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Prevalence of moral injury in Canadian Forces members deployed to Afghanistan

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Abstract

Moral injury is a relatively new area of study within military mental health care, as such, prevalence estimates for both moral injury and exposure to potentially morally injurious events (PMIE; a moral injury precursor) are unknown for many of the world's militaries. PMIE is commonly defined as the perpetrating, failing to prevent, witnessing, or learning about acts or events that transgress an individual's deeply held moral belief(s). The primary purpose of this study was to estimate the prevalence of PMIE in a population of Canadian Armed Forces (CF) members who served in support of the recent mission to Afghanistan. How exposure to PMIE may affect these individuals' self-reported rates positive mental health served as a secondary research question. To this end, a secondary data analysis was conducted using the results of the 2013 Canadian Forces Mental Health Survey, a cross-sectional survey of over 8,000 active-duty CF members conducted by Statistics Canada for the Department of National Defence and the CF.

Statistical analysis revealed that over 65% of CF members reported exposure to at least one event that would be considered a PMIE. The most commonly reported PMIE types included seeing ill or injured women and children that they were unable to help (48%), being unable to distinguish between combatants and non-combatants (44%), and finding themselves in a threatening situation where they were unable to respond due to the rules of engagement they were required to operate under (35%). Results of the second research question revealed that the positive mental health status of CF members overall differed slightly from the Canadian population as a whole. However, when CF members' positive mental health statuses were compared according to PMIE exposure

status those exposed were found to be 37% less likely to be flourishing, and 138% more likely to be languishing when compared to those who were not exposed.

These findings provide support for both the presence of exposure to PMIE in CF members who were deployed in support of the mission to Afghanistan, and the detrimental effect that such exposure has on their mental health. The implications and limitations of these findings and potential directions for future research into moral injury and PMIE are also discussed.

Keywords: moral injury, trauma, ethics, military, prevalence rate, Afghanistan, positive mental health, secondary data analysis

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AGF	Anti-Government Forces
ALP	Afghan Local Police
ANA	Afghan National Army
ANP	Afghan National Police
ANSF	Afghan National Security Forces
AOR	Adjusted Odds Ratio
CF	Canadian Armed Forces
CFMHS	Canadian Forces Mental Health Survey
CO	Commanding Officer
COI	Conflict of Interest
CRS	Chief of Review Staff
DEP	Defence Ethics Program
DND	Department of National Defence
DNR	Do Not Resuscitate
DSM	Diagnostic and Statistical Manual of Mental Disorders
EMIS-M	Expressions of Moral Injury Scale - Military Version
IED	Improvised Explosive Device
IHL	International Humanitarian Law
ISAF	International Security Assistance Force
ISIL	Islamic State of Iraq and the Levant
ISIS	Islamic State of Iraq and Syria
LOAC	Law of Armed Combat

MHC-SF	Mental Health Continuum - Short Form
MHT	Mental Health Training
MI	Moral Injury
MIES	Moral Injury Events Scale
MIQ-M	Moral Injury Questionnaire - Military Version
MISS-M	Moral Injury Symptoms Scale - Military Version
NATO	North Atlantic Treaty Association
NCM	Non-Commissioned Member [Canadian Armed Forces]
NDS	National Directorate of Security [Afghanistan]
PGF	Pro-Government Forces
PMH	Positive Mental Health
PMIE	Potentially Morally Injurious Event
PTSD	Post-Traumatic Stress Disorder
R2MR	Road to Mental Readiness
ROE	Rules of Engagement
SS	Secondary School
TCPS 2	Tri-Council Policy Statement
UAV	Unmanned aerial vehicle (“drone”)
WHO	World Health Organization

Chapter 1

Moral Injury in the Military: A conceptual review

The psychological impacts of war on those involved, be they civilians or soldiers, have been known almost as long as there has been war. Our understanding of these sequalae, however, has evolved over the years through direct observation of the behaviour of combatants, clinical work conducted with veterans, and focussed research in the area. As a consequence of this changing knowledge, the terminology used to describe these impacts has also changed (for review see Ray, 2008). In the 19th century, for example, field doctors observed that soldiers sometimes experienced episodes of extreme fatigue, tremors, shortness of breath, sweating, heart palpitations, and occasionally even fainting spells. Believing the cause to be a disruption in heart function, they referred to the symptoms collectively as *soldier's heart*, and prescribed removing the soldiers from the battle until the symptoms passed, after which they would return to the frontlines. During and after World War I, the understanding of combat stress reactions changed to include symptoms of hysteria (now called a "conversion disorder") such as paralysis, tremors, spasms, and disordered gait, and nervous exhaustion (fatigue, headaches, depressed mood, and nightmares). Following the prevailing theories of psychiatry of the time, professionals began referring to the syndrome as *war neurosis*, or more commonly, *shell shock*. By the start of World War II, these terms had begun to fall out of use as it became apparent that individuals not exposed to war or shelling were experiencing symptoms similar to those soldiers that were exposed. This discovery lead to a broadening of the area of inquiry to include investigations into the characteristics of the trauma(s) experienced and how these might be related to the symptoms that were

experienced; specifically, investigations into how individuals react both physically and psychologically to stressful events. Included in the newly written Diagnostic and Statistical Manual of Mental Disorders (DSM, American Psychiatric Association, 1952) as *stress response syndrome*, the diagnosis recognized that when confronted with extreme physical or psychological stress, otherwise normal people could exhibit similar symptoms as those experienced by those exposed to combat. By the 1980s, clinical understanding of the syndrome had further advanced and the name was changed to *post-traumatic stress disorder* (PTSD) with formal diagnostic criteria being included in both the DSM-III (American Psychiatric Association, 1980) and the International Classification of Diseases and Related Health Problems, 10th Revision (ICD-10, World Health Organization, 1992). Refinements to the diagnostic criteria over successive versions of the DSM, including changes in the categorization of PTSD as an anxiety disorder (American Psychiatric Association, 1980, 1994, 2000) to a newly formed category of "Traumatic and stress related disorders" (American Psychiatric Association, 2013). The change in categorization in the DSM-5 stemmed in part from the new requirement that symptom onset must have been preceded by a traumatic or otherwise adverse environmental event (Friedman, 2017).

Changes in understanding about causation and symptomatology are not the only sources for change with regards to military mental health. Rather changes in the nature and style of conflict can lead to completely new forms of military trauma. Until recently, wars were fought by means of "conventional warfare" between state actors of approximately equal size, strength, and technical ability. Combatants wore uniforms that clearly identified which state they belonged to, and physical targets in battle were

primarily opposing military forces (e.g., bases, airfields, ship yards), military-supportive structures (e.g., factories producing items for the war effort), critical infrastructure (e.g., roads, bridges, rail lines), or communications related (e.g., radio and television stations, telephone, and telegraph lines). As well, the signing of the Geneva Conventions after World War II made hospitals, places of worship, and places of cultural importance protected sites under international law (de Preux, 1990). These wars would generally continue until either one party capitulated, or a truce was reached by either political or other means. For the most part, both parties knew, understood, and fought according to an agreed upon set of rules - the Geneva Conventions (de Preux, 1990), the Law of Armed Conflict, International Humanitarian Law, and Just War Theory (D.-P. Baker, 2015), and both parties knew that the punishments could be severe (e.g., act could be considered a war crime) if these rules were violated. (See Table 1.1 for fundamental rules underlying the Geneva Conventions.)

This type of state-on-state warfare, however, has been on the decline (van Creveld, 2006) and has given way to a rise in more unconventional, asymmetric forms of fighting where the parties involved often differ significantly in military power. Asymmetric warfare (also called guerrilla warfare, insurgency/counter-insurgency, terrorism/counter-terrorism) has existed in some form for as long as there has been war; be it “resistance forces” fighting alongside traditional combatants in a conventional war, or civilians taking up arms against an oppressive government or invading force. For the most part, this type of asymmetric fighting was more of an adjunct form of warfighting, done on a small scale, for the purposes of disrupting one of the parties in the larger war so that their opposition could gain the advantage.

Table 1.1
Fundamental rules forming the basis of the Geneva Conventions (adapted from de Preux, 1990)

1.	**Distinction between civilians and combatants** Distinction must always be made between the civilian population and combatants so as to spare both civilian population and property. Neither the civilian population as such nor civilian persons shall be the object of attack. Attacks shall be directed solely against military objectives.
2.	**Perfidy is prohibited** Intentionally deceiving an adversary into believing that the attacker is deserving of immunity from harm with the intent of betraying that confidence for military gain (ex., a combatant dressing as a civilian to get close to a checkpoint and detonate an IED; feigning surrender to draw adversary in closer so they can be killed) is prohibited.
3.	**Proportionality of force/action** The amount of force used must be proportional to the expected military gain achieved. Any action that could be foreseen as having the potential to cause excessive incidental loss of civilian life, civilian injury, or damage to civilian property is prohibited if alternatives are available.
4.	**Infliction of unnecessary suffering is prohibited (personal)** No person, combatant or civilian, shall be subjected to acts that lead to unnecessary suffering. This includes corporal punishment, cruel or degrading treatment, and physical or psychological torture.
5.	**Infliction of unnecessary suffering is prohibited (means and methods)** The use of means and methods of warfare that will cause unnecessary losses or physical suffering (ex., use of expanding/hollow-point bullets) is prohibited.
6.	***Hors de combat* are to be protected** Combatants considered to be *hors de combat* ["out of the fight" due to injury or disability; no longer a threat] are entitled to respect for their lives and physical integrity, be protected and treated humanely.
7.	**Injury or killing of *hors de combat* or those that surrender is forbidden** The injury or killing of combatants who have surrendered or are no longer able to fight is forbidden.
8.	**Treatment of the sick and wounded** The sick and wounded shall be collected and cared for by the party which has them in its power. This protection also covers medical personnel, establishments (ex., hospitals, medical facilities), transports (ex. ambulances), and equipment.
9.	**Treatment of "prisoners of war" (POWs)** Any captured combatants or civilians are to have their lives, dignity, personal rights, and convictions respected. This includes protection from any acts of violence or reprisals from the party detaining them.

Asymmetric warfare, almost by its very nature, is prone to violating some of the typical or accepted rules of engagement. Van Creveld (2006) uses the example of an adult fighting against a child as an analogy for asymmetric warfare: no matter what their motivation or reasoning, if an adult fights a child, the adult is seen to be in the wrong and their behaviour is considered to be unjust (due to the difference in power between them and the child); it does not matter if the child started the fight, or if they were wrong by doing so. By extension, because the child is a child, they need to worry less about the "rightness" of their actions and are entitled to more leeway in terms of how they behave and what techniques they use in the fight to "level the playing field" (e.g., they are "allowed" to bite, kick, spit, pull hair, etc., which an adult would not be allowed to do), since to fight according to the same rules as the adult would put them at a distinct disadvantage (van Creveld, 2006). While this reasoning does not serve to justify the child's behaviour (kicking, biting, and spitting are still wrong), it does make it a little more understandable. When this reasoning is applied to real-world conflicts, like the recent war in Afghanistan, the larger problems it can create for those fighting become more apparent.

In late 2001, in response to the attacks on September 11, the United States of America led a NATO invasion of Afghanistan that caused the overthrow of the Taliban, a group that held *de facto* political control over the majority of Afghanistan at the time. This NATO force would eventually grow and become the International Security Assistance Force (ISAF), a force composed of trained service members predominantly from western countries, who, as part of their training, would have received instruction in the aforementioned rules of war and Just War Theory (D.-P. Baker, 2015), as well as

been provided with specific rules of engagement (ROE) that they would be bound to during this deployment. This invasion and overthrow would effectively make the Taliban into an insurgent group within Afghanistan who, along with the members of Al-Qaida believed to be hiding there, would fight against the newly established Islamic Government of Afghanistan and its coalition allies. (See Table 1.2 for primary belligerents in the war in Afghanistan.)

Were the Taliban, Al-Qaida, and their associated off-shoot groups ("anti-government forces") to fight according to the same internationally agreed upon rules of war that bound the "pro-government forces," they would likely have quickly lost due to the superior weaponry, training, strategy, and technology of their opponents, in particular, the ISAF. As a result, the anti-government forces disregarded these rules and in doing so, effectively turned those rules against pro-government forces. For example, anti-government forces would routinely dress like civilians, hide amongst the civilian population, and use buildings as staging areas for their attacks that were considered to be protected sites (e.g., hospitals, schools, places of worship) (United Nations Assistance Mission in Afghanistan, 2017a; United Nations Assistance Mission in Afghanistan & United Nations Office of the High Commissioner for Human Rights, 2016); many of these actions would be in violation of international law. Compounding these acts of perfidy, anti-government forces were known to use civilians and children, often gaining their cooperation by threatening them or their loved ones, to plant/detonate improvised explosive devices (IEDs), as suicide bombers, and act as distractions believing that civilians would be less likely to be seen as a threat by the ISAF forces and thereby be fired upon (Fowler, 2016). The use of indiscriminate weapons and tactics as IEDs,

Table 1.2
Primary belligerents in the war in Afghanistan

Anti-government forces

- Taliban [a]
- Al-Qaida and its offshoot groups (including the Islamic State in Syria and Levant; ISIS/ISIL)

Pro-government forces

- Afghan National Security Forces (ANSF)
  - Afghan National Army (ANA)
  - Afghan National Police (ANP)
  - Afghan Local Police (ALP)
  - National Directorate of Security (NDS)
- International Security Assistance Force [ISAF] (coalition force)
  - United States
  - United Kingdom
  - Canada
  - Other NATO member states to varying degrees
- Various local militias and armed groups [b]

Note: [a] Taliban was the *de facto* government of Afghanistan from 1996 until 2001 when it was overthrown in the US-led NATO invasion of Afghanistan conducted in response to the September 11, 2001 terror attacks by Al-Qaida.
[b] While these groups may not technically be "pro-government," as they were often headed by various tribal warlords (Fowler, 2016), they were anti-Taliban/anti-al-Qaida as they opposed these groups' role in the production of illicit drugs such as opium and cannabis (United Nations Office on Drugs and Crime, 2007); the Taliban/al-Qaida were a common enemy.

rockets, and mortars, as well as undirected shooting during clashes with pro-government forces in populated areas, also put civilians and other innocents at undue risk of harm and made it increasingly difficult for ISAF to engage them without also risking civilians' lives.

Unfortunately, such disregard of the rules of war was not limited to the anti-government forces. United Nations reports on the protection of civilians in Afghanistan (United Nations Assistance Mission in Afghanistan, 2017a) reported that members of the Afghan National Security Force, specifically the Afghan National Army, were responsible for an estimated 2,728 civilian casualties (deaths and injuries) in 2016 alone.

According to the writers of this report, just over half (53%) of the civilian causalities caused by pro-government forces resulted from the use of mortars, artillery, or other indirect or explosive ordnance during ground engagements with insurgents. The various local militias and assorted other armed groups who also took part were believed to be responsible for an additional estimated 185 civilian casualties (deaths and injuries) in 2016, also mainly during ground engagements (United Nations Assistance Mission in Afghanistan, 2017a). Of particular note, the deaths attributed to these "pro-government armed groups" did not only occur during engagements with anti-government forces, but also during engagements with other pro-government armed groups, usually when either members of rival political parties, rival warlords, or rivals based on old tribal hatreds encountered each other on the battlefield (Fowler, 2016; United Nations Assistance Mission in Afghanistan, 2017a; United Nations Assistance Mission in Afghanistan & United Nations Office of the High Commissioner for Human Rights, 2016). (See Figure 1.1 for Civilian deaths by belligerent group, 2007-2017).

Compounding the circumstances further, the rules of engagement (ROE) under which the ISAF were required to fight, could occasionally put ISAF troops into situations where they might need to make life or death decisions based on little or no available information. For example, a soldier guarding a checkpoint sees what appears to be a civilian with a bundle in his arms running towards the checkpoint. Not knowing if the individual has hostile intent, since insurgents have been known to use suicide bombers to

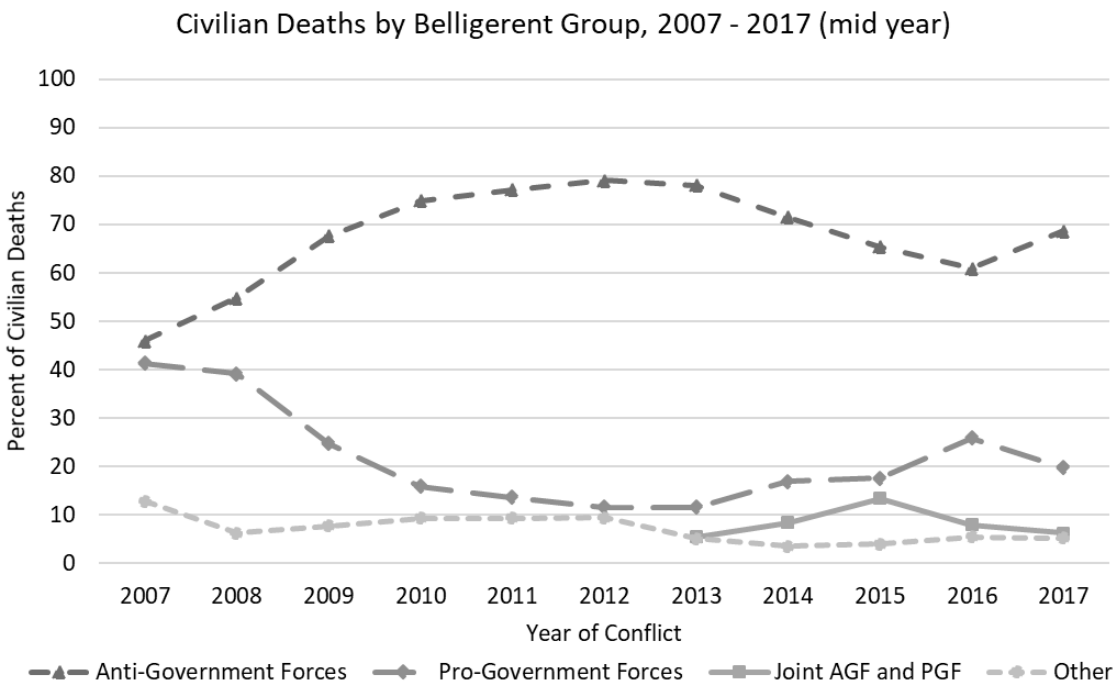

Figure 1.1 Civilian Deaths by Belligerent Group, 2007 to 2017 (mid-year). AGF = Anti-Government Forces, PGF = Pro-Government Forces, "Joint AGF and PGF" means that the civilian deaths could not be conclusively attributed by the UN to one specific party (e.g., deaths in a cross-fire), Other = deaths caused by neither party (e.g., cross-border shelling, unexploded ordinance from current or prior conflicts). (United Nations Assistance Mission in Afghanistan, 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2017a, 2017b; United Nations Assistance Mission in Afghanistan & United Nations Office of the High Commissioner for Human Rights, 2016)

attack checkpoints, the soldier follows the ROE for the situation, giving the requisite verbal warnings for the individual to stop, which are ignored, and shoots and kills the individual, neutralizing the potential threat to himself, his unit, and the civilians nearby. Upon further investigation, it becomes known that the civilian was attempting to get help for the injured child they were carrying and had no ill intent; following the ROE led to the shooting of an innocent man.

