10.02% - 12.84%)	1080	12.30% (9.86% - 14.74%)
Exposure to intimate partner	5320	12.21% (10.67% - 13.76%)	900	10.25% (7.62% - 12.88%)
Emotional abuse	8400	19.41% (17.61% - 21.21%)	1540	17.58% (14.53% - 20.63%)
Neglect	14880	34.56% (32.37% - 36.74%)	2300	26.38% (22.55% - 30.21%)
Deployment experience				
Known someone seriously injured or killed	27060	62.18% (59.92% - 64.43%)	-	-
In threatening situation – unable to respond due to rules of engagement	15000	34.48% (32.23% - 36.73%)	-	-
Ever been injured	15300	35.19% (33.05% - 37.33%)	-	-
Ever received incoming artillery, rocket or mortar fire	20000	46.00% (43.72% - 48.28%)	-	-
Had close call, e.g. shot/hit but were protected	11100	25.54% (23.47% - 27.61%)	-	-
Seen ill/injured women/children who you were unable to help	19140	44.04% (41.72% - 46.36%)	-	-
Felt responsible for death of Canadian or ally personnel	3220	7.41% (6.14% - 8.68%)	-	-
Difficulty distinguishing between combatants and non-combatants	13620	31.31% (29.12% - 33.5%)	-	-

†Force type and Rank in 2018; NCM = non-commissioned member; NCO = non-commissioned officer; ‡military-related: occurred at CAF workplace or perpetrated by CAF member/DND staff

Table 2: Simple linear regressions predicting MIES scores among deployed CAF personnel (weighted n=43,700)

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value	R^2
Age					0.0020
33-44 (ref)					
45-60	.11	.061	1.86	.0628	
61-75	-.0046	.096	-0.05	.9624	
Sex					0.0026
Male (ref)					
Female	.21	.085	2.47	.0137	
Education					0.0029
Secondary or lower (ref)					
Postsecondary or higher	-.13	.05	-2.57	.0104	
Marital status					0.0092
Married (ref)					
Common law	.22	.072	3.05	.0023	
Separated/widowed/divorced	.32	.083	3.84	.0001	
Single	.12	.104	1.13	.2568	
Military factors					
Force type †					0.0024
Regular (ref)					
Reserve	-.18	.078	-2.34	.0196	
Service Environment					0.0096
Army (ref)					
Air Force	-.24	.057	-4.18	<.0001	
Navy	-.22	.066	-3.38	.0007	
Rank †					0.0276
Junior NCM	.62	.078	7.96	<.0001	
Senior NCO	.41	.071	5.82	<.0001	
Junior officer	.28	.11	2.53	.0115	
Senior officer (ref)					
Years in military	-.0083	.0034	-2.46	.0140	0.0026
Sexual trauma					
Place/person					0.0436
No trauma (ref)					
Military related ‡	.86	.089	9.69	<.0001	
At other place or by others	.34	.081	4.23	<.0001	
Relate to deployment or not					0.0440
No trauma (ref)					
While deployment	1.03	.115	9.01	<.0001	
Not while deployment	.40	.071	5.72	<.0001	
Type of sexual trauma					
Sexual assault					0.0413
No trauma (ref)					
Military related ‡	1.11	.12	9.22	<.0001	
Non-military	.47	.11	4.19	<.0001	
Sexual unwanted touching					0.0434
No trauma (ref)					
Military related ‡	.86	.09	9.71	<.0001	
Non-military	.33	.08	3.92	<.0001	
Sexual assault or unwanted touching					

No trauma (ref)					0.0482
Military related ‡	.89	.08	10.60	<.0001	
Non-military	.25	.08	3.01	.0027	
Child Maltreatment					
Physical	.48	.049	9.85	<.0001	0.0405
Sexual	.52	.077	6.76	<.0001	0.0195
Exposure to intimate partner violence	.39	.075	5.24	<.0001	0.0118
Emotional abuse	.78	.061	12.95	<.0001	0.0681
Neglect	.46	.051	8.90	<.0001	0.0335
Deployment experience					
Known someone seriously injured or killed	.51	.050	10.20	<.0001	0.0432
In threatening situation – unable to respond due to rules of engagement	.66	.050	13.14	<.0001	0.0697
Ever been injured	.55	.050	10.88	<.0001	0.0489
Ever received incoming artillery, rocket or mortar fire	.25	.049	5.15	<.0001	0.0114
Had close call, e.g. shot/hit but were protected	.57	.055	10.30	<.0001	0.0441
Seen ill/injured women/children who you were unable to help	.62	.048	12.83	<.0001	0.0667
Felt responsible for death of Canadian or ally personnel	.88	.092	9.53	<.0001	0.0380
Difficulty distinguishing between combatants and non-combatants	.52	.052	9.95	<.0001	0.0412

†Force type and Rank in 2018; ‡Military related is defined as the sexual trauma that happened in CAF workplace or by CAF member/DND staff or while on deployment; NCO = non-commissioned officer; NCM = non-commissioned member

Table 3: Simple linear regressions predicting MIES scores among non-deployed CAF personnel (weighted n=8,800)

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value	R^2
Age					0.0073
33-44 (ref)					
45-60	.16	.12	1.41	.1588	
61-75	-.071	.15	-0.48	.6343	
Sex					0.0309
Male (ref)					
Female	.45	.10	4.46	<.0001	
Education					0
Secondary or lower (ref)					
Postsecondary or higher	.012	.096	0.12	.9008	
Marital status					0.0156
Married (ref)					
Common law	.15	.14	1.04	.2991	
Separated/widowed/divorced	.40	.13	3.08	.0021	
Single	.050	.18	0.26	.7986	
Military factors					
Force type †					0.0008
Regular (ref)					
Reserve	-.085	.12	-0.73	.4680	
Service Environment					0.0047
Army (ref)					
Air Force	-.15	.10	-1.44	.1517	
Navy	-.21	.14	-1.53	.1270	
Rank †					0.0366
Junior NCM	.58	.12	4.67	<.0001	
Senior NCO	.25	.13	1.94	.0533	
Junior officer	.32	.16	1.93	.0537	
Senior officer (ref)					
Years in military	.00027	.0047	0.06	.9542	0
Sexual trauma					
Place/person					0.1035
No trauma (ref)					
Military related	.99	.14	7.31	<.0001	
At other place or by others	.68	.13	5.15	<.0001	
Type of sexual trauma					
Sexual assault					0.095
No trauma (ref)					
Military related ‡	1.20	.18	6.79	<.0001	
Non-military	.82	.17	4.80	<.0001	
Sexual unwanted touching					0.1028
No trauma (ref)					
Military related ‡	1.02	.14	7.38	<.0001	
Non-military	.66	.14	4.81	<.0001	
Sexual assault or unwanted touching					0.1035
No trauma (ref)					
Military related ‡	.99	.14	7.31	<.0001	
Non-military	.68	.13	5.15	<.0001	
Child Maltreatment					
Physical	.34	.09	3.73	.0002	0.0219

Sexual	.78	.13	5.79	<.0001	0.0512
Exposure to intimate partner violence	.37	.15	2.51	.0125	0.010
Emotional abuse	.58	.12	4.99	<.0001	0.0385
Neglect	.35	.10	3.38	.0008	0.0182

†Force type in 2018; ‡Military related is defined as the sexual trauma that happened in CAF workplace or by CAF/DND staff or while on deployment; NCM = non-commissioned member; NCO = non-commissioned officer

Table 4: Multiple linear regression model of MIES scores regressed on military/sociodemographic factors among deployed CAF personnel (weighted n=43,700)

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value
Demographics				
Sex				
Male (ref)				
Female	.14	.09	1.62	.1059
Education				
Secondary or lower (ref)				
Postsecondary or higher	-.02	.05	-0.40	.6868
Military factors				
Force type †				
Regular (ref)				
Reserve	-.04	.07	-0.62	.5373
Rank †				
Junior NCM	.39	.08	4.91	<.0001
Senior NCO	.26	.07	3.70	.0002
Junior officer	.16	.10	1.65	.0994
Senior officer (ref)				
Years in military	.001	.003	2.66	.0078
Sexual assault or unwanted sexual touching				
No trauma (ref)				
Military-related ‡	.61	.09	6.98	<.0001
Non-military	.10	.08	1.33	.1831
Child maltreatment				
Physical abuse	.19	.05	3.73	.0002
Exposure to intimate partner violence	-.04	.07	-0.50	.6194
Emotional abuse	.48	.06	7.39	<.0001
Neglect	.19	.05	3.75	.0002
Deployment experience				
Known someone seriously injured or killed	.09	.05	1.75	.0809
In threatening situation – unable to resp. bc of rules of engage	.27	.06	4.86	<.0001
Ever been injured	.19	.05	3.68	.0002
Ever received incoming artillery, rocket or mortar fire	-.13	.05	-2.49	.0127
Had close call, e.g. shot/hit but were protected	.22	.06	3.62	.0003
Seen ill/injured women/children who you were unable to help	.19	.05	3.56	.0004
Felt responsible for death of Canadian or ally personnel	.51	.09	5.72	<.0001