Taken together, at any given time, members of the ISAF could be both fighting against and alongside individuals for whom the established rules of war do not apply or

are not enforced, while they themselves (i.e., the ISAF) have their actions and decisions bound by these very rules. As well, they could be put into situations where they need to take actions without the benefit of having all the information available to determine what the correct action might be. Events such as these can put service members into positions that can violate their own deeply held beliefs about the world (e.g., what is right/wrong, just/unjust) and their role in it. The inner conflict that can follow these sorts of transgressive events can lead service members to experience what has recently been termed a "moral injury."

Moral Injury

Shay (Shay, 1991) first used the term moral injury to describe the internal conflicts he witnessed while treating Vietnam veterans. Many of the psychological conflicts these veterans appeared to be experiencing did not conform to the understanding of post-combat stress of the time, rather they appeared to be of a more philosophical/existential nature, according to Shay, consistent with a shattering of assumptions about the self, the world, and how the two relate. Basing his interpretations on a comparison between the behaviours reported by combat veterans experiencing severe post-traumatic stress disorder (PTSD) and the story of the warrior Achilles during the Trojan War, as told in the *Iliad* by Homer, Shay postulated the following seven signs clinicians should take note of as they may be indicative of a moral injury:

1. Having experienced a betrayal of what is right, often by someone in power or a position of authority;
2. Loss of social and moral horizon; individuals report no longer fighting for a greater goal or their country, but rather fighting instead for their comrades in arms;
3. A sense of numbness after the battle replacing the usual grief and mourning following the loss of comrades;
4. Feelings of failure when a comrade dies and a desire to change places with them ("Why couldn't I have saved him? It should have been me");
5. The desire to switch places with their fallen comrades may escalate to feeling that they are already dead;
6. Similarly, in battle the feelings of grief and loss are sublimated into a rage state that may fuel increasingly risky behaviours, temporary loss of fear, and on occasion, increased cruelty (berserking);
7. Dishonouring or dehumanizing of the enemy through either the use of derogatory terms or through their actions (e.g., taking of "trophies") (Shay, 2014).

Interestingly, while Shay defined moral injury as "a betrayal of what is right by someone who holds legitimate authority" in both in his original and later refinements of the concept (Shay, 1991, 2014), six of the seven behaviours he recommended clinicians attend to focussed on the behaviour of the individual themselves and not that of a powerful other such as a military leader.

Unlike Shay (Shay, 1991, 2014), who's definition combined how the individual behaved in combat with the clinician's subjective impression to define moral injury itself,

Litz (Litz et al., 2009) instead proposed a working definition, based on existing PTSD literature, for potentially morally injurious experiences (PMIE); that is, experiences that could potentially lead to a moral injury. Specifically, Litz defined a PMIE as: perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations (p. 700). This transgression, he proposed, leads to a kind of cognitive dissonance being created between what the individual has done/seen/failed to prevent (i.e., the PMIE) and their own internalized beliefs about how things should be (e.g., how the world works, how people should behave), or what their own role in the situation is supposed to be (e.g., protection of the innocent and stopping the guilty). Others have phrased their definitions of PMIE slightly differently and with varying specificity (Currier, Holland, Drescher, & Foy, 2015; Drescher et al., 2011), but at their core they all contain references to a transgressive event occurring that causes a disruption to the individual's sense of morality. Litz (2009) goes on to stipulate that it is not the PMIE itself that causes the moral injury, rather the moral injury is a result of a multi-stage thought process that occurs within the individual beginning with the (re)processing of the PMIE after the fact, followed by a realization that a moral transgression has occurred, which leads to a cognitive dissonance being created in the individual. It is the failure to resolve this dissonance that leads the individual to sustaining the moral injury. This injury can present as a constellation of symptoms including: feelings of inappropriate guilt, shame, self-directed anger (because they betrayed their beliefs), self-condemnation, withdrawal from others, overt self-harm or increases in risk taking behaviours, self-handicapping behaviours (e.g., increased substance use or abuse, relationship sabotage), and existential or spiritual problems (e.g.,

a loss of religion), or a disruption in the individual's confidence and expectations about one's own and others' motivation or capacity to behave in a just or ethical manner (Currier, Holland, & Malott, 2015; Drescher et al., 2011).

In the broadest sense, transgressive acts can be divided into two broad categories based on the morally injured party's involvement with the perceived transgression: direct (perpetration, or failure to prevent), or indirect (witnessing, or learning about after the fact). A direct relationship exists if there was something the individual believes they could have done, or not done, that could have potentially changed the outcome of the situation. Perpertrative acts in war can include, but are not limited to: the accidental killing of a non-combatant in a firefight or as a result of misidentifying them as a threat, indiscriminate killing of others while the individual was in a fit of rage (similar to Shay's (1991) berserking), or the intentional torture, killing, or desecration, of either combatants or non-combatants (atrocities). Failure to prevent transgressive acts could include acts such as failing to make sure buildings were clear of civilians prior to calling in an airstrike, failing to inform comrades after identifying civilians in the area, as well as failing to prevent any of the aforementioned perpertrative acts from being done by another. In contrast, an indirect relationship exists if there was nothing that the individual could have done to affect the outcome of the situation, either because the transgressive event had already occurred (e.g., discovering a mass grave), or because they were not empowered to act in accordance with their moral beliefs. An example of the latter would be the situation encountered during the UN Mission to Rwanda. The UN mandate for the mission to Rwanda was that it be one of peacekeeping, as a result, UN forces were instructed to remain neutral and were prohibited from intervening in the actions of the

populous, only being allowed to act if they were directly threatened (Dallaire, 2003), as to intervene in any other way could be seen as taking sides.[1] As neither party directly threatened the UN forces, UN troops were unable to more than merely observe and report on the genocide that was occurring in front of them.

Litz (Litz et al., 2009) goes on to propose that how one views or interprets the transgression and their role in it, may determine what behavioural or psychological symptoms they experience and how these symptoms might progress. For example, if the individual sees the transgression as caused by something they did (i.e., behaviour, "I did something bad/wrong"), this may lead to feelings of guilt about that behaviour. At this point, the guilt could still be functional as it could lead the individual to seek to make reparations for their misdeed and change their behaviour so that they do not transgress in that way again. If the individual is not able to make reparations sufficient to relieve their inner conflict, however, their attribution of fault may change and become internalized ("If the behaviour cannot be forgiven, maybe it is because I am unforgivable"). When the transgression interpreted as being a result of a character flaw (i.e., something is wrong with them, "I am a bad person"), this may lead to a feeling of shame and fear of judgement by others: "If you look in my eyes, you will see the stain on my soul" (R. Lanius, personal communication, 8 May 2015). This shame and fear of judgement can lead the individual to withdraw from others both psychologically (e.g., they are unwilling to discuss the transgressive event or their role in it) and socially. This tendency to withdraw from others can be especially problematic for the individual's recovery as

[1] For example, if a UN soldier were to intervene to stop members of Group A from attacking a civilian of Group B, they would be seen as taking the side of Group B since they were providing them with protection.

people tend to focus on information that reinforces their existing beliefs while downplaying or ignoring contrary information. While withdrawing from others does indeed decrease the likelihood of judgement, it will also decrease the likelihood of exposure to individuals and situations that can challenge their distorted perceptions of themselves and the transgressive event. Without access to this contrary information, their distorted cognitions about themselves and the transgressive event can cause the distorted thinking to become more ingrained and resistant to change.

PTSD and Moral Injury

While aspects of moral injury symptomatology can overlap with those present in PTSD (e.g., the revisiting and reprocessing of the transgressive event, social withdrawal, and self-condemnation of moral injury may parallel the re-experiencing and rumination, avoidance, and emotional numbing seen in PTSD), the two stress injuries differ in important ways. First, current conceptualizations of PTSD are predicated upon its being a fear-based adjustment disorder that requires there to have been exposure to an actual or threatened event in which the individual is at risk of serious injury or death (American Psychiatric Association, 2013; Stein et al., 2012). A key aspect of PTSD is that the cause (or agent) of this perceived life threat is external to the individual; someone or something threatens the individual which leads to their trauma. With moral injury, the agent of the trauma comes from within the individual themselves through the conscious or unconscious reprocessing of the transgressive event. Put another way, it is the reprocessing of the event and the conclusions the individual draws based on this reprocessing, that are the actual cause of the moral injury and not the event itself (Litz et al., 2009). This would mean that until the event is reprocessed, be it days, months, or

even years after the initial act, the "injury" has yet to occur. Second, PTSD does not require a transgression of one's morality or belief system to have occurred for the trauma/injury to be experienced. In contrast, a transgression of one's morality or belief system must have occurred and have been recognized as having occurred by the individual, for there to be a moral injury. Returning to the earlier example of the individual running at the checkpoint with an unidentified bundle, if it had turned out that they were a suicide bomber or carrying an IED, it is less likely that the soldier would have seen killing them as an act that transgressed their moral beliefs; the soldier would likely have seen it as doing their job. There is an emerging body of research that indicates that killing in war in itself is associated with the development of PTSD (Fontana & Rosenheck, 1999; Fontana, Rosenheck, & Brett, 1992; Maguen et al., 2010; Maguen et al., 2011; Maguen et al., 2013), however, how killing in general might be associated with the development of moral injury specifically, has yet to be determined. Finally, PTSD is a diagnosable mental disorder (American Psychiatric Association, 2013) and as such, has particular, objective criteria that must be met before the diagnosis can be conferred. There is no objective cut-off for the presence or absence moral injury, rather it is a dimensional construct in which the same individual can manifest symptoms ranging from none to severe at different points of time. Further research will be required before the precise nature of the relationship between PTSD and moral injury can be determined. An important first step to this goal is the creation of formal assessment tools for both exposure to PMIE and the presence of moral injury itself.

Assessment tools for moral injury and PMIE

Due to its relative newness in the field of military mental health, formal assessment tools for both moral injury and exposure to potentially morally injurious events (PMIE) are similarly still in their infancy. As part of their exploration of the concept of moral injury, Drescher et al. (2011) interviewed a group of researchers, policy makers, religious, and health care professionals working within the U.S. Department of Defence and the Department of Veterans Affairs about their proposed conceptualization of moral injury (i.e., disruptions in an individual's confidence and expectations about one's own or others' motivation or capacity to behave in a just and ethical manner, p.9), and what elements of combat they felt would be most likely to lead to moral injury including what symptoms they would most expect to observe following exposure to a PMIE. Participants all agreed that the concept of moral injury was a useful one to aid in the understanding that the complexities of psychological issues experienced by service members and others can go beyond what is captured by the criteria for PTSD (Drescher et al., 2011). Drescher et al. acknowledge that for research into moral injury to progress, including the potential for formal clinical trials, reliable and valid measures of the moral injury construct need to be developed and consistently applied by researchers, clinicians, and others in the field. To date, only two assessment measures have been developed to specifically investigate PMIE exposure: The Moral Injury Events Scale (MIES; Nash et al., 2013) and the Moral Injury Questionnaire – Military Version (MIQ-M; Currier, Holland, Drescher, et al., 2015), while another two measures have been developed to measure the symptoms and expression of moral injury itself: the Moral Injury Symptom

Scale – Military Version (MISS-M; Koenig et al., 2017) and the Expressions of Moral Injury Scale – Military Version (EMIS-M; Currier et al., 2017).

Moral Injury Events Scale (MIES). Developed in 2013 (Nash et al., 2013), the MIES is a scale to measure exposure to traumatic events that could lead to PTSD, not because they involved actual or threatened serious injury or death, as would be required by Criteria A of the diagnostic criteria for PTSD (American Psychiatric Association, 2013), but because they caused individuals' deeply held values and moral beliefs to be violated. The MIES is a 9-item, self-report measure describing events that draw upon the Litz et al. (2009) definition of PMIE, namely involving the learning about, witnessing, failing to prevent, or perpetrating acts which violate the individual's moral beliefs and expectations. Response options are given on a six-point Likert-type scale ranging from 1 (strongly agree) to 6 (strongly disagree) with higher scores being indicative of a greater intensity of event exposure. The authors report that the even number of response options was selected to preclude respondents from providing a "neutral" answer. The psychometric evaluation of the MIES utilized the final two cohorts of the Marine Resiliency Study (D. G. Baker et al., 2012), which was composed of Marines who were previously deployed to Iraq and Afghanistan between 2008 and 2011, all of whom were male. The first cohort (n = 533) was administered the MIES approximately 1-week post deployment, and again approximately 3-months post deployment, while the second cohort (n = 506) received the MIES at 6-months post deployment only. Internal reliability of the MIEs was found to be excellent (Cronbach's alpha = 0.90) with an average item-total correlation of 0.65 (ranging from 0.52 to 0.75).

When exploratory factor analyses were conducted, two factors were revealed which explained 64.24% of the common variance: perceived transgressions by self or others, and perceived betrayal by others. The first factor, perceived transgressions by self or others, as the name suggests was composed of questions relating to both the witnessing of acts of commission and omission that violated one's moral beliefs and expectations, and the perpetration of such acts, as well as the distress caused by the same (Nash et al., 2013). The latter questions relating to the distress caused could be seen as paralleling Criterion G in the DSM-5 diagnostic criteria for PTSD (i.e., disturbance causes clinically significant distress or impairment; American Psychiatric Association, 2013), as without this distress it could be argued that there is no injury. The second factor, betrayal by others, was composed of questions relating to feelings of betrayal by one's superiors, other service members, and individuals not in the military that they once trusted. Nash et al. also found that the MIES had good temporal stability with paired t-tests comparing the results from 1 week and 3 months post deployment all failing to meet the cut-off for statistical significance. Results of the exploratory factor analyses using the second cohort of Marines suggested that the two-factor model found had a good model fit based on standard cut-off recommendations (standardized root mean squared residual (SRMR) = 0.04, comparative fit index (CFI) = 0.96).

Bryan et al. (Bryan et al., 2015) sought to further evaluate the psychometric properties of the MIES in samples composed of both men and women, service members from other branches of the military than Marines, and those from professions other than combat arms. To this end, two groups of individuals were selected: a clinical sample of 151 active duty Air Force personnel who sought outpatient mental health treatment, and a

non-clinical sample of 935 U.S. military personnel (84% Army National Guard). Using the sample of Air Force personnel, a confirmatory factor analysis was conducted to test the two-factor model proposed by Nash et al. (Nash et al., 2013) the results of which indicated a poor overall fit with a SRMR of 0.125 and a CFI of 0.779; general guidelines for acceptable results are an SRMR < 0.08, and a CFI > 0.90 (Hu & Bentler, 1999). When the confirmatory factor analysis was redone using the second sample of Army National Guard personnel, the two-factor model fit improved slightly (SRMR = 0.082; CFI = 0.930). The difference between the results of the two samples was postulated to be a result of differential exposure to PMIE as only 25% of the Air Force sample reported having direct combat experience compared with 75% of the Army National Guard sample (Bryan et al., 2015).

Having failed to confirm the results of Nash et al. (Nash et al., 2013), Bryan et al. conducted an exploratory factor analyses using the sample of Air Force personnel in hopes of identifying the latent factor structure for the MIES in this group. This analysis yielded a three-factor model that explained 75.6% of the total variance observed (SRMR = 0.024, CFI = 0.922): transgression by others, transgression by self, betrayal by others (essentially splitting the Nash et al. first factor in two). When a confirmatory factor analysis was conducted using the Army National Guard sample to replicate the three-factor solution, the model fit was found to be excellent with an SRMR of 0.056 and a CFI = 0.962 (Bryan et al., 2015).

Moral Injury Questionnaire – Military Version (MIQ-M). Drawing from clinical evidence, military trauma theory, domains found by Drescher (Drescher et al., 2011), as well as their own research using structural equation modelling (Currier,

Holland, & Malott, 2015), Currier, Holland, Drescher, and Foy (2015) developed the Moral Injury Questionnaire – Military Version (MIQ-M) to provide a unidimensional assessment tool for exposure to PMIE. The MIQ-M is a 19 item, self-report questionnaire with items drawing from the following six domains of potentially morally injurious events: acts of betrayal, acts of disproportionate violence inflicted on others, acts which involved death or harm to civilians, violence within military ranks, inability to prevent death and suffering, and ethical dilemmas or moral conflicts (Currier, Holland, Drescher, et al., 2015). Each item is scored on a four-point frequency scale where 1 = Never, 2 = Seldom, 3 = Sometimes, and 4 = Often. The authors note that due to the potential for guilt/shame and potential legal ramifications of admitting that they participated in certain acts while on deployment, they opted to combine direct involvement together with the witnessing of PMIE for several items on the MIQ-M to increase the likelihood gaining accurate responding from participants (e.g., "I saw/was involved with violations of rules of engagement"). The authors acknowledge that by doing so, they likely confounded the effects of the two different types of war-zone stressors; a conclusion reinforced by the findings of Bryan (Bryan et al., 2015). The MIQ-M was administered to two groups of participants; a community sample of 131 Iraq/Afghanistan veterans attending a community college, and a clinical sample of 82 Iraq/Afghanistan veterans attending a residential rehabilitation program for severe PTSD. Based on the results of a minimum average partial test (MAP) conducted on the community sample, only a single factor model was tested with the results suggesting a good fit with the data (SRMR = 0.04, CFI = 0.90). In the clinical sample, the MAP test

also indicated that a one-factor model would also provide the best fit, with the results indicating a good fit with the participants' responses (SRMR = 0.05, CFI = 0.98).

Overall, the results for the MIES (Nash et al., 2013) and the MIQ-M (Currier, Holland, Drescher, et al., 2015) provide support both for the utility of moral injury as a construct, as well as preliminary psychometric evidence for the respective measures to assess military personnel for PMIE exposure. Further refinements to both tools as well as testing in other military populations will be required, however, before either can be used in a clinical diagnostic setting. As both measures utilized a self-report methodology, there is the potential for response bias having affected their respective results, especially with regards to the reporting of perpertrative acts on the MIES. Finally, the cross-sectional sampling utilized prevents drawing any associations between exposure to PMIE and the eventual development of psychopathology in the future.

Moral Injury Symptoms Scale – Military Version (MISS-M). The MISS-M (Koenig et al., 2017) was developed in 2017 to serve as an outcome measure for intervention studies in moral injury in current and former service members diagnosed with PTSD. The MISS-M is a 45-item, self-report questionnaire composed of questions designed to assess respondents on 10 theoretically-grounded dimensions related to moral injury symptomatology namely guilt, shame, moral concerns, religious struggles, loss of religious faith/hope, loss of meaning or purpose, difficulties with forgiving, losses of trust, and self-condemnation. Each question is ranked on a 10-point Likert scale relating to the respondent's amount of disagreement (1) or agreement (10) with various statements (e.g., "Some of the things I did during war continue to bother me"), with higher scores being indicative of greater moral injury. Participants were 427 veterans and

active duty service members recruited from VA medical centres in five major metropolitan areas plus one private research university which were then split to create two samples on which exploratory (n = 214) and confirmatory factor analyses (n = 213) were conducted.

The authors elected to conduct the respective factor analyses within each of the 10 respective dimensions due to their perceived theoretical importance and a desire to maintain the 10 respective dimensions (i.e., the questions that were selected because the authors believed that they reflected the "guilt" dimension, for example, were factor-analysed to verify that these questions held together as indicators of that dimension). The number of questions analysed in each dimension ranged from 2 (shame, and loss of religious faith/hope) to 10 (self-condemnation). All of the predicted dimensions successfully loaded onto single factors with the exception of "difficulty forgiving" and "self-condemnation" which each loaded on 2 factors corresponding to how the questions were worded; positively worded questions (e.g., *I take a positive attitude toward myself*) loaded on one factor while negatively worded questions (e.g., *I certainly feel useless at times*) loaded on a second factor within each dimension (Koenig et al., 2017).

With regards to the reliability of the MISS-M, the overall Cronbach's alpha for the whole measure was 0.92, with alphas for the subscales ranging from 0.56 (loss of religious faith/hope) to 0.91 (loss of trust) indicating that the measure as a whole has good internal consistency. In terms of test-retest reliability, the MISS-M was administered to a group of 64 veterans on two occasions separated by an average of 10 days. Overall ICC for the MISS-M was 0.91, and the ICCs for the subscales ranged from

0.78 (moral concerns) to 0.90 (loss of religious faith/hope) indicating that the measure has good reliability over time (Koenig et al., 2017).

Expressions of Moral Injury Scale – Military Version (EMIS-M). Developed in 2017, the EMIS-M (Currier et al., 2017) is a 17-item, self-report measure designed for use by clinicians and researchers to detect the potential warning signs of moral injury in a military population. Unlike other measures of moral injury, or PMIE, the authors state that they made no attempt to develop a measure that would capture all possible aspects moral injury expression, rather they report approaching moral injury as a "non-pathological dimensional concept" (p. 5) to which additional expression can be added as empirical, theoretical, and clinical knowledge increases. Participants were recruited from two mid-sized research universities at the beginning of the 2015-16 and 2016-17 academic years using lists of students who were attending university using the GI Bill funding.[2] The final sample size for the whole study was 910 individuals with 286 individuals being utilized for an exploratory factor analysis, and the remaining 624 being utilized for a confirmatory factor analysis.

Results of the exploratory factor analysis yielded a two-factor solution which explained almost 63% of the variance in the selected items with the majority of the variance (52%) being attributable to the first factor labelled Self-directed Moral Injury; the second factor was labelled Other-directed Moral Injury. Indices of reliability were reported to have exceeded the recommended threshold of 0.9, and six-month test-retest coefficients ranging from 0.74 for self-directed moral injury, to 0.80 for other-directed

[2] The GI Bill is an educational benefit provided by the U.S. Department of Veterans Affairs to veterans, active duty, reserve, and National Guard members of the military to help them cover the costs associated with receiving continued education.

moral injury (Currier et al., 2017). The results of the confirmatory factor analysis to verify the two-factor model were similarly favourable yielding an SRMR 0.03 and a CFI of 0.96 indicating a good model fit. The authors report that indices of reliability calculated for the various subscales exceeded the recommended threshold of 0.9, however, the specific statistics were not presented (Currier et al., 2017).

Summary

Moral injury has become the subject of increasing amounts of research in recent years, however, in order to maximize the quality and generalizability of research going forward, consensus still needs to be reached around certain aspects of the construct. One such point is the terminology used to describe the construct. Drescher (Drescher et al., 2011) found that over a third of the respondents in their study felt that "moral injury" carried with it potentially negative connotations. In particular, the use of the term "moral" could be interpreted by those affected as implying that they somehow behaved "immorally" while deployed; a position echoed in McClosky (McCloskey, 2011). This interpretation could evoke negative emotions and negative self-judgement in the individual and in turn, affect their responding both in clinical and research contexts. Some of the alternatives suggested included spiritual injury, emotional injury, personal values injury, and life values injury (Drescher et al., 2011).

Another point relates to how to categorize different PMIE. The work on the MIES by Nash (Nash et al., 2013) resulted in two factors being found (transgression by self or others, and betrayal by others), while that of Bryan (Bryan et al., 2015) found three factors (transgression by self, transgression by others, and betrayal by others). Drescher (Drescher et al., 2011) proposed that "betrayal by self" could also be a form of

PMIE; how this concept might be related to, or different from, "transgression by self" has not yet been determined and would benefit from further research. Stein and colleagues, in their categorization system for traumatic military events, use the broad categories of "moral injury by self" and "moral injury by others" to describe the differing types of PMIE (Stein et al., 2012).

It is important to note that while both moral injury and potentially morally injurious events have been examined predominantly within the context of the military, in particular in relation to combat traumas (Currier, Holland, Drescher, et al., 2015; Drescher et al., 2011; Litz et al., 2009; Wisco et al., 2017; Yan, 2016), the concept itself is applicable to other groups as well. First responders (police, fire, and ambulance personnel), can encounter situations in the course of their duties over which they have no control and that may end badly (e.g., a suicidal individual who, despite the first responder's best efforts to talk them down, still jumps off the bridge). Another possible group could be individuals working in health care who may be called upon to complete, or assist with, procedures they do not personally agree with or run counter to their beliefs (e.g., do not resuscitate (DNR) orders, Medical Assistance in Dying (MAID)). Referred to as "moral distress" in the health care field, it has been a subject of inquiry for bioethicists for a number of years. Traditional definitions posit that moral distress arises from situations where the individual knows what the morally correct choice is to make but they do not make it due to various limitations placed on them by either internal or external (e.g., institutional) factors (Campbell, Ulrich, & Grady, 2016). In contrast to moral injury as defined by Litz and colleagues (Litz et al., 2009) where the dissonance is created after the event has occurred, this definition of moral distress would seem to imply

that the distress exists for the individual before they have made their decision to act, or not act. Campbell (Campbell et al., 2016) posits that the traditional definition may not capture the full spectrum of possible types for moral distress and propose broadening the definition citing a number of potentially distressing situations or conditions that are not covered including "bad moral luck." (See Campbell, et al., 2016, for complete discussion). Bad moral luck can be caused by situations where individuals make the best (moral) choice they can based on the information that they have available at the time, but morally undesirable results still occur. Williams termed the emotional outcome of these types of situations "agent-regret" (Williams (1982) cited in: McAninch, 2016) to identify the complex nature of these situations; while the individual may be able to acknowledge that there may have been no other choice they could have made in the situation that would have led to a different outcome (regret about what happened), they none the less still feel guilty about their role in it (regret about what they did). This broadened formulation of moral distress brings its definition closer to what is currently seen as moral injury in the military. As is the case with the military, however, the same issues around terminology and categorization of PMIE apply and will need to be addressed before research into these groups can proceed.

The current study will focus in the experiences of PMIEs in a military sample, specifically, a representative sample of Canadian Armed Forces (CF) members who were deployed in support of the recent mission to Afghanistan. The CF does not currently collect information about exposure to potentially morally injurious events (PMIE) or moral injury within either the veteran population or those currently serving, so prevalence rates of either outcome within these populations are not currently known. The primary

purpose of this study is to estimate the prevalence of exposure to PMIE within the aforementioned population of CF members (Chapter 3), with the secondary purpose being to determine how this exposure to PMIE affects CF members self-rated mental health (Chapter 4). Prior to examining these research questions, however, the type and extent of training regarding ethical decision making provided by the CF and its applicability to PMIE will be reviewed (Chapter 2). While the topics of these chapters are interrelated, they are not interdependent; each chapter is presented in such a way as to be self-contained.

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Chapter 2

Canadian Forces ethics training: Applicability to moral injury

"While the prospect of inter-state war will not disappear, future challenges will be more diverse – with asymmetric attacks launched by transnational terror groups, and the political instability, civil war and humanitarian crises characteristic of fragile countries making up the lion's share of turmoil in the early 21st century" (Department of National Defence, 2007, p. 4). These changes will alter both how service members will be utilized in the field (e.g., moving from primarily peace-support and humanitarian aid provision increasingly towards war-fighting) and the conditions they will encounter while they are deployed, some of which will expose them to new and potentially challenging situations that can tax their ability to cope both physically and mentally. Litz (Litz et al., 2009) describes one such situation – the potentially morally injurious event (PMIE): the perpetration, failure to prevent, witnessing of, or learning about acts that transgress the individual's deeply held moral beliefs and expectations about the rules that govern human behaviour. Exposure to these PMIE could lead the individual to develop a "moral injury" characterized by feelings of shame, guilt, and anxiety and collateral behaviours including acts of self-harm (e.g., increases in substance use and abuse, parasuicidal behaviours) and self-handicapping behaviours (e.g., social withdrawal, avoidance, self-isolation). The actual moral injury, Litz continues, does not occur until such a time as the individual *realizes* that their moral beliefs have been violated and a sense of inner conflict or dissonance is created; this realization may occur immediately after the traumatic event, after some time has passed (days, weeks, months), or it may never occur. According to this formulation, moral injury can be seen as a complex, multifaceted concept that arises

from a combination of law and philosophy in principle, and mental health in outcome: A traumatic event occurs (PMIE) that violates an underlying philosophical (moral) belief held by the individual regarding who they are and how the world should be that then leads to the creation of a psychic conflict within the person (dissonance), which can manifest in psychological or behavioural symptoms (moral injury).

It is important to keep in mind that, organizationally speaking, the military does not operate like other groups of professionals. Doctors and lawyers, for example, operate within organizations that are more associational in nature; while members of these respective organizations may all work toward a shared goal (i.e., for the health and welfare, or legal representation of their clients, respectively), they function as autonomous individuals within that organization. The military, however, is a collective profession in which groups of individuals must operate synergistically in order to achieve an identified end (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003). While they are deployed, but especially while actively engaged in mission related activities (e.g., combat), service members no longer act as autonomous individuals but rather individual parts of a larger whole (e.g., their fire team, section, platoon, etc.). The role of the individual service member in relation to the military is analogous how the heart and lungs operate within the body; while they remain distinct organs, their ability to function correctly both affects and is affected by the functioning of the other organs such that if they all do not function together appropriately, the whole body will suffer. Another aspect of this collective or interdependent nature is a shared responsibility for the continued health and wellbeing of every service member (when one individual suffers it affects the functioning of their fire team, squad, platoon as well). This responsibility is

carried by all levels of the military from the government agencies that oversee its functioning (e.g., the Department of National Defence), through the organization itself (e.g., the Canadian Armed Forces), and down the chain of command to the individuals themselves.

Based on the extensive training that the military provides to its service members before deploying them to hostile environments, both generally (e.g., weapons and training, battle tactics) and deployment specifically (e.g., cultural sensitivity, political climate, rules of engagement), as well as the sorts of equipment provided to maintain service members' physical safety (e.g., body armour, helmets, armoured transport), it seems unlikely that the military, and the governmental organizations that oversee it, would not have taken steps to prepare their service members for the types of potentially morally injurious events (PMIE) they may encounter on deployment. As such, the Department of National Defence (DND) and the Canadian Armed Forces (CF) must believe that the training they provide to their service members is adequate preparation for whatever events they may encounter while deployed.[3]

With this in mind, this chapter has three goals. First, to outline the current training[4] provided by the CF to its service members regarding the potential psychological tolls of a modern deployment. Second, to summarize the training provided by the DND

[3] This last point is proposed based on the assertion that if the opposite was true (i.e., that the DND/CF *do not* believe that this training is adequate preparation for deployment experiences), this would mean that the DND/CF would be knowingly sending service members into situations for which they are unprepared.

[4] Due to the specific details of training provided to CF members being of a classified nature, the source material for this section is limited to documents that are either publicly available (e.g., from the Department of National Defence (DND), Canadian Forces (CF), and Government of Canada (GC) websites), unclassified documents obtained directly from members of the DND or CF by the author, or reports generated by Defence Research and Development Canada (DRDC) and third parties on behalf of the DND or CF.

and CF around ethics and ethical decision-making in general and how these may be applied during deployment. Finally, to evaluate, through the use of scenarios, if the provided ethical decision-making training is applicable to situations that contain PMIEs, and by extension, if this training may decrease the likelihood of service members developing a moral injury as the DND/CF seem to believe it will be.

Mental Health and Stress Management: Road to Mental Readiness (R2MR)

Deployment on combat missions or on operations other than war such as peace support operations (PSO; peace-making, peace building, peace enforcement, peacekeeping), disaster relief, and humanitarian assistance have been shown to take a psychological toll on the service members involved (Boulos & Zamorski, 2013; Boulos & Zamorski, 2016; Hoge et al., 2004). In an effort to mitigate this toll through prevention, management, and treatment, the Canadian Forces (CF) provides training to its service members through a program entitled Road to Mental Readiness (R2MR, Department of National Defence, 2016b). First implemented in 1997, the R2MR program was designed to instruct service members about the basics of mental health and to provide them with resilience training with the overarching goals of improving both short-term performance while deployed, and long-term mental health outcomes. R2MR training begins at the recruit level and continues through the members' careers in the CF gradually becoming more specialized and directed as they advance in rank and deployment requirements change.

The mental health portion of R2MR training is designed with a focus on increasing mental health literacy and reducing the stigma associated with seeking professional help to deal with issues arising from deployment and other difficult life

events (Department of National Defence, 2016b; Weeks, Zamorski, Rusu, & Colman, 2017). Training addresses topics including common beliefs that act as barriers to help seeking in service members (e.g., that they can manage their problems themselves, that therapy won't help, fear that therapy won't remain confidential due to the organizational structure of the military, fear of how receiving assistance may affect their relationships with team members and their future in the military), and the identification of signs and symptoms of ineffective coping through the use of the Military Mental Health Continuum Model. This model was designed to inculcate, force-wide, the knowledge that mental health and coping are not "all or none" entities (i.e., healthy or ill, coping or not), but rather that mental health and coping exists on a spectrum. The model makes use of a four-colour spectrum ranging from healthy adaptive coping ("healthy," green) at one end, through mild yet reversable distress or functional impairment ("reacting," yellow), more severe and persistent impairment ("injured," orange), and finally to clinically significant impairment that affects functioning and requires medical intervention ("ill," red) at the other. For each level of the spectrum, service members are provided with common behavioural indicators to be aware of in six different spheres: mood, attitude and performance, sleep, physical symptoms, social behaviour, and alcohol use and gambling (Table 2.1). By instituting the training force-wide beginning at the recruit stage service members learn to both attend to the identified symptoms in themselves during the stresses of basic training and also identify them in other service members. This type of peer

Table 2.1
Military Mental Health Continuum Model

	Healthy (green)	**Reacting (yellow)**	**Injured (orange)**	**Ill (red)**
Mood	Normal mood fluctuations; calm, takes things in stride	Irritable/impatient; nervous; feelings of sadness or being overwhelmed	Angry; anxious, feelings of pervasive sadness or hopelessness	Has angry outbursts or aggression; experiences excessive anxiety or panic attacks; depression or suicidal thoughts
Attitude and Performance	Good sense of humour; performing well; mentally "in control"	Sarcastic; procrastinating on tasks; forgetfulness	Increasingly negative attitude; poor performance of tasks or being a workaholic; poor concentration or decision making	Overt insubordination; can no longer perform duties, control their behaviour, or concentrate
Sleep	Normal sleep patterns; few difficulties relating to sleep	Trouble sleeping; experiencing intrusive thoughts; nightmares	Increasingly restless or disturbed sleep; experiencing recurrent images; frequent nightmares	Can no longer fall asleep or remain asleep (due to thoughts, images, or nightmares); Sleeping too much or too little
Physical Symptoms	No physical complaints; good energy level	Experiencing muscle tension or headaches; low energy level	Increased aches and pains; increasingly fatigued/tired	Physically ill; fatigue almost constant
Social Behaviours	Active both physically and socially	Decreased amount of physical activity; Socializes less often	Actively avoids physical and socially activity	No longer goes out or answering phone (total social and physical withdrawal)
Alcohol use and gambling	No or limited alcohol use or gambling (socially appropriate)	Regular but controlled alcohol use or gambling (used as coping mechanism)	Alcohol use or gambling now harder to control; experiencing some negative consequences	Frequent alcohol use or gambling now unable to control; consequences of use now severe

Note: Table adapted from (Department of National Defence, 2016b)

support, referred to as "Buddy Aid" within the curriculum, also serves to reinforce the synergistic nature of the military as an organization. The R2MR training provides

suggestions to service members for how they might be able to assist each other should they notice a colleague may be slipping away from the healthy (green) end of the spectrum. Some of the suggestions provided include checking in with this colleague and seeing if there is anything they can do for them (referred to as "being a good friend"); basic active listening skills (i.e., listening attentively; asking non-judgemental questions to help understand the situation better; reflecting back their understanding to the individual for clarification); validating what the other person is feeling; and reminding the troubled individual of the resources that are available to all service members (e.g., chaplains, primary health care, specialized mental health and addictions teams), both on-base and in the community, that they can access if they need to (Department of National Defence, 2016b).

Related to mental health is the concept of resilience. While there is no single accepted definition for what constitutes resilience within the military context (Litz, 2014; Meredith et al., 2011), most definitions refer to an ability to endure some form of traumatic or aversive circumstance and then return to a baseline level of functioning. R2MR defines resilience as "the capacity of a soldier to recover quickly, resist, and possibly even thrive in the face of direct [or] indirect traumatic events and adverse situations in garrison, training, and operational environments" (Department of National Defence, 2016b). The resilience training provided by the CF is multifaceted and designed to provide service members with the practical skills required to deal with both acutely stressful situations, like those encountered while on deployment, and more common day-to-day stressors. This training is incorporated into their basic training program as recruits and is refreshed at various points in their military career, as well as

during the classroom portion of pre-deployment briefings. Based in part on work done in sports and performance psychology, service members are taught specific skills, known as "the Big 4." The Big 4 consists of instruction in goal setting; mental rehearsal or visualization (i.e., how to work through expected scenarios mentally and determine appropriate responses ahead of time; this way should these situations occur while deployed, or another time of high stress, the member already has a plan devised to help deal with the situation); techniques to replace negative self-talk with positive self-talk; and how to use combat tactical breathing (or "box breathing") techniques to control anxiety and arousal in stressful situations (i.e., inhale for a count of 4, hold breath for count of 4, exhale for a count of 4). Service members are also provided with additional techniques and general guidance relating to stress management in general including the importance of maintaining a healthy lifestyle (sleep, exercise, diet), knowing one's own physical and psychological limits, how to break large tasks into smaller more manageable goals should they begin to feel overwhelmed, the value of maintaining a strong social support system (both to turn to in times of stress, and for recreation and escape), and the importance of recognizing signs of distress and seeking help when needed (Department of National Defence, 2016b).

Formal study of the R2MR program within the CF, however, has been predominantly related to course content and methods of delivery rather than the efficacy or effectiveness of the program itself. A recent study of non-commissioned member (NCM) recruits and officer candidates (Fikretoglu, D'Agata, Sullivan-Kwantes, & Richards, 2017) found that both groups begin basic training (called *basic military qualifications* or *basic military officer's qualifications*, for NCM recruits and officer

candidates, respectively) exhibiting considerable variation in both understanding and acceptance of mental health issues such as general disease course (temporary, transitory, or chronic), use of terminology (many saw this as "labelling" the individual), and mental health service use. With regards to the latter, while both groups acknowledged that making use of mental health professionals can lead to a more successful management of issues that arise, over half go on to indicate that doing so would still be a "last resort" preferring to manage the problem on their own (Fikretoglu et al., 2017). This diversity in knowledge and understanding makes the implementation of a single standardized, force-wide education program problematic. A second longitudinal (pre-post), randomized controlled study of recruits who received R2MR training expressed less of a decrease in attitude towards mental health service use that those who did not receive R2MR training (i.e., R2MR lessened the decline in attitude), however, the attitudes of both groups decreased significantly over the course of the study. A lesser decrease in intention to use mental health services was also found in the R2MR groups as compared to the control group who received no mental health training, but both groups were less likely to utilized mental health services (Fikretoglu, Liu, & Blacker, 2016).