Difficulty distinguishing between combatants and non-combatants	.19	.06	3.31	.0009

†Force type and Rank in 2018; ‡Military related is defined as the sexual trauma that happened in CAF workplace or by CAF/DND staff or while on deployment; NCM = non-commissioned member; NCO = non-commissioned officer

Table 5: Multiple linear regression model of MIES scores regressed on military/sociodemographic factors among non-deployed CAF personnel (weighted n=8,800)

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value
Demographics				
Sex				
Male (ref)				
Female	.10	.12	0.85	.3955
Education				
Secondary or lower (ref)				
Postsecondary or higher	.18	.10	1.88	.0604
Military factors				
Force type †				
Regular (ref)				
Reserve	-.12	.11	-1.09	.2760
Rank †				
Junior NCM	.80	.14	5.63	<.0001
Senior NCO	.33	.13	2.56	.0108
Junior Officer	.31	.16	1.93	.0544
Senior officer (ref)				
Years in military	.02	.001	4.00	<.0001
Sexual assault or unwanted sexual touching				
No trauma (ref)				
Military-related	.81	.16	5.13	<.0001
Non-military	.54	.14	3.84	.0001
Child maltreatment				
Physical	.12	.10	1.24	.2139
Exposure to intimate partner violence	-.04	.16	-0.23	.8189
Emotional abuse	.14	.14	1.06	.2902
Neglect	.22	.11	2.09	.0371

†Force type and Rank in 2018; NCM = non-commissioned member; NCO = non-commissioned officer

Chapter 4 | Study Three

General Purpose

Building upon Study Two findings, Study Three serves as a follow-up investigation to delve deeper into the association between moral injury (MI) and past-year mental health disorders among CAF personnel and Veterans. While existing literature highlights the heightened prevalence of mental health disorders within military populations, the specific impacts of MI, resulting from exposure to potentially morally injurious experiences (PMIEs), remained inadequately explored in the Canadian context.

Study Three utilized data from the 2018 CAFVMHS to assess the relation between MI and past-year mental health disorders. Drawing upon established measures such as the Moral Injury Events Scale (MIES) and WHO-CIDI, the study used logistic regressions to analyze the influence of MI scores on various mental health outcomes, while controlling for relevant demographic and military variables.

The findings underscore the significant impact of MI on the experience of adverse mental health outcomes among CAF members and Veterans. By extending the understanding of MI's contribution to mental health outcomes above and beyond military and demographic related variables, this study builds upon prior research and underscores the importance of addressing moral injury alongside other mental health concerns within military populations.

Title and Authorship

Title: Moral injury associated with increased odds of past-year mental health disorders: a Canadian Armed Forces examination

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4.1 Abstract

Background: Potentially morally injurious experiences (PMIEs) are common during military service. However, it is unclear to what extent PMIEs are related to well-established adverse mental health outcomes.

Objective: The objective of this study was to use a population-based survey to determine the associations between moral injury endorsement and the presence of past-year mental health disorders in Canadian Armed Forces (CAF) personnel and Veterans.

Methods: Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS). With a sample of 2,941 respondents, the weighted survey sample represented 18,120 active duty and 34,380 released CAF personnel. Multiple logistic regressions were used to assess the associations between sociodemographic characteristics (e.g., sex), military factors (e.g., rank), moral injury (using the Moral Injury Events Scale [MIES]) and the presence of specific mental health disorders (major depressive episode, generalized anxiety disorder, panic disorder, social anxiety disorder, PTSD, and suicidality)

Results: While adjusting for selected sociodemographic and military factors, the odds of experiencing any past-year mental health disorder were 1.97 times greater (95% CI = 1.94-2.01) for each one-unit increase in total MIES score. Specifically, PTSD had 1.91 times greater odds (95% CI = 1.87-1.96) of being endorsed for every unit increase in MIES total score, while odds of past-year panic disorder or social anxiety were each 1.86 times greater (95% CI = 1.82-1.90) for every unit increase in total MIES score. All findings reported were statistically significant ($p < .001$).

Conclusion: These findings emphasize that PMIEs are robustly associated with the presence of adverse mental health outcomes among Canadian military personnel. The results of this project further underscore the necessity of addressing moral injury alongside other mental health concerns within the CAF.

4.2 Introduction

Military service is well established as a risk factor associated with future adverse mental health outcomes such as posttraumatic stress disorder (PTSD), anxiety disorders such as panic disorder, substance use, major depressive disorder (MDD), and suicidality, including suicidal ideation (Boulos & Zamorski, 2013; Van Til et al,, 2017; Norman, Haller, Hamblen, Southwick, & Pietrzak, 2018; Arenson et al., 2018; Ramchand, Rudavsky, Grant, Tanielian, & Jaycox, 2015; Fikretoglue, Liu, Zamorski, & Jetly, 2016; Rusu, Zamorski, Boulos, & Garber, 2016). For example, in 2018, Canadian Armed Forces (CAF) survey respondents reported a cumulative lifetime prevalence of 54% for at least one mood or anxiety disorder (Sareen et al., 2021). Furthermore, between 2002 and 2018, 44% of CAF members endorsed experiencing anxiety or depression (Sareen et al., 2021), much higher than the Canadian civilian population endorsement of 5.4% for major depression and 4.6% for any anxiety disorder reported between 2000 and 2016 (Dobson, 2020). Studies have also previously shown increased risk of mental health disorders in both American and United Kingdom military samples (Ramchand et al., 2015; Kessler, Heeringa, & Stein, 2014; Goodwin et al., 2015; Finnegan & Randles, 2022), with odds of probable mental health disorder being nearly double that of the United Kingdom general population (Goodwin et al., 2015). Finnegan and Randles (2022) recently found that 38% of veterans in their British Armed Forces cohort had been diagnosed (in their medical record) with at least one mental health disorder, similar to previous Canadian military findings. Numerous factors may account for the high prevalence of adverse mental health outcomes in military populations, including pre-enlistment demographic variables (e.g., sex, age, adverse childhood events), stressful deployment experiences, personality-related considerations, and exposure to potentially morally injurious experiences (PMIEs) (Sareen et al., 2021; Thompson et al., 2016).

Moral injury (MI) is defined as the psychological, spiritual, and social distress that occurs following situations where individuals have witnessed, failed to prevent, or perpetrated acts that are appraised as violating personal moral beliefs (Thompson et al., 2016; Litz et al., 2009; Lewis, 1971). Recent evidence suggests that PMIEs are commonly encountered during military service. In a representative survey of previously deployed CAF members, Nazarov et al. (2018) found that over half of respondents experienced one or more PMIEs. Similarly, Wisco et al. (2017) found that in United States combat Veterans, 10% reported transgressing their personal morals, 25% endorsed experiencing betrayal from other military members, and 25% reported witnessing transgressions of others. Previous studies have also found that exposure to PMIEs increased the likelihood of experiencing negative mental health outcomes, including PTSD and MDD (Nazarov, Fikretoglu, Liu, Thompson, & Zamorski, 2018). The subscale facets of PMIEs (personal transgressions. betrayal, and transgressions of others) may also have potential implications regarding negative mental health outcomes (Nazarov et al., 2018). Although these studies provide evidence that PMIEs are frequently encountered during military service, it remains unclear to what extent MI is related to well-established adverse mental health outcomes among Canadian military members with and without previous deployment experience. Understanding how MI may be associated with mental health disorders is crucial for developing targeted interventions to ameliorate the burden of mental health disorders within this population.

The aim of this study was to determine the association between MI endorsement and the presence of specified past-year mental health disorders in a nationally representative sample of CAF personnel and Veterans. We hypothesized that MI would incrementally predict increased odds of past-year mental health conditions, including PTSD, suicidal ideation, major depressive episode, social anxiety disorder, generalized anxiety disorder, and panic disorder over and above

relevant included demographic and military-related variables, such as rank, force type and sex. We further hypothesized that transgressions by others would have a larger impact on the increased odds of past-year mental health conditions, when compared to transgressions by self, due to the inability to control the actions of other people, and the moral implications of such.