To date, only one longitudinal study has been conducted to investigate the effectiveness of the R2MR training program, and this was conducted in a municipal police force (Carleton et al., 2018). The study authors found that there were no statistically significant changes in mental health knowledge, resilience, or stress levels from pre-test (i.e., before R2MR training) and at either 6- or 12-month follow-up testing. Attitudes regarding stigma around mental health did improve immediately following training, however, these improvements had dissipated at the 6- and 12-month follow-up

points. As one of the stated objectives of the R2MR program is to increase mental health literacy and reduce stigma, these results could be seen as indicating that more work needs to be done to refine the R2MR process and content in order to maximize efficacy. Studies within the CF specifically will also need to be conducted to determine if the outcomes of training are replicated in a military sample as well.

While the CF has incorporated R2MR into all stages of the service members training and reiterates the key concepts of Military Mental Health Continuum, Buddy Aid, the Big 4, and various stress management techniques at both pre- and post-deployment training stages, they acknowledge that the possibility still exists that psychological/stress injuries can occur. It is believed, however, that the repeated exposure to the R2MR training will inculcate the core concepts and, in turn, will decrease the severity of the injury and foster a more rapid recovery.

Ethics training provided to DND employees and CF service members

As stated earlier, current deployments bear increasingly less similarities to those of previous generations. One strategy increasingly used by insurgents and other non-state actors is to intentionally disregard internationally recognized rules regarding the conduct of war such as the Geneva Conventions, Laws of Armed Combat (LOAC), and International Humanitarian Law (IHL) (International Committee of the Red Cross, 2004). This can create situations that soldiers may be unprepared for (e.g., insurgent who attacks from within a protected site like a hospital or place of worship) and as a result, may lead to ethical conflict for the service member. As such, it is important to gain an understanding of the type and content of training currently provided by the CF with regards to values, ethics, and morality.

There are three different approaches that have generally been used to create unified defence ethics programmes (compliance-based, prevention-based, and values-based), each possessing different strengths and weaknesses (Department of National Defence, 2002; Thomson, Adams, & Sartori, 2005). Compliance-based defence ethics programmes are founded on a strict adherence to a predetermined set of rules that govern behaviour (i.e., what can/not be done), similar to how rules of engagement (ROE) govern a service member's behaviour while deployed. While this type of programme generally has the advantage of being easy to understand, amend, and apply (i.e., when in doubt, refer back to the rules), it has some shortcomings in terms of usability. By design, compliance-based programmes require that there be a rule for every conceivable situation that a service member may encounter, and these rules will need to be constantly updated as situations change (similar to how ROE can be amended based on the results of after-action reports that detail how well a given ROE functioned or was applied in the practice). This can eventually create to a set of rules that is so extensive, complicated, and potentially self-conflicting that it ceases to be functional. Another shortfall of a compliance-based approach to defence ethics relates to the fact that since it is impossible to foresee every possible situation a service member might encounter, there will inevitably be situations for which there is no rule for them to refer back too. Finally, strict adherence to compliance-based ethics programmes may preclude service members from actively reflecting upon the larger ethical issues that underly the rules which risks the creation of an almost automatic, blind obedience to those rules. Doing so can lead to a reductionist way of approaching ethically complex situations; if a behaviour has not been expressly prohibited, it must not be wrong. This change in focus from "doing what

is right" to "not doing what is wrong," will require constant monitoring and enforcement to prevent unethical behaviour from occurring.

Prevention-based defence ethics programmes also make significant use of rules; however, they temper these rules with instruction concerning the ethical values that underly them. It is believed that the inclusion of ethical values instruction will allow for increased understanding of the rules, and in turn, more ethical behaviour. In order to avoid the issues caused by the more blanket nature of rules in compliance-based ethics, prevention-based ethics programmes focus the resultant rules on the areas of the organization and mission believed to be at greatest risk of ethical violation (e.g., intelligence gathering, or detention camp management). In this way, the overall number of rules (and their concomitant complexity) can be decreased, while the areas felt to be most in need of the guidance they provide still receive it (Department of National Defence, 2002). Applying this kind of focussed attention to only specific organizational areas, however, can limit the inculcation of ethics throughout the military; while some areas may need it more, all areas still need ethics education. Much as was the case with compliance-based models, the risk exists that individuals from areas not the focus of targeted ethical rules may come to believe that ethics is not a concern for them even if similar issues as covered by the rules may arise (e.g., a frontline soldier who needs to gather information from a captured enemy combatant in the field).

Values-based defence ethics programmes, of which the DND and CF Defence Ethics Program (DEP) is one, could be seen as the opposite of compliance-based ethics; where compliance-based models focus on the "letter of the law," values-based programs focus on the "spirit of the law." As the name suggests, this model focuses on conveying

an understanding of the underlying ethical principles (or values) that the organization wants its members to uphold. It is believed that once individuals understand these larger ethical principles and why they are important, they can then apply this knowledge to any situation they may encounter and ultimately make the "right decision" as to how they should proceed (Department of National Defence, 2002; Thomson et al., 2005). While there is a certain amount of *prima facie* truth to this belief, the depth of philosophical understanding required to allow for this type of generalization to occur may not always be obtainable or even applicable in practice due to the subtle distinctions between available options and viewpoints that often need to be made. This point will be discussed in greater detail later when discussing the specifics of the Defence Ethics Program (DEP) used by DND and CF.

It might be argued that a prevention-based ethics programme would provide the best of both extremes (i.e., compliance- and values-based programmes), it just needs to be applied to the whole of the military rather than focused on specific areas. In this way service members would benefit from all the structure and guidance provided by an existing body of rules, while gaining a level of broader understanding through knowledge of the underpinned values, which will allow existing rules to be generalized to new situations. In practice, however, rather than resulting in a programme that possesses "the best of both worlds," this enhanced prevention-based approach could result in a programme that contains the worst of both extremes – all the potential convolution of a rule-heavy system with all the subtle complexities inherent to the philosophical understanding required for a system based on values.

Defence Ethics Program (DEP)

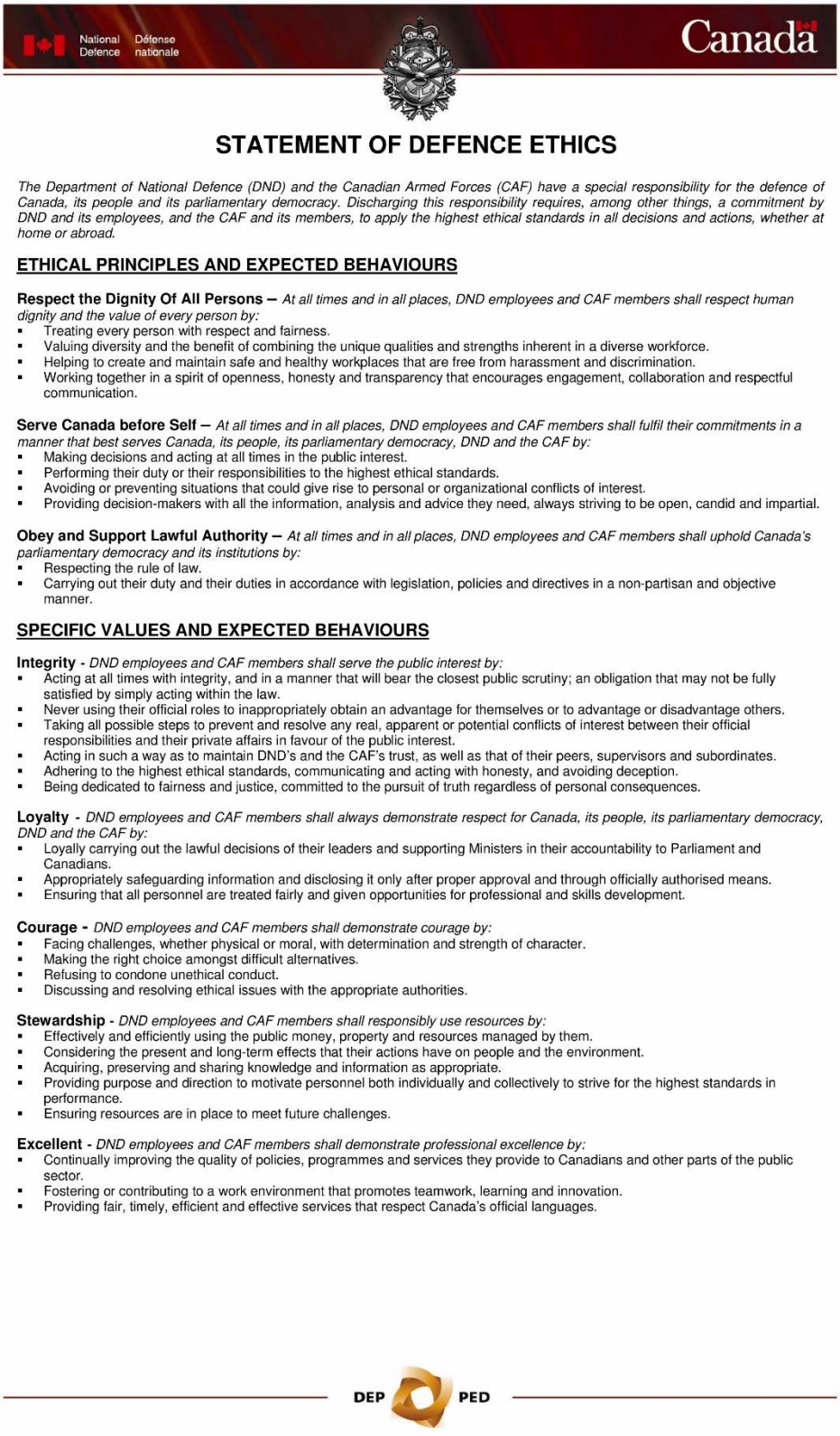
First implemented in 1997, the Defence Ethics Program (DEP) has undergone several refinements and adaptations, in part, to address some of the perceived shortfalls identified in successive Defence Ethics Survey Reports (Durson, Morrow, & Beauchamp, 2005; Fraser, 2008; Messevey, Howell, Gou, & Yelle, 2011). The DEP was designed with the objective of providing both the civilian employees of the DND and military members of the CF (collectively referred to as the Defence Team) with a common set of ethical principles and obligations that can be applied to any decisions that they need to make both domestically and while deployed; "to give [the Defence Team] the tools to know what is 'right' and 'wrong' and to consistently choose 'right'" (Walker, 2013). As the respective audiences for the DEP training are generally non-academics, the relevant documentation and training protocols have been designed in a way so as to be most applicable and relatable to these individuals (i.e., non-academics). Consequently, some of the more intellectually and theoretically complex aspects of the training (e.g., the subtle intricacies of the different philosophical principles that can underlie ethical decision making) are only provided in sufficient enough detail so that the necessary information to understand the concept being explained is covered.

Central to the current iteration of the DEP was the creation of the *DND and CF Code of Values and Ethics* (Department of National Defence, 2012), which came into effect in June 2012, and serves to codify the values, obligations, and behaviours expected from all members of the Defence Team during their respective employments. It is important to note that for CF members the contents of this document are not considered to be guidelines, but rather orders from the Chief of Defence Staff, and as such, failure to

comply with them makes the member subject to formal disciplinary action (Department of National Defence, 2012). Unlike employees of the DND, members of the CF are also expected to know and follow the customs and practices outlined in *Duty with Honour: The profession of arms in Canada* (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003), as such, the relevant contents of this document will also be discussed in turn.

The *DND and CF Code of Values and Ethics* (Department of National Defence, 2012) document is broken into four independent, but interrelated chapters covering the following topics: values and ethics; values and ethics in operations; DND and CF policy on conflicts of interest (COI) and post-employment; and disclosure of wrongdoing. As the latter chapters detailing policies regarding COI (e.g., use of government assets, taking part in political activities, receiving gifts) and obligations regarding the reporting of wrongdoing, do not apply to the operational behaviours of CF members or the potential development or prevention of moral injury, these chapters will be omitted from this summary.

Values and Ethics. As was stated earlier, the DEP is a values-based ethics program designed to provide both civilian employees and members of the military with ethical guidance for their respective roles. Summarized in a document entitled the *Statement of Defence Ethics* (Figure 2.1; Department of National Defence, 2014), this chapter outlines three general ethical principles rooted in the Canadian Constitution and the Canadian Charter of Rights and Freedoms, and five specific values and behaviours



National Defence / Défense nationale — Canada

STATEMENT OF DEFENCE ETHICS

The Department of National Defence (DND) and the Canadian Armed Forces (CAF) have a special responsibility for the defence of Canada, its people and its parliamentary democracy. Discharging this responsibility requires, among other things, a commitment by DND and its employees, and the CAF and its members, to apply the highest ethical standards in all decisions and actions, whether at home or abroad.

ETHICAL PRINCIPLES AND EXPECTED BEHAVIOURS

Respect the Dignity Of All Persons – *At all times and in all places, DND employees and CAF members shall respect human dignity and the value of every person by:*

- Treating every person with respect and fairness.
- Valuing diversity and the benefit of combining the unique qualities and strengths inherent in a diverse workforce.
- Helping to create and maintain safe and healthy workplaces that are free from harassment and discrimination.
- Working together in a spirit of openness, honesty and transparency that encourages engagement, collaboration and respectful communication.

Serve Canada before Self – *At all times and in all places, DND employees and CAF members shall fulfil their commitments in a manner that best serves Canada, its people, its parliamentary democracy, DND and the CAF by:*

- Making decisions and acting at all times in the public interest.
- Performing their duty or their responsibilities to the highest ethical standards.
- Avoiding or preventing situations that could give rise to personal or organizational conflicts of interest.
- Providing decision-makers with all the information, analysis and advice they need, always striving to be open, candid and impartial.

Obey and Support Lawful Authority – *At all times and in all places, DND employees and CAF members shall uphold Canada's parliamentary democracy and its institutions by:*

- Respecting the rule of law.
- Carrying out their duty and their duties in accordance with legislation, policies and directives in a non-partisan and objective manner.

SPECIFIC VALUES AND EXPECTED BEHAVIOURS

Integrity - *DND employees and CAF members shall serve the public interest by:*

- Acting at all times with integrity, and in a manner that will bear the closest public scrutiny; an obligation that may not be fully satisfied by simply acting within the law.
- Never using their official roles to inappropriately obtain an advantage for themselves or to advantage or disadvantage others.
- Taking all possible steps to prevent and resolve any real, apparent or potential conflicts of interest between their official responsibilities and their private affairs in favour of the public interest.
- Acting in such a way as to maintain DND's and the CAF's trust, as well as that of their peers, supervisors and subordinates.
- Adhering to the highest ethical standards, communicating and acting with honesty, and avoiding deception.
- Being dedicated to fairness and justice, committed to the pursuit of truth regardless of personal consequences.

Loyalty - *DND employees and CAF members shall always demonstrate respect for Canada, its people, its parliamentary democracy, DND and the CAF by:*

- Loyally carrying out the lawful decisions of their leaders and supporting Ministers in their accountability to Parliament and Canadians.
- Appropriately safeguarding information and disclosing it only after proper approval and through officially authorised means.
- Ensuring that all personnel are treated fairly and given opportunities for professional and skills development.

Courage - *DND employees and CAF members shall demonstrate courage by:*

- Facing challenges, whether physical or moral, with determination and strength of character.
- Making the right choice amongst difficult alternatives.
- Refusing to condone unethical conduct.
- Discussing and resolving ethical issues with the appropriate authorities.

Stewardship - *DND employees and CAF members shall responsibly use resources by:*

- Effectively and efficiently using the public money, property and resources managed by them.
- Considering the present and long-term effects that their actions have on people and the environment.
- Acquiring, preserving and sharing knowledge and information as appropriate.
- Providing purpose and direction to motivate personnel both individually and collectively to strive for the highest standards in performance.
- Ensuring resources are in place to meet future challenges.

Excellent - *DND employees and CAF members shall demonstrate professional excellence by:*

- Continually improving the quality of policies, programmes and services they provide to Canadians and other parts of the public sector.
- Fostering or contributing to a work environment that promotes teamwork, learning and innovation.
- Providing fair, timely, efficient and effective services that respect Canada's official languages.

DEP PED

Figure 2.1. Statement of Defence Ethics (Department of National Defence, 2014)

that all members of the Defence Team are expected to follow in their professional activities. These principles are, in order of precedence: **Respect the dignity of all persons**; treat all people with respect and fairness, value diversity and the benefits it brings, help create and maintain a healthy workplace free of harassment and discrimination, and always work in an open, honest, and transparent fashion. **Serve Canada before self**; make decisions and act at all times in the public interest, perform duties to the highest ethical standards, avoid and prevent situations that could lead to COI, be open, candid, and impartial in relations with decision-makers.[5] This principle has special import for members of the CF, especially when on deployment. Members of the military, as a function of their role, are required to relinquish some of the rights that ordinary civilians possess (ex., the right to refuse to be put into harm's way) while deployed, while assuming additional responsibilities that civilians do not (ex., maintaining national security both at home and abroad). As a result, the military tends to hold itself and its members to a more selfless standard in that the needs of the individual service member are frequently prioritized below the needs of the mission (which receives highest priority) and the group (e.g., their unit/troop; next highest priority) (Gabriel, 2007). This does not, however, completely negate the service members ability to function as an individual or their responsibilities (e.g., to their family or community) when not actively deployed, it only requires that these responsibilities be suspended

[5] For example, if a member of the DND has two conferences they can attend on the same weekend: One conference is in their hometown, so they would be able to visit friends and family while they are there, but the content of the conference is of limited use to the CF. The other conference's content would of more use to the CF but is on the other side of the country away from the person's family and friends. According to this principle, they are supposed to attend the second conference – serve Canada before self.

temporarily so that they might effectively function as part of a group.[6] Finally, **obey and support lawful authority**; respect the rule of law, carry out duties in accordance with legislation, policies, and directives in a non-partisan and objective manner. As the five values (**integrity, loyalty, courage, stewardship,** and **excellence**) and their associated behaviours are more detailed and potentially prescriptive they have been outlined in Table 2.2.

Defence Team members are instructed that should upholding any of these values come in conflict with one or more of the aforementioned principles, the principles are to take priority. This chapter also outlines the duties and obligations specific to CF members (i.e., all members must abide by the *DND and CF Code of Values and Ethics* in their actions and behaviour, leaders must to exemplify military values of the CF, and create a healthy ethical environment that is free of reprisal, ensure that all subordinates have every opportunity to meet their legal and ethical obligations to act, and proactively inculcate the values of *DND and CF Code of Values and Ethics*), and the ramifications of failing to comply with the outlined principals, values, and behaviours (i.e., disciplinary action). The DEP acknowledges that the document does not cover all expected situations that may arise, in which case, the Defence Team member is "encouraged to discuss and resolve these matters with their immediate supervisor." (Department of National Defence, 2012, p. 14)

[6] This contextual basis of individual rights and responsibilities in the military could be compared to how the laws (rules) governing operating a motor vehicle can vary from province to province: When driving in Québec, one is not allowed to make a right turn on a red light, but in Ontario this turn is legal. When a service member is on patrol, for example, their rights as an individual are suppressed in deference to the needs of the mission; once they return to base and are off duty, however, their rights as an individual return.