4.3 Materials and Methods

4.3.1 Participants and Data Collection

Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS) (Afifi et al., 2020). The target sampling population for the CAFVMHS was individuals who had completed the 2002 Canadian Community Mental Health Survey – Mental Health and Well-Being – Canadian Forces (CCHS-CF) (Sareen et al., 2007), and who were full-time Regular or Reserve Force members at that time. At the time of the 2018 administration, personnel could be Veterans or could be actively serving in the CAF.

Regular force members of the CAF who participated in the 2002 CCHS-CF (n = 4,299) were eligible for the CAFVMHS follow-up survey, of whom 2,941 participated. Longitudinal weights were applied by Statistics Canada to produce representative estimates of the target CCHS-CF population in 2002. Therefore, the weighted CAFVMHS sample represented 34,380 released and 18,120 active-duty CAF personnel from the 2002 survey. Between January and May 2018, Statistics Canada collected and scored data using computer-assisted personal interviews. All data were collected in accordance with Statistics Canada procedures and approved by relevant review boards. Data were then accessed through Statistics Canada Research Data Centres. For more information regarding the CAFVMHS rationale and methodology, please refer to Afifi et al. (2020).

4.3.2 Measures

Mental Health Outcomes. Mental health disorders were measured in the 2018 CAFVMHS using the World Health Organization Composite International Diagnostic Interview (WHO-CIDI), which is a structured diagnostic interview developed in accordance with the Diagnostic and Statistical Manual of Mental Health Disorders, fourth edition (DSM-IV) (Sareen et al., 2007; Robins et al., 1988; Wittchen, 1994; Kessler et al., 2003). The outcomes of interest from the WHO-CIDI were past-year prevalence of major depressive episode (MDE), generalized anxiety disorder (GAD), panic disorder (PD), and social anxiety disorder (SAD). The WHO-CIDI was used for continuity between the 2002 CCHS-CAF and 2018 CAFVMHS datasets. For more information regarding the methodology of the surveys, please see Afifi et al. (2020).

Past-year PTSD was determined by assessing the presence of a CIDI-based PTSD diagnosis during the 16-year follow-up period, experiencing PTSD-related symptoms, and having at least three of seven PTSD symptoms that were assessed in the past-year time frame. This algorithm for PTSD diagnosis was created and validated by Statistics Canada based on previous surveys (Afifi et al., 2020). Suicidal ideation (SI) was self-reported based on the question, “in the past 12 months, did you seriously think about attempting suicide or taking your own life?”.

Moral Injury. MI was evaluated using the Moral Injury Events Scale (MIES) (Nash et al., 2013), which uses a 6-point Likert scale to assess event experiences. Participants were presented with a series of nine statements (e.g., “I saw things that were morally wrong”) and were asked to indicate their level of agreement (1=*strongly disagree*, 6=*strongly agree*), with possible scores ranging from 9 to 54. The transgressions other subscale (items 1 and 2) has possible scores ranging from 2 to 12, transgressions by self (items 3 to 6) has scores that range from 4 to 24, and

betrayal subscale (items 7 to 9) has possible scores ranging from 3 to 18. Importantly, Statistics Canada implemented logic skipping during administration, wherein a participant selecting "*strongly disagree*" for certain items automatically had "*strongly disagree*" imputed for a subsequent item (e.g., "strongly disagree" for item one, "I saw things that were morally wrong", automatically imputed "strongly disagree" for item two, "I am troubled by having witnessed others' immoral acts"). Research has examined the psychometric properties of this measure in United States and Canadian military samples (Nash et al., 2013; Plouffe et al., 2021). Based on past studies (Plouffe et al., 2021), MIES total scores and two subscale scores (Transgressions by Self and Transgressions by Others) were calculated using mean values.

Covariates. Military variables, including force type (Regular or Reserve Force), service environment (Army, Navy, or Air Force), and rank (junior non-commissioned member, senior non-commissioned officer, junior officer, senior officer) were included as covariates in the model. Due to evidence that there may be age- and sex-related differences in the endorsement of mental health disorders (Nazarov et al., 2018), age (categorized as 33-44, 45-60, 61-75 years) and sex (male and female) were also included in analysis.

4.3.3 Statistical Methods

First, means, standard deviations, and Cronbach's alphas were assessed for the MIES, and percentages of individuals endorsing mental health outcomes were reported. MIES total score mean was 2.57 (SE= .023; standardized Cronbach's alpha = .867), transgressions by self mean was 1.92 (SE =.026; Cronbach's alpha = .913), and transgressions by others mean was 3.09 (SE = .028; Cronbach's alpha = .801). Next, simple logistic regressions were conducted to evaluate the bivariate associations between individual predictors (sociodemographic, military, and MIES variables) with past-year mental health disorders and SI. Finally, hierarchical multiple

logistic regression models were conducted to assess the adjusted associations between MIES scores, sociodemographic characteristics, specific military factors and the presence of past-year mental health disorders and SI. Military and demographic covariates were included in a single block to control for the impact of these factors on outcomes of interest. Multicollinearity was assessed for, with no indication of the presence of these problems in the models and model significance was assessed using Wald chi-square tests. Survey sample weights and 500 bootstrapped weights calculated by Statistics Canada were used in all analyses to ensure survey sample representativeness and to calculate standard errors. Statistical analyses were conducted using SAS Version 9.4 (SAS Institute Inc., Cary, NC, USA).

4.4 Results

The weighted sample for this study represented 34,380 retired and 18,120 active-duty CAF members from the original 2002 CCHS-CF study (unweighted data is available upon request). Over 87% (N = 15,860) of the active-duty sample and 88% (N = 30,260) of the released sample were male. Just over half of respondents (57%, N = 29,880) had completed postsecondary education (Table 1). A total of 87% (N = 45,960) were Regular Force CAF members and 48% (N = 25,120) of survey respondents were senior non-commissioned members. When asked about the number of traumatic experiences they endured while deployed with the CAF, 82% of both active duty (N = 13,100) and released (N = 22,480) members endorsed at least one traumatic deployment experience (Table 2). Presence of at least one past-year mental health disorder was seen in 26% (N = 4,600) of active duty and 33% (N = 11,000) of released CAF members (Table 3). For MIES total scores, as well as subscale scores representing Transgressions by Self and Transgressions by Others, Cronbach's alphas were high (α = .801 – .913).

Simple logistic regressions showed that MIES scores, as well as all sociodemographic and military variables, significantly predicted odds of experiencing past-year mental health disorders, except for sex in the prediction of PD and SAD, which were non-significant (Table 4).

Multiple logistic regression models evaluating associations between MIES scores and past-year mental health disorders are reported in Tables 5 and 6. Following the inclusion of all demographic and military-related variables, the concordance value (c-statistic) for the past-year mental health disorder logistic regression model was .666. The addition of MIES total scores in this model increased the c-statistic from .666 to .764. When examined in multiple logistic regression models, the odds of experiencing any past-year mental health disorder were 1.97 (95% CI = 1.94-2.01) times greater for each one-unit increase in total MIES score (Table 5). Specifically, for every one-unit increase in MIES total scores, there were 1.91 (95% CI = 1.87-1.96) times greater odds of experiencing PTSD. For every one unit increase in MIES total scores, the odds of experiencing past-year PD or SAD were each 1.86 (95% CI = 1.82-1.90) times greater. In addition, for each one-unit increase in MIES total scores, the odds of experiencing MDE were 1.79 (95%CI = 1.76-1.82) times greater, the odds of SI were 1.85 (95% CI = 1.82-1.90) times greater, and the odds of experiencing GAD were 1.80 (95% CI = 1.76-1.85) times greater.

When MIES was separated into subscales representing Transgressions by Others and Transgressions by Self, the odds of any past-year mental health disorder were 1.78 (95% CI=1.75-1.82) times greater for each unit increase in Transgressions by Others, and 1.11 (95% CI=1.09-1.13) times greater for each unit increase in Transgressions by Self (Table 6)**.**

4.5 Discussion

This is the first study to quantify the extent to which MI was associated with the presence of well-established adverse mental health outcomes in CAF members and Veterans using a nationally representative survey. These findings underscore that the distress which occurs following PMIEs has a significant impact on the endorsement of adverse mental health outcomes in this population.

Our results indicated that MIES total score significantly increased the odds of experiencing past-year MDE, PD, SAD, GAD, PTSD and SI. Importantly, the c-statistic increase with the addition of MIES total score (from .666 to .764) indicated that the addition of MIES total score increased the probability of correctly discerning CAF members who experienced past-year mental health disorders from those who did not, when compared to the model including only sociodemographic and military-related variables.

Although there is evidence supporting that MI is a distinct construct from other mental health disorders, it has been previously conceptualized as commonly co-occurring with, for example, PTSD, MDE and SI (Bryan et al., 2018; Lancaster, 2018; Barnes, Hurley, & Taber, 2019). Our results are consistent with previous research indicating that exposure to PMIEs is associated with an increased likelihood of experiencing adverse mental health outcomes (Nazarov et al., 2018). Novel findings from this research also include the association between PMIEs and other mental health outcomes, such as GAD, PD, and SI. The associations between other mental health disorder experiences alongside MI as captured by the MIES further emphasize the importance of MI as a transdiagnostically-relevant construct to assess during mental health screening and treatment. Importantly, the vast majority (82%) of our sample reported exposure to at least one potentially traumatic experience while deployed with the CAF.

Although the specific experiences are not captured herein, previous research has shown that killing in combat and difficulty distinguishing between combatants and non-combatants, encounters which may both be classified as PMIEs, are related to greater likelihood of developing past-year MDD, PTSD, and SI (Nazarov et al., 2018; Maguen et al., 2010; Fontana, Rosenheck, & Brett, 1992; Maguen et al., 2012).

Both difficulty with distinguishing combatants and killing in combat are considered PMIEs involving personal or individual responsibility. Events involving individual responsibility (i.e., transgressions by self) are more likely to lead to negative internal perceptions such as guilt, while PMIEs involving external or other responsibility (i.e., transgressions by others) may be more likely to elicit negative external cognitions and emotion such as anger or inability to trust (Barnes, Hurley, & Taber, 2019). This difference in symptom presentation between self- and other-related transgressions elucidates the importance of examining whether transgressions by the self and transgressions by others may have differential associations with adverse mental health outcomes. Interestingly, when the MIES subscales (Transgressions by Others and Transgressions by Self) were examined in the same model, Transgressions by Others conferred a greater probability of endorsing all past-year adverse mental health outcomes in this study compared to Transgressions by Self. This indicates that when controlling for transgressions perpetrated by the self, witnessing morally distressing events perpetrated by others may be more strongly related to the future development of negative mental health outcomes. This further emphasizes the need for adequate support for CAF personnel, specifically as it relates to witnessing or being impacted by moral transgressions of others. This is consistent with Bryan et al. (2016), who found that transgressions by others were most strongly associated with posttraumatic stress, whereas transgressions by self was most strongly associated with

pessimism, anger, and hopelessness. Future research is required to understand the differential impacts of transgressions perpetrated by the self and others on the development of mental health conditions.

Implementing measures such as confidential disclosure processes, moral-ethical decision-making training, and targeted bystander intervention training may also have the potential to ameliorate some of the moral distress endorsed herein, leading to a reduction in adverse mental health outcomes within the CAF. However, research on the effectiveness of such interventions is urgently needed.

Several sociodemographic and military-related variables in this study also resulted in increased odds of past-year mental health disorders. For example, being female increased the odds of experiencing any past-year mental health disorder, which is consistent with previous findings that women are at greater risk for the development of PTSD and MDD (Nazarov et al., 2018; Bryan et al., 2016; Brewin, Andrews, & Valentine, 2000; Kessler, 2003; Rogers et al., 2017). When examining specific past-year disorders in the multiple logistic regressions, sex was not significantly associated with SI. This is in opposition to current evidence suggesting that female service members had a higher likelihood of experiencing SI and engaging in suicide attempts (Rogers et al., 2017; Naifeh et al., 2021). However, when predictors were examined separately in the simple logistic regression, female sex was related to greater odds of SI, thus indicating that the overlap between predictor variables included in the multiple logistic regressions may have rendered this association non-significant. Furthermore, junior non-commissioned members (compared to senior officers), and Army service environment (compared to Navy or Air Force), showed increased odds of past-year SI, MDE, PD, GAD, PTSD and SAD. This is consistent with past research that has shown lower rank and land force

(i.e., Army) have a higher risk of developing mental health disorders (Rebeira, Grootendorst, & Coyte, 2017). This increased odds of past-year mental health disorder in lower rank and land force CAF members may be due to a number of potential factors, including rank-related job duties, differences in culture (both at the rank and force-type level) and direct combat exposures.

Although this study provides novel evidence regarding the impact of MI on past-year mental health disorders, it is not without limitations. Although it remains the most widely used MI measure in military research, and at the time of data collection (2018) was the most relevant MI scale to include, the MIES is a less-than-ideal measurement tool. Since the time of data collection, it has been criticized for not differentiating between exposure to and outcomes of MI (Plouffe et al., 2021). This may inadvertently introduce irrelevant model variance when attempting to ascertain severity of MI (Plouffe et al., 2021). Future studies intending to capture MI should consider using more appropriate scales, such as the Moral Injury Outcomes Scale (MIOS) which examines shame related outcomes and trust violation outcomes, as well as total score and functional impairment (Litz et al., 2022). Another limitation of the MIES is that it exclusively refers to military-related experiences of moral distress, which precludes the possibility of assessing which types (e.g., military vs. non-military) of morally distressing events have an impact on the probability of experiencing other adverse mental health outcomes. As such, the models created herein were not exhaustive, including only demographic and military-related variables. This may limit generalizability, as there is the possibility that non-deployment and non-military related PMIEs may have differentially impacted these findings.

The logic skipping that was used during Statistics Canada administration may also have introduced response biases in the sample. Within the CAFVMHS 2018 MIES scoring logic, when a participant selected "*strongly disagree*" for certain MIES items, "*strongly disagree*" was

automatically imputed for a subsequent item. However, following previous research regarding MIES response patterns in the 2018 CAFVMHS (Plouffe et al., 2021), it is unlikely that this logic skipping impacted response patterns.

Importantly, as the CAFVMHS is a longitudinal study, the 2018 sample is representative of the original 2002 CAF members who took part in the initial survey and may not be representative of current CAF demographics. As this was a survey conducted to be representative of the initial 2002 survey, another limitation may have been the use of the WHO-CIDI, due to assessment of mental health disorders using DSM-IV criteria. The largest changes between the DSM-IV and DSM-5 (version in use in 2018), were regarding disorder classifications (e.g., PTSD was classified as an anxiety disorder in the DSM-IV and became a trauma- and stressor-related disorder in the DSM-5). The core criterion features for all included disorders remained largely unchanged, or were separated into more distinct categories (e.g., PTSD changing from three to four distinct symptom clusters). Therefore, this was unlikely to have significantly impacted the analysis of mental health variables of interest in this sample. Further, the exclusive use of sex as a binary categorization rather than the use of gender may have oversimplified the impact of sex. Due to this constraint, we were unable to ascertain how gender, rather than sex, may play a role in these experiences. Due to the limited number of females in the sample, we were also unable to run regression models stratified by sex, and therefore, unable to examine whether findings are different between sexes.

Future directions should incorporate a more comprehensive assessment of mental health outcomes and include other disorders not assessed herein using measures with sound psychometric properties. Future research should also implement a scale focusing on expressed outcomes of MI, such as the MIOS (Litz et al., 2022), while continuing to establish effective

screening tools and interventions for the treatment of this clinically useful construct. Lastly, future research should examine MI outcomes as they relate to transgressions of others and betrayal, compared to personal moral violations.

4.5.1 Concluding Remarks

Notwithstanding the previous limitations, this was the first study to ascertain the relations between MI and the presence of past-year mental health disorders in a representative cohort of CAF members and Veterans. The results of this research underscore the importance of screening for exposure to PMIEs, as well as addressing MI and PMIEs alongside other adverse mental health outcomes within the CAF. Explicitly providing preventative interventions and targeted clinical treatments to reduce moral distress may further reduce the prevalence and incidence of adverse mental health outcomes in this population.