Table 2.2
Values and expected behaviours [a]

Value	**Expected Behaviours**
Integrity	DND employees and CF members shall serve the public interest by: 1. Acting at all times with integrity, and in a manner that will bear the closest public scrutiny; an obligation that may not be fully satisfied by simply acting within the law. 2. Never use their official roles to inappropriately obtain an advantage for themselves or to advantage or disadvantage others. 3. Taking all possible steps to prevent and resolve any real, apparent, or potential conflicts of interest between their official responsibilities and their private affairs in favour of the public interest. 4. Acting in such a way as to maintain DND's and the CF's trust, as well as that of their peers, supervisors, and subordinates. 5. Adhering to the *highest ethical standards*, communicating with honesty, and avoiding deception. 6. Being dedicated to fairness and justice committed to the pursuit of truth regardless of personal consequences.
Loyalty	DND employees and CF members shall always demonstrate respect for Canada, its people, its parliamentary democracy, DND and the CF by: 1. Loyally carrying out the lawful decisions of their leaders and supporting Ministers in their accountability to Parliament and Canadians. 2. Appropriately safeguarding information and disclosing it only after proper approval and through officially authorized means. 3. Ensuring that all personnel are treated fairly and given opportunities for professional and skills development.
Courage	DND employees and CF members shall demonstrate courage by: 1. Facing challenges, whether physical or *moral*, with determination and *strength of character*. 2. Making the *right choice* amongst difficult alternatives. 3. Refusing to condone unethical conduct. 4. Discussing and resolving ethical issues with the appropriate authorities.
Stewardship	DND employees and CF members shall responsibly use resources by: 1. Effectively and efficiently using the public money, property, and resources managed by them. 2. Considering the present and long-term effects that their actions have on people and the environment. 3. Acquiring, preserving, and sharing knowledge and information as appropriate. 4. Providing purpose and direction to motivate personnel both individually and collectively to strive for the highest standards in performance. 5. Ensuring resources are in place to meet future challenges.

Excellence	DND employees and CF members shall demonstrate professional excellence by: 1. Continually improving the quality of policies, programs, and services they provide to Canadians and other parts of the public sector. 2. Fostering or contributing to a work environment that promotes teamwork, learning, and innovation. 3. Providing fair, timely, efficient, and effective services that respect Canada's official languages.

Note: Adapted from (Department of National Defence, 2012). [a] Italics mine.

Values and Ethics in Operations. Due to the brevity of this particular chapter, it has been quoted in its entirety below.[7]

> This chapter is to be developed by the CRS [Chief of Review Staff] through the Director Defence Ethics Program in partnership with Level One stakeholders from the Canadian Forces and the Department of National Defence that are significantly involved in military operations at home and abroad. (Department of National Defence, 2012, p. 15)

In the absence of the guidance that would be provided by this chapter, CF members are directed to follow the remaining sections of *DND and CF Code of Values and Ethics* (Department of National Defence, 2012), *Duty with Honour: The profession of arms in Canada* (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003), and related key doctrines (S. Hare, personal communication, 10 February 2017).

Values and Ethics training specific to the CF. As stated earlier, members of the CF are also expected to conform to the customs and practices of the CF (collectively

[7] The most recent correspondence with the Manager for Programme Development of the DEP confirms that, as of May 2018, *Chapter 2 – Values and Ethics in Operations* is still in development and has not been finalized. No date as to when this finalization might occur was possible at that time.

referred to as the *military ethos*) outlined in *Duty with Honour: The profession of arms in Canada* (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003) as part of the DEP. This military ethos is formed of three fundamental components: **Beliefs and expectation inherent to military service** (unlimited liability, fighting spirit, discipline, and teamwork). The most unique to the military of these expectations is the concept of unlimited liability; the understanding that, as members of the military, they could be ordered into harm's way and potentially lose their lives and that refusing such a deployment is not an option. This expectation of unlimited liability can extend to the individual's right to self-defence as the CF does not view this right as an absolute right, but rather a right that can be curtailed. For example, service members cannot sacrifice someone else to save themselves, flee during a firefight, or switch sides if it seems that their position will be overrun. The acceptance of this possible need to self-sacrifice forms the cornerstone of the edict "mission, own troops, self," which is integral to military's conception of duty. Building on this edict, fighting spirit is what "imparts to individuals the moral, physical, and intellectual qualities necessary to operate in conditions of great danger … Fighting spirit is important to act decisively – including the use of lawful, lethal force against an adversary – during combat operations" (p. 26). The second component, **Canadian values**, is reflected in the three principles outlined in the *Statement of Defence Ethics* (Department of National Defence, 2014) (i.e., Respect the dignity of all persons, Serve Canada before self, and Obey and support lawful authority). The final component, **Canadian military values**, outlines the personal qualities that the CF believe are integral to its members to ensure their success. Some of these values overlap with the values outlined in the *Statement of Defence Ethics* (loyalty, integrity,

courage), while others are unique (duty, honour), all however are defined within *Duty with Honour* from a distinctly military point of view. **Loyalty**, as well as reflecting an allegiance to Canada and its people, also entails a faithfulness to one's comrades that is reciprocal and based on a mutual trust in one another, regardless of rank. **Integrity** builds on the previous definition by stipulating that members must be committed to meeting their professional obligations while remaining responsible and accountable for their actions. While a CF member is required to follow all lawful authority, which would include orders given by a superior officer, if they disagree with an order because they believe it to be unethical, for example, they need not follow it. Should they choose to disobey the order, however, they then must also bear the responsibility for their actions, including whatever punishments for disobedience might be applied. **Courage** is characterized as being a personal quality that allows one to do what's right or what needs to be done without regard for the personal cost of taking that action, and as such, is seen as a function of the individuals' willpower and resolve. The principles of "serve Canada before self" and "obey and support lawful authority" form the pillars of the military value embodied in the concept of **duty**; providing purpose and direction to CF members. Finally, the most central military value, **honour**, is likely the hardest to define as it is an abstract concept that can be seen as including all of the values, beliefs, and expectations important to the military ethos: if one does one's duty with loyalty, integrity, and courage, and upholds the principles outlined in the *Statement of Defence Ethics*, then one possesses honour. Honour is what "allows warriors to hold onto their humanity while experiencing the horrors of war." (Thompson, Thompson, & Adams, 2008, p. 4)

DEP ethical decision-making model

While the DEP remains a predominantly a values-based programme, it also incorporates an ethical decision-making model adapted from the Army Ethics Program (Thomson, Hall, & Adams, 2010; Walker, 2013). The model as taught by the DEP consists of four stages (perception, judgement, decision, action) designed to create a more structured decision process for members to use when confronted by a potentially ethically challenging situation. Part of the training includes a set of questions to help focus trainees on the relevant information to be considered at each stage of the decision-making process. The first stage, **perception**, involves the recognition that a potential ethical issue exists and will need to be addressed. From a practical point of view, if no ethical issue is recognized, the decision-making model stops. This step requires the individual to draw upon their knowledge of the military ethos, mission requirements (e.g., ROE, mission objectives), immediate environment, as well as individual factors (e.g., own beliefs, values, attitudes) to view the situation from the broadest perspective possible. *Is there anything ethically wrong in the situation? Who may be harmed/benefit from this situation? What are the relevant mission factors relating to this situation?* It is believed that the inculcation of all these factors through both training and pre-deployment preparation makes the perception stage almost automatic (Thomson et al., 2010).

In the second stage, **judgement**, the individual refocuses their attention on the specific situation they are confronted with. This multi-step process begins with an ordered comparison of the current situation against core ethical principles and values outlined in the *Statement of Defence Ethics* (Department of National Defence, 2014) and military values to check if any of these have been violated. The next step involves the

generation of alternate courses of action and then evaluating these alternatives according to their various risks and benefits, both to the individuals involved and the CF as an organization, using different ethical approaches to decision making. The objective of using these different ethical approaches is to determine: *What is the right thing to do, and why? What things might prevent a person from doing the right thing? Who might one turn to if one has difficulty doing the right thing?* (Thomson et al., 2010)

As part of a mandatory 1-day course in applied ethics conducted by the DEP annually, CF members are taught four different approaches to making ethical decisions: rules-based, consequence-based, self-interest-based, and care-based, and the respective strengths and weaknesses of each (Walker, 2013). As taught, **rules-based** or deontological (Keating, 2015) approaches are based on Kantian philosophy, specifically the first two formulations of the categorical imperative (i.e., if the decision applies in this case, it must apply in all similar cases; individuals are ends in themselves and should not be treated as mere means to an end). Accordingly, following a rules-based approach, the individual seeks to determine if there is a rule, regulation, order that would be applicable in this situation; these rules are treated as absolutes. Some of the limitations of a rules-based approach outlined include that it does not allow for decisions to be made using methods other than reason (e.g., compassion, love, generosity) and that no rules are absolute; there are exceptions to almost all rules. A **consequence-based** (Baker, 2015a) approach is based on Utilitarianism, where it is the consequences of a given action that determine the action's rightness or wrongness. Specifically, the action that leads to the greatest good for the greatest number is considered to be the correct action to take; the needs of the many will outweigh the needs of the few. Strict adherence to this approach,

however, would seem to justify the use of unethical actions providing that the resultant outcome is for the greatest good for the greatest number (the end justifies the means). This approach also fails to take into consideration any past or present obligations that an individual may have, instead its only concern is with future outcomes.[8] In contrast, **legitimate self-interest-based** (Baker, 2015b; Walker, 2013) approaches are concerned with inalienable rights and freedoms of the individual and uses the maintenance of these rights and freedoms as the basis for making a decision (i.e., will a particular course of action violate someone else's rights or freedoms). Similar to the case with rule-based approaches, individual's right must be treated as absolutes for this approach to work consistently. Consequently, legitimate self-interest could allow the rights and freedoms of the individual to have more weight in decision-making than what may be in the best interest of the group; the rights of the one can outweigh the needs of the many. Finally, **care-based** approaches focus on how a given act will affect the relationships between individuals and groups by altering the foundational elements of that relationship such as trust, honesty, and compassion. Care-based approaches, however, provide no guidance for how to address situations where maintaining positive relationships with one group will cause conflict with relationships with other groups (e.g., to be compassionate and

[8] For example, if intelligence reports indicate that a group of insurgents are going to invade a village and a platoon is deployed to defend the village and its residents [current obligation]. However, the officer in charge of that platoon reasons that instead of actively defending the village (which would put his own troops at risk, as well as possibly allow some insurgents to escape) they could instead evacuate the villagers and then wait for the insurgents to invade and set up camp. Once they had done so, he could then call in an airstrike on the village and eliminate that insurgent threat completely. While this alternate course of action would require the sacrificing of the village proper, it would also prevent this group of insurgents from invading any future villages and causing harm to the inhabitants [maximize future gains at cost of current obligation].

supportive of one individual requires that another individual be lied to; “steal from Peter to pay Paul” – good for Peter, bad for Paul).

There is another method for ethical decision making available, however, the CF does not include this as part of its DEP program: **case-based reasoning**. In case-based reasoning (or casuistry) the individual begins by determining the facts of the situation they are presented with (not a theoretical foundation as was the case in previous decision models) and from these extracts what they feel are the appropriate features that need to be considered. They then identify prior cases that are similar to the current situation in terms of these important facts, then extracts from those prior cases the rules that were used to come to a solution. These rules are then applied to the current situation to come to a decision. This type of reasoning is often used in legal proceedings when lawyers refer to precedent setting cases to show a parallel to situations in their current case. There are two potential problems with using this form of decision making, however. First, it draws upon anecdotal evidence and, as such, requires generalizations to be made which may overlook important differences between situations (similar does not mean the same; what was the right decision then may not be the right decision now). Second, for case-based reasoning to work, there needs to have been at least one similar prior case to refer back to for guidance. In the absence of a prior case, the individual is forced to make use of one the aforementioned theoretical foundations (i.e., rules-based, consequence-based, etc.) to determine the correct course of action. These shortcomings may be part of the reason that the DND and CF do not offer case-based reasoning as part of their DEP program.

According to the DEP model, once the individual has weighed the risks and benefits of their alternative options they must come to a **decision** as to how they will proceed, since "not acting is not an option" (Thomson et al., 2010, p. 27), and then **act** on that decision. Should individuals find themselves unable to come to a decision as to what is the correct course of action, or if they are uncertain as to the decision they have chosen, DEP recommends that they should discuss the situation with others who may be more qualified or trusted to decide to assist them.

It is important to note that while the stated goal for the DEP training program is to assist Defence Team members with "making the right choice," in practice it does not provide any specific direction as to which approach should be used in which situations (e.g., in matters of life or death, always use a consequences-based approach), as a result, there could potentially be multiple "right choices" depending on which approach a service member elected to use at the judgement stage. Similarly, the DEP model also does not provide direction with regards to how to select the correct action when different approaches yield outcomes that conflict with each other (i.e., there is no hierarchy to the approaches). Returning to the example of the officer who ordered the airstrike on the village, his selected action was rooted in consequences-based reasoning, however, by doing so he would violate the villagers right to life and freedom (legitimate-self-interest), it would also likely sacrifice the required relationship between the military and the civilian population that is required for ultimate mission success (care-based approach). It seems that, in practice, rather than providing a structured process from which service members can more easily make ethical decisions, the decision-making model as it is

taught in the DEP may actually serve to make determining what the "right choice" is more difficult.

Application of the DEP ethical decision-making model to PMIE

The first 2 scenarios are not true accounts of actual situations, but they do reflect situations in which members of the CF may find themselves while performing their duties. The final scenario is based on the findings of a DND/CF Board of Inquiry report relating to an actual situation experienced during a recent CF deployment overseas (Department of National Defence, 2016a). After each scenario the decision-making process taught to CF members will be applied, and the following three questions will be addressed: How well does the DEP provided training address this scenario? Could this situation reflect a PMIE? Does the provided training address the potentially morally injurious aspects of the scenario?

Scenario 1: Terrorist attack

A fighter pilot is patrolling the skies over Toronto in response to a recent terrorist attack that occurred in New York City involving commercial airliners that had been hijacked by terrorists. The fighter pilot has been issued Rules of Engagement (ROE) that allow him to engage and bring down any highjacked aircraft that poses a threat to a civilian target. The pilot has been advised that 5 terrorists have hijacked a small commuter aircraft with approximately 30 passengers and crew on board and is currently heading towards downtown Toronto. The pilot has just detected the aircraft, which is heading towards a major sports stadium where

approximately 30-thousand people are attending a baseball game. The pilot attempts to contact his control station to inform them of the plane's location and receive further instructions but, due to communication issues, is unable to do so. The pilot then attempts to contact the hijacked aircraft but received no response. It is clear to the pilot that the aircraft is heading towards the stadium and he must engage it immediately to prevent it crashing into the stadium.

Perception: *Is there anything ethically wrong in the situation? Who may be harmed/benefit from this situation? What are the relevant mission factors relating to this situation?* Yes, there is an ethical transgression possible, specifically, his requirement to uphold his mission (protect civilian targets) possibly puts him at odds with the requirement to uphold the principle of respecting the dignity of all people in that his actions or inactions will directly affect, that is, the lives of both the 30 passengers and crew on the plane and the 30-thousand spectators in the stadium. **Judgement:** *What are the alternatives the fighter pilot has available to him? What are the ramifications of each of these options?* The pilot has four options available to him: engage the plane, do not engage the plane, talk to his command to get more information, or talk to the plane's pilot to try and negotiate a safe landing somewhere. As mentioned earlier, not making a decision is not an option for a CF member, but even if it were, in this case, to not decide would yield the same results (i.e., plane hitting stadium) as deciding to not engage the plane. The pilot has already tried the latter two options to no avail, which leaves him with either engaging the plane or not engaging the plane, both of which violate the first

ethical principle of respecting the dignity of all people. If he elects to engage the commuter aircraft and shoot it down, he'd be violating the right to life of the passengers, crew, and terrorists; however, if he does not shoot the plane down, he is risking the lives of the 30-thousand people in the stadium. The pilot could conclude that, whichever course of action he chooses (engage or not engage the plane), the lives of the passengers and crew on the commuter plane will be lost, so their lives should not be a factor in his decision. However, this would imply that their lives have no value and that they are expendable, which would also violate the first principle (Respect the dignity of all people). Since both options available to the pilot will result in the deaths of people, they both violate key components of the ethical decision-making models taught to CF members: Rule-based/Kantian ethics would be violated in that to engage the plane would result in the passengers and crew being treated as if they are mere means to an end (i.e., saving the 30-thousand in the stadium), and doing so would then necessitate that all future planes be shot down (or not shot down) should similar situations be present. Legitimate-self-interest reasoning would be violated in that the rights of the individuals to live is violated, and care-based reasoning is violated in that the trust of the passengers and crew that they are safe is lost as well as shooting the plane down could be seen as not showing compassion to their plight (i.e., they are in a situation not of their choosing, yet they will end up paying with their lives).

In contrast, if the pilot were to utilize a consequences-based ethical reasoning process, while engaging the plane would lead to the inevitable deaths of the people on board, to not engage the plane might lead to the deaths of a larger number of people in the stadium should the plane crash there (i.e., only a single individual needs to die in the

stadium to tip the ethical balance in favour of engaging the aircraft), so engaging the plane would seem to be the correct choice for the pilot to make. As well, to engage the plane would also allow the pilot to fulfil his responsibilities to the second and third principles of Serving Canada before Self, and Obeying Lawful Authority. Not engaging the plane would violate both of these principles in that it would put the lives of Canadians at risk and the pilot would be disobeying his orders to eliminate threats to civilian targets, respectfully.

The pilot having now decided upon his potential course of action (engage the plane), must check to see if taking this action would violate any of the values and ethics outlined in the *Statement of Defence Ethics* (integrity, loyalty, courage, stewardship, and excellence) or the additional values of duty and honour key to the military ethos. While this decision wouldn't violate most of the held values, the military value of honour may be violated, in that honour in part insists that "all non-combatants be protected and accorded the dignity and other considerations that their situations may entitle them to" (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003, p. 32). Upholding this value, however, would raise the same conflicts as outlined for the first principle (respecting the dignity of all people), as the harm caused to civilians is inevitable if the pilot is to fulfil his mission requirements (protection of the Canadian populace), which he must, or he violates the third principle (obeying lawful authority).

Action: Engage the commuter plane before it can crash into stadium.

How well does the DEP training address this scenario? If the scenario was viewed as an abstract, thought exercise, the DEP training could be applied fairly easily; the pilot had all the information he would need to make his decision, and he would have received

sufficient training to weight the pros and cons of various choices and ultimately be able to come to the "right answer" that the training demands. A major obstacle even in this application, however, stems from the nature of the decision being made; it will result in the death of innocent civilians either way. It is an operational reality for members of the military that their decisions can sometimes be the difference between life and death for themselves and others, and as such, the first principle (respect the dignity of all persons) will be violated. From a practical point of view, however, the DEP model (perceive, judge, decide, act) is too time consuming to actually be applied as taught to this situation. While the pilot is trying to generate alternative courses of action, weighing the pros and cons of each, then comparing of these each of these options against the set of principles and values prescribed in the *Statement of Defence Ethics* to be sure that none of these are violated, and trying to resolve any violations that might have arisen, the commuter plane is getting closer and closer to the shore and the concomitant risk to the population is ever increasing and his window to act with minimal casualties is closing.