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Tables | Study Three

Table 1: Sociodemographic characteristics of the 2018 CAFVMHS sample by enrollment status

	Active		Released	
	N	Percentage % (95%CI)	N	Percentage % (95%CI)
Age				
33-44	6640	36.64 (33.10 – 40.19)	4400	12.8 (10.96 – 14.64)
45-60	11480*	63.36 (59.81 – 66.90)*	24380	70.91 (68.65 – 73.18)
61-75			5600	16.29 (14.91 – 17.66)
Sex				
Male	15860	87.53 (86.27 – 88.78)	30260	88.02 (87.39 – 88.64)
Female	2260	12.47 (11.22 – 13.73)	4120	11.98 (11.36 – 12.61)
Marital status				
Married	12080	66.96 (63.66 – 70.27)	23900	69.80 (67.57 – 72.03)
Common law	3200	17.74 (14.94 – 20.54)	4080	11.92 (10.33 – 13.50)
Separated/widowed/divorced	1720	9.53 (7.38 – 11.69)	4020	11.74 (10.13 – 13.35)
Single	1040	5.76 (4.04 – 7.49)	2240	6.54 (5.31 – 7.78)
Education				
Secondary or lower	7900	43.79 (40.18 – 47.41)	14480	42.31 (39.95 – 44.68)
Postsecondary or higher	10140	56.21 (52.59 – 59.82)	19740	57.69 (55.32 – 60.05)
Any mental health disorders since 2002				
Yes	7460	41.40 (38.02 – 44.78)	15800	46.42 (43.95 – 48.88)
No	10540	58.49 (55.11 – 61.87)	18260	53.64 (51.18 – 56.11)
Past-year mental health disorder				
Yes	4600	25.58 (22.31 – 28.86)	11000	32.72 (30.40 – 35.04)
No	13380	74.42 (71.14 – 77.69)	22640	67.34 (65.02 – 69.66)

Note. CI = confidence interval. *Calculated by collapsing the two age groups (45-60 and 61-75) to avoid small cells (unweighted frequency <15).

Table 2: Military-related characteristics of the 2018 CAFVMHS sample by current enrollment status

	Active		Released	
	n	Percentage % (95%CI)	n	Percentage % (95%CI)
Force type				
Regular	15440	85.21 (82.95 – 87.47)	30520	88.88 (87.54 – 90.21)
Reserve	2680	14.79 (12.53 – 17.05)	3820	11.12 (9.79 – 12.46)
Rank				
Junior Non-Commissioned Member	2220	12.25 (9.73 – 14.77)	11680	33.97 (31.72 – 36.22)
Senior Non-Commissioned Member	9800	54.08 (50.71 – 57.46)	15320	44.56 (42.35 – 46.78)
Junior Officer	1600	8.83 (6.98 – 10.68)	2800	8.14 (6.98 – 9.31)
Senior Officer	4500	24.83 (22.43 – 27.24)	4580	13.32 (12.30 – 14.34)
Year released				
2001-2005	-	-	7820	22.77 (20.63 – 24.92)
2006-2010	-	-	11960	34.83 (32.41 – 37.25)
2011-2015	-	-	10520	30.63 (28.31 – 32.96)
2016-2018	-	-	4020	11.71 (10.11 – 13.30)
Years of service				
1-21	5420	29.94 (26.53 – 33.36)	9840	28.65 (26.34 – 30.96)
22-27	4200	23.20 (20.19 – 26.22)	10640	30.98 (28.61 – 33.36)
28-33	5540	30.61 (27.35 – 33.87)	7180	20.91 (19.13 – 22.68)
34-47	2920	16.13 (13.94 – 18.33)	6680	19.45 (17.96 – 20.95)
Ever deployed outside of Canada				
Yes	16080	88.74 (86.6 – 90.89)	27600	80.28 (78.47 – 82.08)
No	2020	11.15 (9.00 – 13.29)	6780	19.72 (17.92 – 21.53)
Deployment timing				
Before 2002	1880	11.69 (9.53 – 13.86)	12900	46.81 (43.94 – 49.67)
After 2002	5800	36.07 (32.28 – 39.86)	4060	14.73 (12.56 – 16.90)
Before and after 2002	8400	52.24 (48.44 – 56.04)	10600	38.46 (35.65 – 41.27)
Number of traumatic experiences while deployed with CAF				
0	2900	18.10 (15.13-21.08)	5020	18.25 (16.25-20.26)
1	2600	16.23 (13.46-19.00)	4800	17.45 (15.37-19.54)
2+	10500	65.54 (61.82-69.26)	17680	64.29 (61.72-66.86)

Note. CI = confidence interval.

Table 3: Descriptive statistics of past-year mental health disorders

Past-year mental health disorder	Ever deployed		Never deployed	
	n	Percentage (95%CI)	n	Percentage (95%CI)
Any disorder*	13740	31.98% (29.87% - 34.09%)	1840	21.35% (17.74% - 24.96%)
Alcohol abuse	720	1.67% (1.04% - 2.30%)	60	0.69% (0.01% - 1.36%)
MDE	8940	20.6% (18.78% - 22.41%)	1240	14.19% (10.94% - 17.44%)
Suicidal Ideation	280	0.64% (0.22% - 1.06%)	0	0
PD	5220	12.07% (10.52% - 13.61%)	480	5.48% (3.29% - 7.67%)
GAD	4660	10.75% (9.24% - 12.26%)	460	5.29% (3.43% - 7.15%)
PTSD	7020	16.39% (14.66% - 18.11%)	640	7.32% (5.01% - 9.64%)
SAD	6240	14.36% (12.73% - 16.00%)	840	9.59% (6.93% - 12.25%)

Note. *Any disorder including PTSD, GAD, MDE, PD, SAD. Reported frequencies were weighted on sample weight and rounded on the base of 20. Percentages were calculated based on weighted frequency after rounding. 95%CIs were calculated using 500 bootstrapped weights provided by Statistics Canada. CI = confidence interval; MDE=major depressive episode; PD=panic disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; SAD=social anxiety disorder.

Table 4: Odds ratios (95%CIs) from simple logistic regressions assessing the bivariate associations between sociodemographic/military and MIES variables and past-year mental health outcomes.

Variables	Any disorder	Suicide Ideation	MDE	PD	GAD	PTSD	SAD
Age (ref: 61-75)							
33-44	2.98 (2.75-3.23)	2.39 (2.08-2.76)	2.69 (2.44-2.96)	3.02 (2.63-3.47)	3.62 (3.12-4.21)	4.83 (4.25-5.50)	2.77 (2.45-3.13)
45-60	2.15 (2.00-2.32)	2.11 (1.85-2.41)	2.07 (1.89-2.26)	2.81 (2.47-3.21)	2.93 (2.54-3.37)	3.24 (2.86-3.66)	2.69 (2.40-3.02)
Rank (ref: Senior Officer)							
Junior NCM	3.91 (3.65-4.19)	8.98 (7.55-10.66)	4.15 (3.80-4.52)	6.86 (6.01-7.84)	4.04 (3.59-4.55)	4.67 (4.20-5.20)	4.38 (3.94-4.88)
Junior NCO	2.69 (2.52-2.88)	5.24 (4.42-6.23)	2.76 (2.53-3.00)	4.02 (3.52-4.59)	2.43 (2.17-2.73)	3.61 (3.25-4.00)	3.32 (2.99-3.68)
Junior officer	1.95 (1.78-2.14)	3.53 (2.86-4.36)	2.26 (2.02-2.53)	1.63 (1.35-1.97)	1.81 (1.54-2.12)	2.09 (1.82-2.41)	1.43 (1.23-1.67)
Sex (ref: male)							
Female	1.28 (1.21-1.35)	1.12 (1.02-1.22)*	1.34 (1.26-1.43)	0.96 (0.89-1.05)ns	1.50 (1.39-1.63)	1.14 (1.06-1.23)*	1.06 (0.99-1.15)ns
Force type (ref: Reservists)							
Regular	2.22 (2.08-2.38)	1.31 (1.18-1.45)	2.63 (2.41-2.87)	2.92 (2.59-3.30)	2.23 (1.99-2.51)	1.90 (1.73-2.07)	1.82 (1.66-1.99)
Military element (ref: Army)							
Air	0.47 (0.45-0.49)	0.49 (0.46-0.53)	0.47 (0.45-0.49)	0.46 (0.43-0.49)	0.56 (0.52-0.60)	0.39 (0.36-0.41)	0.60 (0.56-0.63)
Navy	0.58 (0.55-0.62)	0.45 (0.41-0.50)	0.56 (0.52-0.59)	0.54 (0.50-0.59)	0.62 (0.57-0.68)	0.45 (0.42-0.48)	0.56 (0.52-0.60)
MIES subscales							
Transgressions by Self	1.45 (1.43-1.47)	1.47 (1.44-1.50)	1.42 (1.40-1.44)	1.47 (1.44-1.49)	1.41 (1.38-1.43)	1.49 (1.47-1.52)	1.48 (1.46-1.50)
Transgressions by Others	1.92 (1.89-1.95)	1.90 (1.86-1.95)	1.79 (1.76-1.83)	1.88 (1.84-1.93)	1.91 (1.86-1.95)	1.87 (1.83-1.91)	1.80 (1.76-1.84)
MIES total score	2.05 (2.01-2.08)	1.97 (1.93-2.02)	1.88 (1.85-1.92)	1.98 (1.93-2.02)	1.90 (1.86-1.95)	1.99 (1.95-2.03)	1.95 (1.91-1.99)

Note. Unless noted as ns (p value > .05), * (.0001 ≤ p value < .05), all the p values are < .0001. 95%CIs were calculated using 500 bootstrapped weights provided by Statistics Canada. Junior NCM=junior non-commissioned member; Junior NCO= junior non-commissioned officer; MDE=major depressive episode; PD=panic disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; SAD=social anxiety disorder. CI = confidence interval.

Table 5: Odds ratios (95%CIs) from multiple logistic regressions assessing the associations between MIES total scores and past-year mental health outcomes with the adjustment for sociodemographic and military factors.

Variables	Any disorder	Suicide Ideation	MDE	PD	GAD	PTSD	SAD
Age (ref: 61-75)							
33-44	2.36 (2.16-2.58)	1.53 (1.32-1.79)	1.90 (1.71-2.11)	1.85 (1.60-2.15)	2.64 (2.26-3.09)	3.89 (3.40-4.46)	2.10 (1.85-2.40)
45-60	1.64 (1.51-1.77)	1.43 (1.24-1.64)	1.51 (1.37-1.66)	1.85 (1.61-2.12)	2.17 (1.87-2.52)	2.40 (2.11-2.73)	1.99 (1.76-2.24)
Rank (ref: Senior officer)							
Junior NCM	2.38 (2.2-2.56)	5.63 (4.72-6.71)	2.49 (2.28-2.73)	4.05 (3.53-4.65)	2.32 (2.05-2.62)	2.58 (2.31-2.88)	2.64 (2.36-2.95)
Junior NCO	2.06 (1.92-2.21)	3.95 (3.32-4.70)	2.08 (1.90-2.27)	2.84 (2.48-3.26)	1.75 (1.55-1.97)	2.66 (2.39-2.96)	2.45 (2.20-2.73)
Junior officer	1.72 (1.56-1.90)	3.06 (2.47-3.79)	1.99 (1.77-2.25)	1.38 (1.13-1.67)*	1.53 (1.29-1.80)	1.79 (1.55-2.08)	1.20 (1.02-1.40)*
Sex (ref: male)							
Female	1.25 (1.17-1.33)	0.98 (0.89-1.07) ns	1.32 (1.23-1.41)	0.89 (0.81-0.98)*	1.42 (1.31-1.55)	1.09 (1.01-1.18)*	0.96 (0.88-1.04)ns
Force type (ref: Reservists)							
Regular	1.70 (1.58-1.83)	0.88 (0.79-0.98) *	2.08 (1.90-2.29)	2.19 (1.93-2.50)	1.73 (1.53-1.95)	1.29 (1.17-1.42)	1.40 (1.27-1.54)
Military element (ref: Army)							
Air	0.58 (0.56-0.61)	0.65 (0.60-0.70)	0.58 (0.55-0.62)	0.61 (0.57-0.66)	0.72 (0.67-0.78)	0.49 (0.46-0.52)	0.80 (0.75-0.85)
Navy	0.68 (0.64-0.72)	0.56 (0.51-0.62)	0.65 (0.61-0.70)	0.66 (0.60-0.71)	0.77 (0.71-0.84)	0.51 (0.47-0.55)	0.65 (0.60-0.71)
MIES total score	**1.97 (1.94-2.01)**	**1.85 (1.81-1.90)**	**1.79 (1.76-1.82)**	**1.86 (1.81-1.90)**	**1.80 (1.76-1.85)**	**1.91 (1.87-1.96)**	**1.86 (1.82-1.90)**

Note. Unless noted as ns (*p* value > .05) or * (.0001 ≤ *p* value < .05), all the *p* values are < .0001; Junior NCM=junior non-commissioned member; Junior NCO= junior non-commissioned officer; MDE=major depressive episode; PD=panic disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; SAD=social anxiety disorder. CI = confidence interval.

Table 6: Odds ratios (95%CIs) from multiple logistic regressions assessing the associations between MIES subscale scores and past-year mental health outcomes with the adjustment for sociodemographic and military factors.

Variables	Any disorder	Suicide Ideation	MDE	PD	GAD	PTSD	SAD
Age (ref: 61-75)							
33-44	2.55 (2.33-2.80)	1.55 (1.33-1.8)	1.96 (1.76-2.17)	1.86 (1.61-2.16)	2.68 (2.29-3.14)	3.94 (3.44-4.52)	2.29 (2.01-2.62)
45-60	1.66 (1.53-1.80)	1.35 (1.18-1.56)	1.48 (1.35-1.63)	1.77 (1.54-2.03)	2.08 (1.79-2.41)	2.34 (2.05-2.66)	2.07 (1.83-2.34)
Rank (ref: Senior officer)							
Junior NCM	2.29 (2.12-2.47)	5.40 (4.52-6.45)	2.39 (2.18-2.62)	3.89 (3.39-4.47)	2.23 (1.97-2.52)	2.52 (2.26-2.82)	2.53 (2.26-2.83)
Junior NCO	2.01 (1.87-2.16)	3.95 (3.32-4.70)	2.06 (1.88-2.25)	2.79 (2.44-3.20)	1.70 (1.51-1.92)	2.63 (2.36-2.94)	2.37 (2.12-2.64)
Junior officer	1.61 (1.45-1.78)	2.67 (2.14-3.32)	1.83 (1.62-2.06)	1.32 (1.08-1.60)*	1.40 (1.18-1.65)	1.69 (1.45-1.96)	1.11 (0.94-1.30)ns
Sex (ref: male)							
Female	1.18 (1.11-1.26)	0.96 (0.87-1.06)ns	1.26 (1.17-1.35)	0.88 (0.81-0.97)*	1.36 (1.25-1.48)	1.05 (0.97-1.13) ns	0.93 (0.85-1.01) ns
Force type (ref: Reservists)							
Regular	1.64 (1.53-1.77)	0.85 (0.76-0.94)*	2.01 (1.84-2.21)	2.13 (1.87-2.42)	1.66 (1.46-1.87)	1.27 (1.15-1.40)	1.34 (1.21-1.48)
Military element (ref: Army)							
Air	0.57 (0.54-0.60)	0.61 (0.57-0.67)	0.57 (0.54-0.60)	0.58 (0.54-0.63)	0.72 (0.67-0.78)	0.49 (0.46-0.52)	0.78 (0.73-0.83)
Navy	0.68 (0.64-0.72)	0.55 (0.50-0.61)	0.65 (0.61-0.69)	0.64 (0.59-0.70)	0.77 (0.71-0.85)	0.51 (0.47-0.55)	0.65 (0.60-0.71)
MIES subscales							
Transgressions by Self	**1.11 (1.09-1.13)**	**1.16 (1.13-1.18)**	**1.12 (1.10-1.14)**	**1.15 (1.13-1.17)**	**1.09 (1.07-1.11)**	**1.16 (1.14-1.18)**	**1.19 (1.17-1.21)**
Transgressions by Others	**1.78 (1.75-1.82)**	**1.66 (1.61-1.71)**	**1.62 (1.59-1.65)**	**1.65 (1.61-1.69)**	**1.74 (1.69-1.78)**	**1.70 (1.66-1.74)**	**1.57 (1.53-1.61)**

Note. Unless noted as ns (p value > .05) or * (.0001 ≤ p value < .05), all the p values are < .0001; Junior NCM=junior non-commissioned member; Junior NCO= junior non-commissioned officer; MDE=major depressive episode; PD=panic disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; SAD=social anxiety disorder. CI = confidence interval.

Chapter 5 | General Discussion

5.1 Summary of Dissertation Research

Moral injury has become a psychological construct discussed with increased frequency in military research, especially within the past decade (Litz & Kerig, 2019). As we continue to understand the implications of exposure to moral pain and moral stressors, it has become increasingly prudent to further ascertain who may be at heightened risk of developing MI, and once incurred, how that injury impacts well-being; in this case, the well-being of CAF members and PSP.