Could this situation reflect a PMIE? The scenario described could still lead to the fighter pilot experiencing a moral injury, even though they did exactly what they were trained to do, how they were trained to do it. This is because the potential for injury stems not from what they did, but what they feel they should have done and what aspects of the situation they ultimately choose to focus on. By engaging the commuter plane and shooting it down the pilot may focus on the 30-thousand people in the stadium that were potentially saved, and the elimination of the associated pain and suffering their families would have experienced from their deaths. Alternately, the pilot might instead focus on the lives of the innocent people on the plane who died as a direct result of the decision and associated

action he took. Maybe if he had shot somewhere different, he would have crippled the plane and it would have been forced to ditch in the water. Maybe if he had tried to contact the plane just one more time he might have gotten through and been able to negotiate with the terrorists. Ultimately, the number of ways the pilot could reinterpret the situation and the choice he made is limited only by the depth and degree to which he wishes to re-examine it.

Does the training provided to CF members affect the possible development of moral injury in this scenario? Based on the documents available to review, there appears to be minimal training provided that would affect either the pilot's resilience to moral injury (i.e., to increase resistance to developing it), or their ability to deal with the aftermath of the choice he made.

Scenario 2: Child Soldier

A unit is on foot patrol through a village where intelligence indicates that insurgents have set up camp. As they enter the town square they come under fire from the doorways and windows of the surrounding buildings. A private opens fire at one of these doorways and the shooting from that location stops. The firefight continues for a while longer, but eventually ends, and the unit begins to sweep the buildings for remaining insurgents. The private is the first through the door she shot at and she immediately comes across the body of a boy, no more than 11 or 12 years old, who has been shot; an assault rifle is laying by his side. The private realizes that she is likely the person who shot him.

Perception: *Is there anything ethically wrong in the situation? Who may be harmed/benefit from this situation? What are the relevant mission factors relating to this situation?* Whether or not there is anything ethically wrong with the situation depends on whether the child-soldier is seen to be a "child" or a "soldier." If they are viewed as a child, then yes there is something ethically wrong with the killing of children; however, if they are viewed as a soldier, then the killing of an enemy combatant during a firefight is acceptable, and there is nothing ethically wrong. At the time the decision was made (i.e., during the firefight), however, the child-soldier was attempting to cause grievous harm to members of the unit and in this role, would be considered to have been a soldier.

How well does the DEP training address this scenario? As the DEP program teaches a model designed to assist with decision making, and the decision to engage the hostile had already been made and acted upon during the firefight, the model as taught is not actually applicable to this situation. Similar to the scenario with the hijacked plane, time for evaluation of possible alternative courses of action was not available as any hesitation in a firefight on her part could have led to the death or serious injury of unit members or herself at the hands of an insurgent. Part of the reason that soldiers devote so much time drilling with their weapons and practicing tactics is to make their actions and reactions during stressful situations automatic; identify threat, eliminate threat. The DEP is by design a thought-driven process, and as such, could potentially be seen as a hinderance rather than a help in a firefight in that it could derail the tactical training service members have received and slow their reactions.

Could this situation reflect a PMIE? This scenario contains within it the potential for a conflict between the private's beliefs about appropriate actions that can be taken during a

firefight (identify threat, eliminate threat), what her duty is with regards to children (children are to be protected), and the rules of war including the Geneva conventions which prohibit the use of children in combat ("Geneva Conventions," 1949); so the child should not have been in the firefight at all. Again, a moral injury is not caused by the traumatic or transgressive event itself, but rather the individual's processing of the event. The insurgent that she shot during the firefight turned out to be a child, and if her reprocessing of the event becomes fixated on that aspect of the situation, to the exclusion of the other aspects (e.g., he was trying to harm her and the members of her unit), this scenario has the potential to become a PMIE. If she manages to not fixate on the insurgent's age, however, the likelihood of her developing a moral injury may be lessened.

Does the training provided to CF members affect the possible development of moral injury in this scenario? Based on the documents available to review, there appears to be minimal training provided that would affect either the soldier's resilience to moral injury (i.e., to increase resistance to developing it), or their ability to deal with the aftermath of the choice she made.

Scenario 3: Abuse of a minor[9]

> *While deployed as part of a NATO contingent to [country], a group of soldiers witness what appears to be the sexual assault of a minor by members of the [Country] National Security Force. Not sure what they are allowed to do in such situations under their Rules of Engagement (ROE),*

[9] Adapted from (Department of National Defence, 2016a)

they report what they observed to their commanding officer. The commander informs them that others have told him that they too have witnessed actual or suspected sexual assaults by members of the [Country] National Security Force, but the rules currently in place were unclear as to how they should proceed in this situation: While the CF Use of Force Manual would allow soldiers to intervene if a serious crime was being committed, sex with a minor didn't meet the "serious bodily harm" criteria required for them to do so. This was in part due to the use in the CF Use of Force Manual of outdated "rape terminology" (i.e., rape only applies when a man subjects a woman who is not his wife to sexual intercourse against her will), which is not as inclusive as the term "sexual assault" which would apply to everyone irrespective of age, gender, or marital status. As well, Canadian Forces (CF) members have no authority to enforce International, Canadian, or [country] laws against [country] citizens; this is the responsibility of the [country] government. Finally, there was no procedure in place at the time regarding reporting national-on-national crimes to the [country] government (i.e., how to report it, and who to report it to, since the suspected abusers were representatives of the country's government, sometimes including members of law enforcement), and even if there were procedures, such reporting is only required if the human rights abuses would fall under violations of the Law of Armed Combat (LOAC), which sexual assault of a minor would not, since it's not combat related. The commander reminds the soldiers that in order for the larger mission to

> *be successful, the NATO forces need to be able to work alongside the [Country] National Security Force as they will eventually be the group responsible for the nation's security once the NATO mission ends and the troops have withdrawn. The soldiers leave their commanders office no clearer on how they should proceed should they encounter a similar situation again. While there doesn't seem to be any rules that would prevent them from intervening in the future, if they chose to do so, their intervention would carry no legal weight under the rules that did exist and, as a result, there would be nothing that would prevent the abuser(s) from doing it again when the soldiers were not around to witness it. As well, intervening might put the larger mission goals in jeopardy due to the potential for loss of trust between the NATO forces and the [Country] National Security Force.*

Perception: *Is there anything ethically wrong in the situation? Who may be harmed/benefit from this situation? What are the relevant mission factors relating to this situation?* Yes, conflict exists between what CF members believe they should do (intervene), and what it appears they can do under the rules in place. The child/children being abused by the National Security Forces are being harmed by the activity, but to intervene may be ineffective and possibly jeopardize the larger mission by turning the National Security Force against the NATO force members. **Judgement:** *What are the alternatives that these soldiers have available to them? What are the ramifications of each of these options?* The soldiers have two options available to them, since not

intervening and not reporting the incident are not options: intervene in the situation directly to stop the abuse should they witness it again and report the incident to their commander, or not intervene but still report it to their commander (observe and report). If they elect to intervene, they will fulfil the first principle (respect dignity of all people) since they will be stopping the assault on a child, and they will be upholding Canadian values and be acting in the public's interest (serve Canada before self). However, if they elected to follow a rules-based approach, the rules that they are to operate under while deployed to [country] do not seem to support their intervention, but neither do they expressly prohibit it, so it is unclear if intervening would or would not violate the principle of obeying lawful authority; overall, a rules-based approach would likely not be useful in this situation. If the soldiers elected to use a legitimate self-interest approach, based on the fact that children have a right to be free of abuse, this may also be of limited utility. As part of their pre-deployment mission orientation, CF members receive information about some of the cultural differences that are present in the countries they will be deployed to (Department of National Defence, 2016a). For example, the status of women and what constitutes culturally acceptable behaviour towards them in [country] differs dramatically from what is considered acceptable in most western countries who would have supplied NATO troops; information regarding what would constitute an illegal act with regards to minors was not covered, however, so it is unknown to the soldiers what the rights of the child are in [country].[10] As well, to intervene to stop the behaviour could conceivably be considered to be disrespectful of the country's culture,

[10] According to the DND/CF Board of Inquiry report (Department of National Defence, 2016a), any sexual act with a minor is illegal under international, Canadian, [country], and Islamic law. CF members, however, still have no authority to enforce these laws against [country] citizenry, as this is the responsibility of the [country] government.

beliefs, and practices (which would also violate a prime tenet of a care-based approach) which could in turn lead to a possible loss of trust between the CF/NATO troops and civilian nationals and the National Security Force. Using a consequences-based approach, while it might be possible to save the child being abused for the moment, the future consequences of doing so are unknown. Since the CF members have no means to keep the child safe after intervening (i.e., they cannot take the child away), they will need to release the child again which could lead to their being subjected to even more extensive abuse later on when the CF members are not around in retaliation for the soldiers' interference. As the National Security Force members doing the abusing are unlikely to appreciate the NATO soldiers intervening, this could create animosity between the two forces and put NATO soldiers at risk when they are in the field together with National Security Forces (e.g., retaliation by National Security Force members in the form of slower response times, indiscriminate shooting leading to "friendly fire" incidents, or "fragging" – the deliberate killing of one soldier by another on the same side), as well as increase the potential for loss of civilian lives. This possible loss of trust with the National Security Force and potential for increased risk of harm would run counter to the stated mission goals, which could be seen as violating lawful authority (principle three).

If the soldiers elect to not intervene directly but instead only report what they witnessed to their commander, this may or may not fulfil the first two principles depending on how the commander chooses to proceed. If the commander elects to take direct action, for example, by issuing orders regarding what the soldiers should do in this situation, it would then allow all subordinate soldiers to meet all three of the required

ethical principles since they would have a clear, lawful authority (i.e., order) to obey. [11] However, the commanding officer is then putting themselves in the potentially ethically conflicted position; if they issue an order (be that to intervene or not intervene) that is not supported by the any of the established rules that the mission is to operate under, they may not be upholding the principle of obeying lawful authority, which could lead to the same aforementioned issues that may affect the mission. If the commander elects not to take a direct action (e.g., just file a report with his own superiors), then their subordinates are in the same potentially conflicted position as outlined previously. **Action:** As the actions taken or not taken in this situation can have potential wide-reaching repercussions (e.g., for the mission, the relationships with the local citizenry and the country's government), the power to select the appropriate action may be beyond the abilities of the front-line soldiers. This would make deferring to their superior (until clear direction can be given) the ethically correct action to take. Alternatively, since the principles taught as part of the DEP are listed in order of precedent, with respecting the dignity of all people being foremost, the soldiers could see this as indicating that they would need to intervene to stop the abuse should they witness it in the future (the child must be protected), even though doing so may carry no legal weight and cause issues with completing their mission, and they may be called upon to answer for their choice should it be challenged later on.

[11] This was what happened in one of the situations that this case is based upon; the commanding officer (CO) issued an order stating that if similar events were witnessed, service members were to intervene and report the act up the chain of command. Unfortunately, this CO only issued the orders to his troops verbally so there was no official record of the orders and they were not passed on to the next group of soldiers deployed to the area (Department of National Defence, 2016a).

How well does the DEP training address this scenario? Unlike was the case in the previous two scenarios where the fighter pilot and the private were empowered to make the choices they did, in this scenario, even if they could utilize the DEP decision-making process they were taught, their ability to take the action decided upon is in question. After they came upon the scene initially the soldiers were unclear as to how they should proceed, so they elected to discuss the situation with someone who was more qualified to decide, their commanding officer, as they are instructed to by the DEP. Issues arise in that their commanding officer was unable to provide them with direction since the assorted rules that should dictate appropriate behaviour are confused and vague. In this way, the difficulty in implementation does not actually stem from the DEP decision-making process itself, but a lack of useful information to draw upon to make the decision. If, for example, the ROE, LOAC, or CF Use of Force Manual empowered soldiers to intervene and lay charges against the abusers in these situations, then the soldiers would be able to determine what they should do using the DEP process and prevent the abuse from continuing.

Could this situation reflect a PMIE? As presented, the vagueness and confusion created by the ROE and other rules currently in place may directly conflict with what the soldiers see as their duty, that is to protect civilians from harm. The way the rules are structured now, however, creates a difficult situation: if they intervene, they save the child for the moment but possibly risk jeopardizing the mission, which could cost lives in the future. If they do not intervene, the greater mission may succeed but it is done at the physical, mental, and emotional cost of the children who will likely continue to be abused. This conflict could lead to the development of a moral injury for those involved as the soldiers

may view it as a betrayal of their personal and professional principles by those who wrote the rules (e.g., NATO or the CF) and potentially their commanding officer for reinforcing those rules, as the rules force the soldiers to choose between doing "what's right" and fulfilling their mission.

Does the provided training address the potentially morally injurious aspects of the scenario? Based on the documents available to review, there appears to be minimal training provided that would affect either the soldier's resilience to moral injury (i.e., to increase resistance to developing it), or their ability to deal with the aftermath of the choices made.

Observations relating to CF preparation for PMIE

The review of the obtained documents relating to the training provided by the DND and CF around psychological tolls that exposure to PMIE can have on service members during deployment and the extent to which the ethics and values training provided are applicable to potentially morally injurious situations has led to the following observations. First, and possibly most importantly, the key reference document that outlines the standards against which members of the DND and CF ethical behaviour will be judged, the *DND and CF Code of Values and Ethics* (Department of National Defence, 2012), is missing the chapter that relates specifically to ethical behaviour while on operations; likely the most important chapter for members of the CF. Since this document came into force in June 2012, members of the CF have taken part in over 50 operations (Department of National Defence, 2018) including 11 operations to areas where encountering hostile resistance is possible (e.g., the UN Missions to the Republic of South Sudan, and the Democratic Republic of the Congo). The Government of

Canada's recent decisions to supply troops in support of the UN Peacekeeping Mission in Mali and the NATO mission to Iraq to combat Daesh (a.k.a., the Islamic State in Iraq and the Levant (ISIL) and Islamic State in Iraq and al-Sham (ISIS)), would bring this total to 13 operations. A recent report from the Secretary-General of the UN has identified both these countries as locations where children have been used as combatants (United Nations General Assembly Security Council, 2017), which dramatically increases the likelihood that children will be killed by CF members in the course of their duties. This same report documents that the recruitment and use of children in combat roles is not limited to just insurgent groups; there were 11 UN-verified cases attributed to the Afghan National Defence and Security Forces in 2015 alone. As stated earlier, in the absence of the direction provided by the missing chapter, CF members are instructed to utilize the contents of the remaining sections of the *DND and CF Code of Values and Ethics*, *Duty with Honour: The profession of arms in Canada* (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003), and related key doctrines to guide their behaviour while on operations (S. Hare, personal communication, 10 February 2017). As demonstrated in Scenario 3 (Abuse of a minor), following this direction is not always as straightforward as it should be when there are multiple sets of rules in place simultaneously. This can be particularly problematic when forces are involved in multinational missions, like those conducted by the UN and NATO, where service members are governed by overarching mission rules and mandates in addition to the rules set out by their respective countries; rules which may conflict with each other (e.g., Country A views "waterboarding" as a legitimate technique to gain information from captured insurgents, while Country C considers the act to be torture, which makes its use

forbidden). Another example of the kinds of conflicts that having multiple systems of rules operating at the same time might be the UN mission to Rwanda. The UN mission was to be a Chapter VI peacekeeping mission (i.e., to assist parties in settling intra- and international disputes through the use of peaceful means such as negotiation, arbitration, and conciliation; (United Nations)), which would mean that the UN peacekeepers deployed were to remain neutral. This need for neutrality, however, also limits peacekeepers use of force to personal protection and prevents them from intervening to prevent harm to the country's citizenry; as doing so could be interpreted as "taking sides" in the conflict. So, if Scenario 3 were to have happened on a UN Chapter VI peacekeeping mission where the National Security Force was abusing a child from the other side of the conflict, the soldiers would have been expressly prohibited from intervening to stop the assault, irrespective of the instruction provided by the DEP around respecting the dignity of all people, which could create a PMIE for those soldiers involved.

Related to this first observation, what guidelines are provided to CF members around making ethical decisions seem to have limited utility in an operational environment. Problems such as these (i.e., where models work well in theory or in the abstract, but not in actual application) are not unique to the military but can also be seen in such areas as hospital bioethics as well. While all three types of defence ethics programmes discussed earlier provide guidance regarding how to make an ethical decision, in contrast with compliance- and prevention-based systems, the values-based system utilized by the DND and CF is more time intensive and knowledge dependant. Both compliance- and prevention-based programs provide a structure for the individual to

refer back to, which can focus the decision-making process on the relevant core elements that are key to determining what the "right decision" might be; there is only one possible approach to use to interpret the situation. While these systems have their own flaws, those flaws have more to do with the practical issues associated with using a given process (e.g., the sheer number of rules required, or the specificity of who those the rules apply to) than the decision-making process itself. With a values-based system, in contrast, it is the decision-making process itself that leads to the bottleneck. As shown in Scenarios 1 and 2 (Terrorist Attack, and Child Soldier, respectively), operational decisions often need to be made in a near instantaneous manner as dire consequences may result from hesitation. In order to properly apply the decision-making model taught in the DEP, the service member needs both a detailed understanding of the philosophical underpinnings of each approach (rules-, consequence-, legitimate self-interest-, and care-based) so that they can attempt to select the best one, and the time to weight the respective advantages and disadvantages of each possible course of action according to each of these approaches.

Another potential shortcoming of the DEP process is that it provides no specific direction to the individual. Consequently, the decision the individual makes can be subjective; another individual confronted with the same situation and information could potentially come to a different decision, and both individuals could be equally correct, or incorrect, as the case may be. This less than ideal model fit for operational environments may stem in part from the DEP training being designed to be applicable to both civilian (DND) and military (CF) members of the Defence Team, which may ignore the differences inherent in the roles the two groups perform (bureaucratic/governmental

versus combat operations) and the possible ramifications of making the wrong choice (DND – money is wasted, versus CF – people may die). For non-operational ethical decision-making situations where time limitations do not factor in in the same way (e.g., should someone report a colleague for taking stationary supplies from the office for their own use), or for judging the appropriateness of an operational decision after the fact (e.g., in a court-martial setting), the model taught may have some applicability. This criticism has been raised by others (e.g., Sanschagrin, 2006; Woodgate, 2004) about previous versions of the DEP and may partially underpin the current redevelopment of the program, and the associated delay in the development of the chapter specifically related to operational ethics, to make it more operationally applicable.

From a practical point of view, the decision-making process has potential limitations when applied to situations that would constitute PMIEs. First, the process requires that the individual have all the information required to make their decision available to them at the time they need to make the decision. If Scenario 1 (Terrorist attack) were rewritten such that the fighter pilot was advised that terrorists stole the commuter plane but there are no passengers or crew on board, then the right decision becomes clearer: he should engage the plane and eliminate the threat. If the scenario was rewritten such that the pilot was advised that the commuter plane posed no threat, and he was able to confirm this with the plane's pilot via radio, his decision also becomes clearer: do not engage the plane and allow it instead to land. What about if the pilot had no information about who is on the plane or what their intentions are, and he cannot raise them on the radio? The plane could conceivably contain only civilians (no threat), civilians and terrorists (threat), or only terrorists (threat), the fighter pilot has no

information on which to base his decision. In this situation, the fighter pilot would need to proceed as if the plane posed a threat and engage it in order to save the people in the stadium, since to do nothing would potentially put the stadium goers' lives at risk. The information he required to determine what the right decision is only becomes available to him after the fact when the wreckage is examined, and the presence or absence of terrorists is established. If there turns out to have been no terrorists on board, the pilot now has to live with the knowledge he shot down a plane that was of no threat and he killed innocent civilians; a PMIE.

A second limitation is that the DEP content is only applicable to situations in which the individual has the ability to affect the outcome. As outlined by Litz (Litz et al., 2009), in addition to situations where the morally injured individual is the perpetrator of the PMIE, moral injuries can also be caused by witnessing or learning about potentially transgressive events after the fact, when the individual has no ability to affect the outcome. Based on the documents reviewed, it appears that the DND and CF believe that their training as it exists currently is sufficient to allow its service members to deal with these circumstances and make the "right choice" when called upon to do so. The training provided, however, may only be useful for a narrow band of situations, operational requirements, often exist outside this narrow band which makes the training inapplicable to some of the problems encountered as was shown in applying the decision-making model to the situations described earlier. In particular, the DEP provides little if any training regarding how service members should best react to situations in which they may be unable to do "the right thing" either because injurious event already happened, they

are not empowered to affect the outcome, or conflicting rules makes determining what the right decision is unclear.

The DEP program structures its training in such a way as to teach steps required for individuals to make the right decision, but when it comes to being applied in an operational setting, it may be better viewed as teaching what steps to take in order to *not make the wrong decision*. The difference between the two (making the "right choice" versus "not making the wrong choice") is subtle but important; just because an individual didn't do anything wrong does not mean what they did was right. In the last iteration of the terrorist attack scenario, the pilot didn't do anything wrong (ethically) by shooting down the plane but, based on the results (there were only civilians on board), he may feel that his decision was not the right one. The same would be true for the private in the child soldier scenario; she didn't do anything wrong (ethically) by engaging a hostile during the firefight, but she may still feel she did when she discovers that it was a child doing the shooting. The disconnect between these two interpretations of the rightness of the act could be seen as a difference in how the act is framed by those involved: the DND/CF would view the actions from within an ethical frame, while the pilot and private potentially view, and later may re-evaluate them from within their own personal, moral frames.

Ethics as taught by the DEP seems to be an organizational-level ethics, an ethics designed to be applied the same way by everyone, in which some behaviours are identified as being allowed while others are identified as being prohibited.[12] In this way, the application of ethics can be an objective and impersonal process where the opinions

[12] Stating that behaviour "A" is not allowed (e.g., kicking puppies), by extension, the opposite behaviour (not A) is allowed (i.e., not kicking puppies).

and values of the individual regarding a given course of action need not enter into the decision-making process so long as all the requisite steps are applied. In this application of ethics, some behaviours are deemed to be wrong because they are prohibited (i.e., they are against the established rules; *mala prohibita*). Morality, in contrast, relates to a personal set of values that the individual holds for themselves and, to a limited extent, for others. This does not mean, however, that moral beliefs are unique to each individual as some beliefs may be common to many people (e.g., the killing of children is wrong, kicking puppies is wrong); some actions are *mala in se* (wrong in themselves). The belief that there are some actions that are "just wrong" contains within it a comparison against a standard that transcends ethics, a standard that the individuals involved may see as one that *cannot* be violated. It is this comparison that may lay at the heart of moral evaluations and moral injury; some behaviours are wrong because they are prohibited (ethics), while others are prohibited because they are wrong (morality); believing that the latter prohibition has been violated is what underlies moral injury.

In scenario 2 (child soldier), if the private had instead made the wrong ethical choice (e.g., she had seen that the shooter was a child, elected not to shoot, and a unit member died as a result) and there was an investigation, she would likely be judged severely by the CF (and potentially herself as well) because she failed in her duty to protect fellow unit members by engaging an insurgent; the child-soldier is viewed as a soldier from the frame of ethics. The way the scenario was written, the private does shoot at the insurgent and later realizes that she is responsible for the death of a child causing a conflict within herself. The source of this conflict is her belief that killing children is *mala in se*; the facts that she was in a firefight and the child was shooting at

her unit, while relevant at the time she made her decision, are no longer relevant to her upon reflection since she is now comparing her actions against this inviolable higher standard and using this as the standard against which to make a moral judgement about the rightness or wrongness of her actions, and by extension, also judging herself as a person. While in areas other than the military the distinction between ethics and morality may be more academic, the military is an organization in which behaviour is highly governed by the application of rules and regulations, so the distinction between ethics and morality may be of greater importance. Service members, in essence, serve two masters: as members of the military on deployment they operate as parts of a larger machine with their behaviour is governed by rules and regulations (ethics) meant to ensure mission success. However, they still remain individuals in their own right and as such, are also governed by, and judge themselves according to, their own core beliefs (morality).

While the DEP predominantly uses the term "ethics" and speaks of "ethical decision-making," it also uses the term "morality" in some places (e.g., in their definition of courage: "Facing challenges, whether physical or moral, with determination and strength of character" (Department of National Defence, 2012, p. 10)), and at other times uses "ethical and moral;" yet the DEP does not define these terms in any of the reviewed documents so that the distinction between them is made clear. This may partially be a result of the programme's more superficial coverage of some core philosophical concepts to ensure maximum understanding of programme participants; they assume that the participants understand at a visceral level that the two concepts (ethics and morality) differ, even if they cannot explain precisely how they differ in words.[13] This assumed

[13] If a person as done something that is "unethical," participants understand that this is bad (i.e., it is wrong because it is prohibited); the person broke an established rule. But if a person has done

intuitive understanding may make their codification into specific guidelines especially challenging (Mileham, 2016). By using both terms interchangeably in their instruction and course materials, however, the DEP risks creating the appearance that the two terms are synonymous and glossing over the inherent, viscerally understood, differences between the two concepts. By extension, this confusing of terms might be indicative of a belief within the DND/CF that the ethics-focussed training they provide to their service members will also assist them in making morally correct decisions, and as such, pre-empt the development of a moral injury. As the scenarios demonstrate, this assumption may not be true; individuals can make ethically correct actions (i.e., decisions resulting from working through the ethical decision-making process) yet still sustain a moral injury as a result of their choices.

This would seem to indicate that ethics and morality may exist as separate entities, thereby creating a four-quadrant structure where "ethical-unethical" behaviour exists on one axis, and "moral-immoral" behaviour on another (Figure 2.2). Operational behaviours that would be both ethical and moral (quadrant A) could include such behaviours as neutralizing a suicide bomber before they can detonate their vest, these would be the least likely to be considered a PMIE. Ethical but potentially immoral behaviours (quadrant B) could include acts such as shooting an individual running at a checkpoint who's intent at the time was unknown but upon post-incident investigation was found to not have hostile intent (i.e., an innocent); if this person was found to have been carrying a bomb, however, then the act would fall into quadrant A – ethical and moral. Quadrant B behaviours would generally be considered to be PMIE. Quadrant C

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something that is "immoral," participants understand that this is qualitatively different (i.e., it is prohibited because it is wrong); the person broke a rule that *cannot* be broken.

(unethical but moral) would contain acts such as shooting an enemy combatant who is fatally wounded but would die slowly and in immense pain (i.e., battlefield mercy killing, the deliberate taking of the life of another on the field of battle where the killer's intent

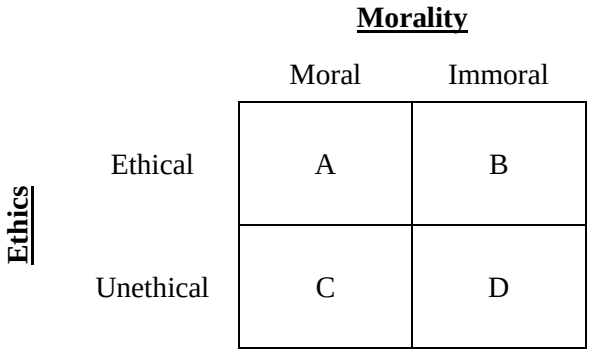

Figure 2.2. Four quadrants Ethical – Moral behaviour model

claims to be one of mercy towards the person killed.)[14] As the service member's intent was to end the individual's suffering, it is likely that they would also consider the action to have been morally correct, so it is unlikely to be considered a PMIE. This having been said, the behaviour is likely be the subject of disciplinary or even court-martial proceedings due to its illegality. Finally, behaviours that would be placed in quadrant D (unethical and immoral), such as the massacre at My Lai during the Vietnam War, would also be considered to be PMIE however, the individual involved may not realize the immorality of their actions until much later.

[14] Under the Geneva Conventions, battlefield mercy killings are illegal. Incapacitated individuals (by injury, or being unconsciousness), and those who have formally surrendered, are considered no longer to be a threat and are not to be harmed ("Geneva Conventions," 1949). The behaviour does still occur, however (Deakin, 2013; Friscolanti, 2010).

Recommendations for ways to improve DND/CF preparation for PMIE

Based on the documents available for review, as it is designed and implemented currently, neither the R2MR nor the DEP seems to provide CF service members with sufficient preparation to deal with the kinds of potentially morally injurious situations they may encounter on a contemporary military deployment. This being said, there is no reason this needs to continue to be the case going forward. First and foremost, the DND and CF needs to complete and release the missing chapter from *DND and CF Code of Values and Ethics* (Department of National Defence, 2012) that relates to values and ethics in operations. As the situations encountered on both combat and peace-support operations are constantly changing, sometimes even from one encounter to the next, creating a guidance document that will cover all eventualities will not be an easy task. This being said, it can be argued that some guidance is better than no guidance at all, which is the current state of the document it seems; documents can always be updated or amended as situations change. Second, in light of the increasing possibility for encountering potentially morally injurious events while on deployment, it would be beneficial for the DEP to provide definitions of the terms "ethics" and "morality" (and their derivatives) in their training programs so participants are clear on their respective meanings and contexts for use, as well as being able to accurately identify when a situation requires an ethical or a moral decision be made. Alternately, the DND/CF could remove references to morality from its training and guidance documents completely so that it becomes clear to participants and instructors alike that the training provided is only designed to address ethical dilemmas. It is important to note that not every ethical question is necessarily a dilemma (i.e., a situation where an individual is required to make

a choice between two or more equal alternatives where making the choice requires a compromise be made that is undesirable). Moral questions, in contrast, generally are also dilemmas due to the deeply held and absolute nature inherent in these beliefs. Third, the DEP could incorporate into their training scenarios situations that are more reflective of the types of situations service members might encounter on deployment. These could include situations where multiple sets of equally valid ethical rules conflict with each other (an ethical dilemma) and the service member needs to determine which rules they will follow and be able to justify why they made that choice; situations where there is no possibility of achieving a positive outcome no matter what choice they make (i.e., no-win situation); or situations where following the ethical decision-making model they are taught will lead them to making a decision that would be considered to be morally incorrect. By introducing these situations into training in a safe, controlled environment, the service members will gain exposure to the inherent conflicts (personal and procedural) before they encounter them in the field; similar to how they are instructed in mental rehearsal as part of their resilience training. Finally, with regards to the mental health and resilience, include training in basic coping mechanisms (e.g., positive self-talk, focussing on the facts of the situation) specifically focussed on encounters with a PMIE while deployed so they are better prepared for dealing with the feelings of conflict should they arise, thus potentially blunting some of the psychic impact that can result.

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Chapter 3

Prevalence Rate of Potentially Morally Injurious Events (PMIE) in CF members

For the 50 years following the Korean War the Canadian Armed Forces (CF) have predominantly been deployed internationally on multinational peace support operations (i.e., peace-making, peace building, peace enforcement, peace keeping, and monitoring) and humanitarian aid missions to areas of the globe affected by disasters, both natural and man-made. While peace support was to be the intended foci of these missions, this does not mean that CF members did not occasionally have to also engage in combat while deployed. During the UN protection mission to Bosnia-Herzegovina (1992 to 1995), for example, Canadian troops were deployed to supervise the removal of heavy weapons from major cities, protect non-combatants and maintain security of UN protected areas, reopen the airport in Sarajevo to allow humanitarian aid flights to come in, and to protect these aid convoys from hostiles (Department of National Defence, 2016; Department of Public Information - United Nations, 2016). They would, however, come under fire from both major parties in the conflict and a variety of non-governmental paramilitary groups using indiscriminate shelling of the cities and UN protected areas, and snipers intentionally targeting civilians and UN troops, to achieve their respective ends. As a result, the Canadian troops were required to respond to protect both the civilians and themselves. As well as violating the internationally recognized rules of war (i.e., the Geneva Conventions, Laws of Armed Conflict, International Humanitarian Law (Legal Information Institute, 2018)), these behaviours also exposed Canadian soldiers to situations they had rarely witnessed previously including mass graves, genocide, and

other acts that would later be classified as crimes against humanity (United Nations, 2017).

This predominant focus on multinational peace support missions changed in October 2001, however, when the CF were deployed to Afghanistan as part of operations focussed on the identification and neutralization of members of al-Qaeda believed to be hiding in the country, as well as the overthrowing of the Taliban regime that was supportive of international terrorism (Public Safety Canada, 2018); the CF members were deployed specifically in a combat role (i.e., for war). Ultimately, the CF would remain in the region for the next 13 years and during this time would be engaged in a different kind of warfighting than they had encountered previously. As was the case with the UN deployment to Bosnia-Herzegovina, this deployment exposed CF members to combat situations for which they may have been unprepared, as well as exposing them to situations where what the 'morally correct' decision was either unclear or not available to them. These situations could include encountering a child pointing a rifle at them, or when quickly determining whether the individual who just stepped around the corner is a hostile combatant or an innocent civilian in the wrong place at the wrong time is impossible. Circumstances such as these have been postulated to lead to some service members experiencing a different type of combat injury; an injury caused by a transgression of that service member's core moral beliefs, beliefs about what is Right, Just, and Fair, about themselves, others, and the world as a whole.

The phenomenon was first termed "moral injury" by Shay (Shay, 1991, 2009) to describe the internal conflicts experienced by veterans as a result of what they encountered, and occasionally engaged in, during their participation in the Vietnam War.

These experiences, alternately referred to in the literature as potentially morally injurious experiences (PMIE; Litz et al., 2009) or as transgressive acts (Frankfurt & Frazier, 2016), have been defined with varying levels of specificity in recent years (e.g., Currier, Holland, & Malott, 2015; Drescher et al., 2011) but at their respective cores remains the formulation put forth by Litz and his colleagues: "the perpetration, failure to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations" (Litz et al., 2009). These PMIEs form the precursors for what may eventually manifest as a moral injury. Litz et al. goes on to stipulate that the moral injury itself is not caused by exposure to the PMIE, but rather a result of the individual's reprocessing of the event after the fact leading to a realization that some aspect of their moral belief system has been compromised or transgressed. This realization of the moral transgression then leads to the creation of dissonance or inner conflict for the individual which then manifests in the actual moral injury; in effect, it is the reprocessing and realization of the transgression that is the cause of the moral injury.

Predicting which individuals will go on to develop a moral injury after exposure to a transgressive event is a challenging prospect as what is and is not considered "morally permissible behaviour" can vary across culture, time, and context. Take for example the near universal belief that killing another person is an immoral act and, as such, should not be done. The killing of an enemy combatant in war, however, is allowable and is almost an expected behaviour for combat soldiers while for medical personnel, such action is only permissible in self-defence, and for a military chaplain never permissible. Individual differences also contribute to the complexities of defining morally permissible and impermissible behaviours in that what may violate one

individual's moral code may not violate another's. Another issue relates to rates of reporting and the concomitant prevalence rates. As outlined above, moral injury results from an internal conflict which requires the affected individual first admit to another person, such as a colleague, therapist, or chaplain, that they are conflicted and what the event was that lead to this conflict. Depending on the nature of the transgression involved, such an admission may bring with it the potential for interpersonal and legal consequences, including loss of the trust or respect of their colleagues, courts-martial, or potentially even prison time. The real or perceived risk of these outcomes may decrease the likelihood that individuals will report their moral conflict resulting in knowledge of who is affected and *what occurred* that led to the problem remaining unknown and unaddressed.

These issues have, until the recent development of specific scales to measure moral injury such as the Moral Injury Events Scale (MIES; Nash et al., 2013), Moral Injury Questionnaire – Military Version (MIQ-M; Currier, Holland, Drescher, & Foy, 2015), Expressions of Moral Injury Scale – Military Version (EMIS-M; Currier et al., 2017), and the Moral Injury Symptom Scale – Military Version (MISS-M; Koenig et al., 2017), necessitated that researchers approach the problem of moral injury by looking instead at rates of its precursor PMIE. Similar to with many diseases like influenza where exposure to the virus does not necessarily mean that the individual will develop the illness, if an individual does present with the illness, they must have been exposed to the virus; if a service member is to develop a moral injury, they first need to have been exposed to a PMIE.

Aim of this study

The CF does not currently collect information on either exposure to PMIE or rates of moral injury itself within its serving member or veteran's populations, so the prevalence rates for these events are not currently known. As such, this study set out to accomplish three tasks. First, to estimate the prevalence rate of PMIE exposure within a representative sample of CF members who served in support of the recent mission to Afghanistan. Second, validate the resulting group formations with regards to potential moral injury by comparing the groups on questions relating to common symptoms and behavioural expressions associated with having experienced a moral injury (e.g., anxiety, feelings of alienation, purposelessness, social withdrawal, and self-handicapping). Finally, using the groups created based on endorsement of questions indicative of potential PMIE exposure, determine if there are any sociodemographic, military, or deployment characteristics that may be related to said exposure.

Methods

Data source and study population

The data for this study was obtained from the *Canadian Forces Mental Health Survey* (CFMHS), conducted by Statistics Canada between April and August 2013 (Statistics Canada, 2014c). The CFMHS is a cross-sectional survey containing a range of questions relating both directly and indirectly to the mental health status of Canadian Armed Forces (CF) members. A subset of the population surveyed for the CFMHS (n = 4854) serves as the target population for this study, specifically, all regular and reserve force members of the CF who had been deployed in support of the mission to Afghanistan between 2001 and time of survey completion.

Sampling and data collection

For the CFMHS, Statistics Canada utilized a stratified random sampling framework (stratified by military rank) to ensure that the resultant sample would remain representative of the whole of the CF. In order to reinforce the confidentiality of the survey, interviews were conducted on-base by Statistics Canada personnel using a computer assisted personnel interview. These Statistics Canada personnel were neither affiliated with nor would they report back to the CF any responses received during survey administration.

Measures

Since the CFMHS was administered in 2013, several scales related to moral injury have been published (e.g., Moral Injury Events Scale (MIES; Nash et al., 2015), Moral Injury Questionnaire – Military Version (MIQ-M; Currier et al., 2017), Moral Injury Symptoms Scale – Military Version (MISS-M; Koenig et al., 2017), Expressions of Moral Injury Scale (EMIS-M; Currier et al., 2017)), however, these tools were not available at that time. As a result, for this study exposure to potentially morally injurious events (PMIE) was determined using a composite measure based on prevailing moral injury theory and questions from the psychometrically validated MIES and MIQ-M that referred specifically to PMIE as a guide. The resultant measure was composed of questions drawn from the Deployment Experiences (DEX) and Post-Traumatic Stress (PTS) modules of the CFMHS. The final list of questions selected was sent to a content expert for review and verification that they met the criteria for PMIE (B. Litz, personal communication, 03 August 2017).