Collectively, the three presented studies within this program of research reinforce the importance of assessing for and treating MI following PMIEs within the CAF as a way to potentially reduce psychological burden of service, especially for those already at increased risk. This dissertation demonstrates that MI is a distinct construct with separate subjective implications compared to other mental health diagnoses in the eyes of CAF members, Veterans and PSP; that certain demographic and military-related factors may increase the risk of MI in this population; and that MI further increases the odds of other mental health diagnoses within the past-year. Details and implications of these findings are described below.

5.1.1 Study One

Study One was conducted as a qualitative investigation into experiences that may influence mental health and treatment outcomes of treatment-seeking military members and PSP. As there is currently a dearth of research on the mental health concerns of military members and PSP

actively seeking treatment for mental health concerns, this study examined the subjective experiences of working within these occupations.

Study One results demonstrate the subjective toll that careers in the military and public safety domains may have on members, as described by treatment-seeking individuals within these populations. While not explicitly assessed using psychometric tools, discussions of PMIEs were primarily described as making decisions or doing/not doing things that resulted in loss of life, or a sense of organizational level betrayal that stemmed from "red tape," and lack of organizational support. The distinction between acts of commission or omission and other-related events (in this case, primarily betrayal) is in line with the current literature on moral injury, which identifies two broad types of PMIEs: moral transgressions of the self, and transgressions of others (Currier et al., 2017; Litz & Kerig, 2019; Nash et al., 2013; Shay, 2014).

Further, Study One reinforces that psychological implications following PMIEs are considered as separate compared to symptomatology of other mental health disorders (e.g., PTSD). When describing PMIEs, many participants discussed the emotional impact of these experiences using moral emotion terms, explicitly using the terms shame and guilt when referring to transgressions of the self, and overwhelmingly describing emotions of anger and resentment when discussing a sense of organizational betrayal. While this sample of treatment-seeking individuals is not generalizable to the larger population, this finding seems to align with current hypotheses which speculate self-related PMIEs to be associated with more internalizing symptoms (e.g., guilt, shame, withdrawal) when compared to transgressions of others, which may be associated with more externalizing symptoms (e.g., aggression, impulsivity) (Litz & Kerig, 2019).

Interestingly, moral transgressions of others, aside from betrayal, were not discussed in depth by participants. Instead, most of the discussion surrounded acts of omission or commission of the self. This is of importance when considering that this population was seeking treatment for trauma, and that self-blame, the basis of the first phases of CPT (the PTSD treatment used at the inpatient facility where this work was performed), has been previously associated with higher levels of internalizing symptoms (Nomamiukor et al., 2024). As such, the increased discussion surrounding self-related PMIEs may simply be a by-product of engaging with and identifying thoughts or feelings of self-blame during treatment for PTSD, and is likely not indicative of a lack of other-based PMIEs in military and public safety populations.

Based on the presented findings, Study One furthers the literature through the characterization of PMIE impacts, as described by those with lived experience of moral harms within CAF and PSP populations. The distinctness by which these experiences and symptoms were described further reinforces the importance of explicitly discussing and identifying PMIEs in these populations. Specifically, this study reaffirmed that even within treatment-seeking CAF Veteran and PSP populations, potential MI is a topic critical to explore with members, as it is currently not something that is commonly explicitly discussed in group or individual trauma-focused treatments.

5.1.2 Study Two

Following qualitative confirmation of the importance of explicit potential MI discussions within treatment-seeking military and public safety contexts, we next thought it prudent to identify whether specific factors may increase risk of MI within military members, who are currently the most frequently studied population with regards to moral harms and their outcomes.

Therefore, Study Two aimed to identify risk factors for MI within a representative national sample of CAF members.

Using data from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey, we conducted a series of multiple linear regressions across ever- and never-deployed samples to identify specific military, sociodemographic, and deployment-related factors that may be associated with increased MI. To our understanding, this study was the first of its kind to identify factors associated with increased MI using a representative sample of Canadian military personnel.

As hypothesized, results from Study Two suggest that certain military and sociodemographic factors may be implicated in increased levels of MI within CAF members. Across ever- and never-deployed samples, history of childhood neglect, lower rank (i.e., junior non-commissioned member), and military-related sexual trauma were each significant risk factors for increased MI, all of which have also previously been associated with other negative mental and physical health outcomes, including PTSD, in other military populations (Battaglia et al., 2019; El-Gabalawy et al., 2018; Williamson et al., 2021). While some research has begun to identify MI as a potential risk factor for other negative mental health outcomes (e.g., PTSD, SUD), this study advances the field through the examination of factors which increase vulnerability to MI, a critical step in being able to accurately address and understand MI in military populations (Nazarov et al., 2015; Nazarov et al., 2018; McDaniel et al., 2023). This study notably was the first to examine risk factors for MI within a representative sample of CAF members, something that at the time of publication, had not previously been accomplished. The confirmation that certain military members may be at heightened risk of MI provides directional next steps regarding which subpopulations should be targeted for MI related interventions, and

more specifically, preventative skills training. If these individuals, or more broadly, newly incoming members of the CAF, are provided with training aimed at preventing the development of MI, for example through moral-ethical decision making, it may alleviate some of the mental health burden currently seen in the CAF.

5.1.3 Study Three

The third study included in this dissertation work further characterizes the potential additional psychological implications of MI in the Canadian military, and underscores, as has been noted across this dissertation, the importance of addressing MI alongside other mental health concerns with military members. More specifically, Study Three presents data from a series of multiple logistic regressions assessing critical associations between MI endorsement, demographic characteristics, military-related factors, and past-year mental health disorder diagnoses using CAFVMHS data.

While previous research has linked MI with other mental health outcomes in other military populations (Griffin et al., 2019), Study Three was the first to establish the association between PMIEs and past-year adverse mental health outcomes in a representative CAF sample, while accounting for specific sociodemographic and military-related variables. The results of Study Three emphasize the importance of MI when examining diagnosable mental health outcomes, including but also in addition to diagnoses commonly associated with MI, such as PTSD or depression. As this study found that MI is also associated with other mental health disorders including social anxiety, generalized anxiety, and suicidal ideation, this finding advances our understanding of MI, emphasizing that an individual with MI is more likely to also have another comorbid mental health diagnosis. This characterization may allow for the development of potentially more appropriate and targeted interventions for this population.

5.2 Implications

This dissertation speaks to the critical importance of examining MI as a distinct construct from other, currently diagnosable mental health disorders. This body of work also enforces the need for explicit efforts to target MI symptom profiles and outcomes when discussing mental health symptoms following PMIEs. Currently, no such explicit MI-targeted interventions are utilized in a standardized fashion following exposure to PMIEs in Canada. Within the CAF population, PMIEs typically largely overlap with PPTEs and therefore symptoms of MI may be misattributed to symptoms of PTSD. This lack of standardized and targeted intervention following exposure to PMIEs may also be related to both current challenges of quantifying MI experience (Litz, 2022; Plouffe et al., 2021), and inability to define MI using diagnostic tools such as the DSM-5-TR (American Psychiatric Association, 2022).

Controversy remains regarding how to appropriately capture MI nosology, as it is not a diagnosable disorder or standardized clinical condition (Held et al., 2017; Jinkerson, 2016). Currently, proponents of a syndromal definition of MI have proposed that core features of MI should include: experiencing morally charged events causing moral conflict, core features such as shame, guilt and religious or existential conflict, and the presence of what has been termed "secondary symptoms", which include depression, anger, or social impacts such as withdrawal (Jinkerson, 2016). While this syndromal approach would be beneficial for potential access to government funded interventions, which in Canada typically require diagnosis for access to care, there are many current limitations to such a categorization. One of the most foundational limitations to the syndromal proposal is that we currently do not have explicit cutoffs for what would be considered "clinically significant" MI, compared to the natural course of human emotion following morally charged transgressions. Alongside the overlap with symptoms of

depression and PTSD, it may be too premature to currently advocate for an update in the DSM and other diagnostic manuals to include MI as a diagnosis.

However, it is clear from both previous research and the work presented herein, that MI is a construct worth further exploration as separate from PTSD or other mental health disorders. Specifically, each study within this dissertation showcases how MI may additionally impact the well-being of CAF members, above and beyond other diagnosable mental health conditions. As such, this literature suggests that there may be benefit to including MI as a transdiagnostic specifier for diagnoses, in the same way that "with anxious distress" or "dissociative subtype" have become specifiers for major depressive disorder and posttraumatic stress disorder, respectively (American Psychiatric Association, 2022). The ability to identify MI as a specifier for an already diagnosable mental health condition may be of benefit for mental health practitioners working with CAF members, especially when considering the results of Study Three, which provide evidence that MI increases the odds of other past-year mental health diagnoses including Social Anxiety Disorder and Panic Disorder, not only PTSD. This lends itself to possible conceptualization of MI as a transdiagnostic syndrome which may present itself alongside a host of symptoms that may be more parsimoniously diagnosed as a specific mental health disorder with an MI specifier. This would also account for the fact that symptoms consistent with current interpretations of MI may appear without Criterion A events required for diagnosis of PTSD (Litz & Kerig, 2019). By providing the ability to capture MI as a transdiagnostic specifier, this would improve clarity with regards to which diagnoses MI is more likely to concurrently present with, aside from the current assumption that MI is something that occurs exclusively alongside or as a component of PTSD.

This dissertation also provides evidence that preventative efforts to reduce the incidence of MI following military-related PMIEs are critically needed. While prevention cannot take the form of reducing the likelihood of exposure to PMIEs due to the nature of these professions, providing moral-ethical decision-making training, explicit information regarding the definition of PMIEs, and encouraging strengths-based approaches which bolster resilience within these populations may all be effective first steps toward appropriate, MI-focused interventions. The overarching goal and future policy directions of this work are to explicitly advocate for MI to become an easily accessible and understood term within CAF and PSP collective consciousness, in the same way that PTSD has become a focus of awareness and understanding. While efforts are currently being made by external sources (e.g., CIPSRT and Atlas guides for MI), further policy work must be undertaken within the CAF and VAC to spread awareness of the risk factors that make someone more vulnerable to MI, as well as signs and symptoms that may indicate an individual is developing MI. These risk factors and symptom presentations are current considerations identified within the research lexicon that have yet to make their way into the collective consciousness of individuals who are more likely to experience PMIEs.

5.3 Limitations and Future Directions

In addition to the limits presented in the previous chapters, further discussion of the limitations of this body of research is warranted. Importantly, the lack of longitudinal sampling prohibits this research from providing any causal or directional conclusions regarding the impact of MI on CAF member mental well-being. While this research provides insights into the subjective experiences of MI, potential factors that increase the risk of MI, and evidence that MI increases the odds of other mental health disorders in Canadian military members, due to the cross-sectional method of MI assessment, we are unable to distinguish whether there are

differences in risk profiles or impacts on development of other mental health disorders based on timing of exposure to PMIEs or severity of MI symptoms. We are also currently unable to ascertain whether other mental health challenges may have been present prior to PMIE exposure, which could further lead to interpretations of PMIEs as morally injurious. As such, longitudinal, prospective studies which explicitly examine the directionality of these associations using more sophisticated statistical analyses are critically needed.

In the presented research, certain sociodemographic factors including but not limited to religiosity, sexual orientation, gender identity, sense of duty, family unit support, posttraumatic growth, and internal vs. external locus of control were not accounted for in our regression models due to data collection and use parameters. As Statistics Canada collected data was used for analyses, we were unable to include or export any factors which may be potentially identifiable due to small cell counts (e.g., sexuality), while some factors were simply not collected due to scope of the survey (e.g., posttraumatic growth). Future studies regarding MI and its implications on CAF member mental well-being should attempt to include more in-depth analyses related to demographic factors and their potential risk or protective properties.

While mentioned previously, it bears repeating that there are also inherent limitations to the way in which MI was assessed in the 2018 CAFVMHS, which lead to important limitations of the body of work presented herein. While this was the first time that a nationally representative Canadian military sample has been evaluated for the presence of moral injury in a standardized fashion, the included measure – the Moral Injury Events Scale (Nash et al., 2013), has since shown poor model fit and unclear dimensionality in CAF populations (Plouffe et al., 2021). In addition to these concerns, the MIES has previously been criticized for conflating exposure and experience of MI, which reduces the ability of this research to distinguish how

PMIEs themselves, as well as the symptoms of MI, may differentially impact CAF member well-being. Continued research must include the use of tools created to separately capture the severity of moral injury outcomes, and exposures to PMIEs. Scales such as the Moral Injury Outcome Scale (MIOS; Litz et al., 2022; Tao et al., 2023), or the Moral Injury and Distress Scale (MIDS; Maguen et al., 2024; Norman et al., 2023) have been developed to assess impacts of MI, and have been validated in military populations as well as with healthcare workers (Maguen et al., 2024; Tao et al., 2023). Also of importance, the validation of newly developed tools (such as those listed above) to assess MI in populations external to the military is critical for the continuation of research identifying unique manifestations and consequences of MI in other populations where PMIEs may be less commonplace but equally as consequential.

The current lack of generalizability to larger, non-military populations is another limitation of this body of research. Since MI as a construct has been most frequently studied within military contexts, PMIEs referred to herein may be more likely to also be potentially psychologically traumatic in nature (e.g., combat, witnessing extreme human suffering) when compared to civilian counterparts. This may lead to inherent differences in symptom severity or profiles of MI between military, public safety, and civilian personnel. Further, individuals seeking trauma-related treatment in Study 1 may have better able to identify and reflect upon PMIEs than their non-treatment-seeking counterparts (who were not included in the study), which may have led to an overestimation of severity of PMIE appraisals and outcomes in this population. There may have also been an inherent risk of response bias in each of the samples of participants across studies, wherein those who responded to and completed the focus groups or questionnaires may have disparate mental health and well-being profiles compared to participants who chose not to respond.

Due to Western military populations being the most commonly studied group with regards to MI and PMIEs (Koenig & Al Zaben, 2021), white males are, de facto, also the most commonly studied demographic group. White males account for approximately 71% of the CAF population, while only accounting for 39% of the available civilian workforce in Canada (Government of Canada, 2022). Conversely, members of equity deserving groups who have historically been excluded from service in the CAF (e.g., 2SLGBTQAI+, Indigenous peoples) are vastly underrepresented to this day. In fact, while Indigenous, Black, and racialized people account for approximately 25% of the workforce in Canada, they only account for 13% of the CAF and Department of National Defence civilian combined workforces (Government of Canada, 2022). In addition, while 2SLGBTQAI+ and racialized civilians have increased likelihood of exposure to specific PMIEs (Nieuwsma et al., 2022; Maguen et al., 2020; Livingston et al., 2019), it is still unknown how intersectional identities such as race, ethnicity, gender, and sexual orientation may impact the development or maintenance of MI following PMIEs in any population, including CAF members. As such, research in the areas of both military- and non-military-related MI must include equity-deserving groups as a priority moving forward.

Awareness that deployment experiences, lower rank, and military-related sexual trauma may increase an individual's vulnerability to MI may allow for the development of more tailored preventative interventions to cope with PMIEs more effectively for those at heightened risk. Therefore, a critical future direction of this work should be to design, implement, and assess effective transdiagnostic treatments explicitly related to MI, as no "gold standard" currently exists (Litz, 2023; Williamson et al., 2021).

While current interventions such as Adaptive Disclosure (see Introduction for more detailed description) seem to show promise for the treatment of MI, it is important to again reiterate that each of these interventions are being piloted and assessed using military-related PMIEs, and military members or Veterans **exclusively** at this point in time. Therefore, the preliminary efficacy of such interventions should not be generalized to broader non-military populations. There may be critical differences in treatment effectiveness with other, non-military populations and research must continue to ascertain whether these differences exist. These interventions also do not account for the intersection of MI symptoms and other mental health diagnoses, which, as evidenced from Study Three of this work, must be considered as we continue to develop appropriate treatments for MI.

5.4 Final Conclusions

While still in its nascent stages, MI research to date advocates for the recognition of this phenomenon particularly within military populations, where morally challenging situations are commonplace. The fundamental implication of this dissertation work is that moral injury is a transdiagnostically relevant construct which should be addressed alongside adverse mental health outcomes within military populations, and that preventative interventions are critically needed. The findings presented herein further emphasize the distinctiveness of MI as a construct which may have lasting negative impacts on the mental health and well-being of CAF members and PSP. For the first time, a nationally representative sample of military participants provided evidence that specific demographic and military-related factors may increase risk of MI and further showcased the interplay between MI and other, diagnosable mental health disorders. These findings provide a clear pathway forward with regards to developing more tailored interventions and preventative training for those at heightened risk within the CAF, as currently,

no such tailored training exists. This work underscores the importance of deepening our understanding of MI to improve assessment, diagnosis and treatment, which are critically needed and currently largely unavailable for CAF and PSP members.

Introduction and Discussion References

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