The DEX questions[15] selected were DEX-2 "found yourself in a threatening situation where you were unable to respond because of rules of engagement;" DEX-4 "ever seen ill or injured women or children you were unable to help;" DEX-6 "ever felt responsible for the death of Canadian or allied personnel;" and DEX-8 "ever had difficulty distinguishing between combatants and non-combatants." Selected PTS questions included were PTS-25 "Have you ever done something that accidentally lead to serious injury or death of another person;" PTS-26 "Have you ever purposely injured, tortured, or killed another person;" and PTS-27 "Have you ever seen atrocities or massacres such as mutilated bodies or mass killings." In an effort to restrict participant inclusion to only those who had experienced PMIE during deployment(s), participants must have also endorsed one of the two following questions for the aforementioned PTS questions to be included in the measure: "Have you ever participated in combat, either as a member of the military, or as a member of an organized non-military group," or "Have you ever served as a peacekeeper or relief worker in a war zone or in a place where there was ongoing terror of people because of political, ethnic, religious, or other conflicts?" (PTS questions 1 and 2, respectively). Individuals who positively endorsed any of selected DEX or PTS questions were considered to have been exposed to a PMIE (PMIE+), the remaining participants were considered to have not been exposed to a PMIE (PMIE-).

The CFMHS also contains information relating to the sociodemographic and military characteristics of the participants at the time the survey was completed. This information includes the participants' age, sex, marital status, educational attainment,

[15] All DEX questions are preceded by "During any [Canadian Forces] deployment, have you …"

rank category (Junior Non-Commissioned Member (NCM) [Private to Master Corporal], Senior NCM [Sargent to Chief Warrant Officer], or Officer), component (regular force, reserve force), previous exposure to mental health training, and information relating to their Afghanistan deployment.

Statistical Analyses

Statistical analyses were conducted using SPSS 23 and STATA 15, with results being weighted and an alpha level set to 0.05. List-wise deletion was used to ensure all analyses were conducted on complete cases. Statistics Canada provided the final sample weights (adjusting for initial sampling weight, removal of outliers, and participant non-response) so that the estimates produced from the CFMHS data would be reflective of the entire Canadian Armed Forces population at time of survey (n = 68,866) and not just the sample (Statistics Canada, 2014a). A bootstrapping technique using sampling weights (500 bootstrap samples also provided by Statistics Canada) was used to account for the complex survey design (Statistics Canada, 2014d). Per Statistics Canada requirements for release of confidential data, all final cell counts were rounded to the nearest 20, so as to protect the identity of respondents. Descriptive statistics were calculated for each variable used in the analyses (e.g., socio-demographic, military, mental-health training, and deployment related characteristics), and used as covariates in logistic regressions conducted to explore the impact they had on exposure to PMIE. With regards to Mental Health Training, only the final composite question (i.e., "*Any mental health training in the last 5 years"*) was used as a covariate in the regression analysis. Adjusted Odds Ratios (AOR) were calculated for the logistic regressions rather than the usual regression

coefficient (i.e., β) to ease the interpretation of results. The AOR indicates the odds of a given outcome occurring (e.g., developing the flu) if the individual was exposed to a specific event or stimulus (e.g., receiving the flu shot) compared with the odds of the same outcome occurring without said exposure (e.g., not receiving the flu shot), when all other covariates (e.g., age, sex, marital status, etc.) are kept constant.

Ethics approval

The original data collection procedures for the survey and access to the resultant database containing the survey results were reviewed and approved by the relevant committees at Statistics Canada that serve these purposes in terms of ethical treatment of participants, following the principles detailed in the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans (TCPS-2). The Research Ethics Board of Western University provided a waiver for this study as it constitutes a secondary data analysis, which does not require an ethical review under TCPS-2.

Results

The weighted demographic, military, and deployment characteristics of survey respondents are presented in Table 3.1. Of those CF members who were deployed in support of the mission to Afghanistan, just over 86% were in the Regular Forces, 48% had ranks of Master-Corporal or below (i.e., Junior Non-Commissioned Member), and 51% had finished post-secondary education (i.e., college or university graduate). With regards to having received some form of mental health training in the five-years prior to survey administration, endorsement rates ranged from almost 14% (During trades training) to almost 64% (at the end of their deployment), with 84% indicating that they had received some mental health training during the stated time period. Almost two-

Table 3.1.
Demographic, Military, and Deployment Characteristics (Weighted N = 33,440)

Characteristic	Weighted %	95% CI
Sociodemographic		
Sex		
Male	89.20	88.20 – 90.20
Female	10.80	9.80 – 11.80
Age (years)		
19-24	4.06	3.43 – 4.69
25-34	36.58	35.23 – 37.92
35-44	34.43	33.11 – 35.74
45-54	22.98	21.79 – 24.16
55 and over	2.03	1.70 – 2.35
Marital Status		
Married or Common-law	72.73	71.42 – 74.04
Widowed, Separated, or Divorced	8.41	7.54 – 9.28
Single (never married)	18.85	17.73 – 19.98
Education		
Less than secondary school graduation	4.55	3.93 – 5.17
Secondary school graduate	28.90	27.48 – 30.33
Some post-secondary	9.22	8.32 – 10.11
Post-secondary graduation	51.23	49.66 – 52.79
More than post-secondary graduation	6.10	5.49 – 6.72
Military Factors		
Military Component		
Regular Forces	86.69	86.61 – 86.78
Reserve Forces	13.37	13.28 – 13.45
Rank Group*		
Junior NCM	48.21	47.74 – 48.68
Senior NCM	31.74	31.35 – 32.14
Officer	20.05	19.78 – 20.31
Mental Health Training last 5 years (endorsed)		
In preparation for CF deployment	58.92	57.47 – 60.38
At the end of CF deployment	63.71	62.26 – 65.17
Preparation for a higher rank	33.35	31.90 – 34.81
During trades training	13.89	12.81 – 14.98
By PSP personnel/health office	20.48	19.20 – 21.76
Routine training/professional development	46.83	45.27 – 48.38
Any mental health training in the last 5 years	*83.89*	*82.77 – 85.01*
Total number of days deployed to Afghanistan		
< 120 days	13.67	12.60 – 14.74
121 – 240 days	57.25	55.74 – 58.77
241 – 360 days	14.15	13.04 – 15.25
Over 361 days	14.93	13.85 – 16.00

Potentially Morally Injurious Events (PMIE)		
Exposure to any PMIE		
Not exposed (PMIE-)	34.84	33.37 – 36.32
Exposed (PMIE+)	65.21	63.74 – 66.68
Specific PMIE (endorsed experience)		
Accidentally caused serious injury or death of another person	6.11	5.31 – 6.92
Purposely injured, tortured, or killed another person	15.94	14.77 – 17.11
Saw atrocities or massacres	29.33	27.87 – 30.79
Found self in threatening situation where you were unable to respond due to ROE	35.41	33.90 – 36.92
Seen ill or injured women or children who you were unable to help	48.37	46.68 – 50.07
Felt responsible for the death of Canadian or allied personnel	8.41	7.48 – 9.35
Had difficulty distinguishing between combatants and non-combatants	43.55	41.87 – 45.24

Note: CF = Canadian Armed Forces, Junior NCM = Private to Master Corporal, NCM = non-commissioned member, PMIE = Potentially Morally Injurious Event, PSP = Personnel Support Program, ROE = Rules of Engagement, Senior NCM = Sargent to Chief Warrant Officer

thirds (65.21%) of deployed personnel indicated that they had experienced at least one event that could be considered a PMIE. This included 48.37% seeing ill or injured women and children that they were unable to help, 43.55% reported being in situations where they could not distinguish between combatants and non-combatants, and 35.41% reported finding themselves in threatening situations where they were unable to respond due to the rules of engagement (ROE) set out for the mission.

A comparison of available survey questions related to common symptoms and behavioural expressions by PMIE grouping is presented in Table 3.2. With the exception of a feeling of belonging to their community, the distributions of responses differed significantly between groups according to their PMIE exposure status (< 0.001 $p \leq$ 0.003).

Logistic regression models for exposure to any PMIE and component PMIE sub-questions are presented in Table 3.3. Variables found to be associated with a statistically significant increase in endorsement of any PMIE exposure (i.e., endorsement of any single PMIE sub-question) included being in the youngest age group relative to the oldest group (AOR: 2.08, 95% CI: 1.16 – 3.73), being a member of the Reserve Forces (AOR:1.46, 95% CI: 1.27 – 1.68), being in the Senior NCM rank group compared to being an Officer (AOR: 1.30, 95% CI: 1.07 – 1.59), having received any mental health training in the previous five years (AOR: 1.92, 95% CI: 1.61 – 2.29), and having a total number of days deployed to Afghanistan of longer than 121 days (AOR: 1.67 – 2.56; see Table 3.3 for respective confidence intervals). In comparison, being female (AOR: 0.44, 95% CI: 0.36 – 0.55) was associated with a statistically significant lower rate of PMIE endorsement. This statistically significant lower rate of PMIE endorsement for female service members was also found on all PMIE sub-questions with the exception of questions relating to seeing sick/injured women and children they were unable to help, and feeling responsible for the death of Canadian or allied personnel, which, while still a lower rate than for males, failed to reach statistical significance ($p = 0.086$, and $p = 0.743$, respectively).

Table 3.2
Common symptoms and behavioural expressions of moral injury

	PMIE -		PMIE +		
Characteristic or Behavioural Expression (CFMHS Variable Name)	**Proportion**	**95% CI**	**Proportion**	**95% CI**	***p* =**
Depression					
Feld sad/depressed in last month (DIS_10G)					
No	57.02	54.55 – 50.49	46.98	45.19 – 48.77	< 0.001
Yes	42.98	40.51 – 45.45	53.11	51.32 – 54.90	
Felt hopeless in last month (DIS_10D)					
No	84.08	82.23 – 85.92	74.20	72.52 – 75.88	< 0.001
Yes	15.75	13.91 – 17.60	25.71	24.03 – 27.39	
Felt worthless in last month (DIS_10J)					
No	87.99	86.29 – 89.70	82.43	80.98 – 83.89	< 0.001
Yes	12.01	10.30 – 13.71	17.57	16.11 – 19.02	
Depression; Received a positive screening for ~ (SCRDEP)					
Yes	57.53	55.00 – 60.07	67.40	65.90 – 69.21	< 0.001
No	42.47	3.94 – 45.00	32.60	30.79 – 34.41	
Anxiety					
Generalized Anxiety Disorder; Received a positive screening for ~ (SCRGAD)					
Yes	42.44	39.90 – 44.98	56.04	54.21 – 57.87	< 0.001
No	57.73	55.19 – 60.28	43.96	42.13 – 45.79	
Panic Disorder; Received a positive screening for ~ (SCRPAD)					
Yes	45.21	42.53 – 47.88	67.22	65.40 – 69.04	< 0.001
No	54.80	52.12 – 57.47	32.78	30.96 – 34.60	

Social Withdrawal					
In the past month, how often did you feel …					
That you belonged to a community (PMH_05)					
Every day or almost every day	59.00	56.41 – 61.61	56.99	55.23 – 58.74	0.320
About 1 to 3 times per week	21.27	19.16 – 23.39	21.42	19.89 – 22.95	
Once or twice a month, or never	19.73	17.64 – 21.81	21.60	20.42 – 23.16	
When dealing with stress, how often do you …					
Avoid being with people (STR_6_3)					
Often	7.38	6.02 – 8.73	13.28	11.95 – 14.61	< 0.001
Sometimes	33.62	31.18 – 36.06	35.35	33.49 – 37.21	
Rarely	35.68	33.17 – 38.19	33.70	31.92 – 35.48	
Never	23.16	20.96 – 25.35	17.58	16.28 – 18.92	
Sense of belonging to local community (GEN_10)					
Very strong	10.65	8.96 – 12.35	10.95	9.83 – 12.06	< 0.001
Somewhat strong	46.74	44.07 – 49.40	41.86	39.98 – 43.74	
Somewhat weak	31.44	28.98 – 33.91	31.65	29.92 – 33.37	
Very weak	11.34	9.67 – 13.01	15.64	14.25 – 17.03	
Self-harm					
Suicidal thought – Past 12 months (DEPFSYT)					
Yes	3.26	2.33 – 4.19	5.59	4.65 – 6.54	< 0.001
No	96.74	95.81 – 97.67	94.41	93.46 – 95.35	
Suicidal thoughts – lifetime (DEPFSLT)					
Yes	12.18	10.46 – 13.90	18.79	17.31 – 20.27	< 0.001
No	87.82	86.10 – 89.54	81.21	79.73 – 82.69	

Role or Purpose in Society					
In the past month, how often did you feel …					
That you had something to contribute to society? (PMH_04)					
Every day or almost every day	67.78	66.34 – 71.22	63.73	61.96 – 65.50	0.003
About 1 to 3 times per week	19.55	17.45 – 21.65	22.87	21.24 – 24.49	
Once or twice a month, or never	11.49	9.73 – 13.26	13.41	12.12 – 17.70	
That your life has a sense of direction or meaning to it (PMH_14)					
Every day or almost every day	79.55	77.41 – 81.71	74.15	72.53 – 75.77	< 0.001
About 1 to 3 times per week	15.71	13.85 – 17.77	17.69	16.28 – 19.10	
Once or twice a month, or never	4.64	3.53 – 5.75	8.16	7.05 – 9.27	
Trust / Betrayal					
In the past month, how often did you feel …					
That people are basically good (PMH_07)					
Every day or almost every day	68.61	66.24 – 70.98	54.23	52.36 – 56.09	< 0.001
About 1 to 3 times per week	24.36	22.11 – 26.60	31.07	29.26 – 32.88	
Once or twice a month, or never	7.03	5.64 – 8.42	14.71	13.29 – 16.12	
That you had a warm, trusting relationship with others (PMH_11)					
Every day or almost every day	86.45	84.69 – 88.21	80.93	79.36 – 82.51	< 0.001
About 1 to 3 times per week	10.81	9.23 – 12.38	14.57	13.20 – 15.95	
Once or twice a month, or never	2.74	1.87 – 3.61	4.49	3.65 – 5.34	
Self-Blame or Self Handicapping					
When dealing with stress, how often do you …					
Blame yourself (STR_6_10)					
Often	9.47	7.91 – 11.02	14.59	13.21 – 15.96	< 0.001
Sometimes	41.65	38.96 – 44.34	41.56	39.66 – 43.46	

Rarely	35.11	32.61 – 67.61	32.57	30.75 – 34.39	
Never	13.77	12.04 – 15.50	11.28	10.02 – 12.55	
Alcohol abuse or dependence – lifetime (AUDDL)					
Yes	26.12	23.84 – 28.40	37.65	35.98 – 39.32	< 0.001
No	73.88	71.61 – 76.16	62.38	60.68 – 64.02	
Alcohol abuse or dependence – last 12 months (AUDDY)					
Yes	2.23	1.48 – 2.99	4.59	3.80 – 5.38	< 0.001
No	97.94	97.18 – 98.70	95.50	94.71 – 96.29	
Satisfaction with life in general (GENGSWL)					
Satisfied	94.52	93.33 – 95.71	89.09	87.91 – 90.27	< 0.001
Neutral	2.91	2.02 – 3.81	5.68	4.79 – 6.58	
Dissatisfied	2.57	1.74 – 3.40	5.13	4.32 – 5.95	

Note: CFMHS = Canadian Forces Mental Health Survey; PMIE- = Not exposed to potentially morally injurious event; PMIE+ = Exposed to potentially morally injurious event

Logistic regression models to determine the associations between covariates and the prediction of each of the PMIE sub-questions yielded mixed results (Table 3.3). With the exception of female sex, none of the sociodemographic, military, or deployment related covariates showed a statistically significant association with endorsement of the question "Have you ever done something that accidentally led to the serious injury or death of another person?" In contrast, endorsement of the question "Have you ever purposely injured, tortured, or killed another person?" was significantly associated with the following covariates: being under 45 years of age compared with being over 55 years of age (AOR: 4.53 – 6.40, see table 3.3 for respective 95% CI), and having been deployed for over 361 days (AOR: 1.85, 95% CI: 1.25 - 2.74). Reporting having witnessed atrocities (e.g., massacres or mass killings) was statistically associated with having graduated from a post-secondary educational institution (AOR: 0.66, 95% CI: 0.46 – 0.96), being a Senior NCM of the CF (AOR: 1.61, 95% CI: 1.26 – 2.07), and having been deployed to Afghanistan for over 241 days in total (AOR: 1.40 – 1.74, see Table 3.3 for 95% CI).

Having a post-secondary education was also significantly associated with being unable to respond in a threatening situation due to ROE (AOR: 0.62, 95% CI: 0.43 - 0.88) when compared with those with less than a secondary school education. Holding a less than officer rank (AOR: 1.60 – 1.88), and being deployed between 121 and 240 days, or over 361 days (AOR: 1.34 – 1.53) were both associated with a higher rate of endorsement of the inability to respond due to ROE question see Table 3.3 for respective 95% CIs). Witnessing sick/injured women or children they were unable to help was associated with being a member of the Reserves, a Senior NCM, and having a total-days deployed

Table 3.3
Logistic regression for prediction of exposure to PMIE

Characteristic	Any PMIE		Accidentally caused serious injury or death of another person	
	AOR	**95% CI**	**AOR**	**95% CI**
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.44 ***	0.36 - 0.55	0.34 *	0.13 – 0.90
Age (years)				
19-24	2.08 *	1.16 – 3.73	0.34	0.10 – 1.11
25-34	1.39	0.88 – 2.19	0.70	0.28 – 1.73
35-44	1.55	0.99 – 2.43	0.66	0.26 – 1.65
45-54	1.08	0.69 – 1.69	0.59	0.23 – 1.54
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Divorced	1.15	0.87 – 1.40	1.03	0.60 – 1.75
Single (never married)	1.02	0.84 – 1.23	1.15	0.77 – 1.73
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.75	0.52 – 1.10	0.77	0.39 – 1.52
Some post-secondary	0.90	0.57 – 1.41	1.19	0.55 – 2.58
Post-secondary graduation	0.70	0.49 – 1.02	0.71	0.36 – 1.39
More than post-secondary graduation	1.18	0.73 – 1.90	1.04	0.42 – 2.54
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.46 ***	1.27 – 1.68	1.09	0.79 – 1.49
Rank Group				
Junior NCM	0.95	0.78 – 1.17	0.84	0.53 – 1.37
Senior NCM	1.30 **	1.07 – 1.59	1.05	0.67 – 1.66
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.92 ***	1.61 – 2.29	1.17	0.76 – 1.81
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.67 ***	1.37 – 2.05	0.90	0.55 – 1.45
241-360 days	1.70 ***	1.32 – 2.19	1.07	0.63 – 1.83
Over 361 days	2.56 ***	1.95 – 3.35	1.04	0.60 – 1.80

Characteristic	Purposely injured, tortured, or killed someone		Saw atrocities or massacres	
	AOR	95% CI	AOR	95% CI
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.23 ***	0.13 – 0.42	0.47 ***	0.34 – 0.66
Age (years)				
19-24	6.40 ***	2.04 – 20.05	1.08	0.81 – 1.44
25-34	6.26 ***	2.15 – 18.24	0.76	0.46 – 1.24
35-44	4.53 **	1.54 – 13.35	1.10	0.67 – 1.80
45-54	2.19	0.75 – 6.56	0.97	0.59 – 1.57
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Divorced	1.30	0.92 – 1.85	1.08	0.81 – 1.44
Single (never married)	0.96	0.74 – 1.24	0.95	0.77 – 1.18
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.10	0.68 – 1.78	0.78	0.54 – 1.13
Some post-secondary	1.07	0.63 – 1.83	0.74	0.49 – 1.13
Post-secondary graduation	0.81	0.50 – 1.31	0.66 *	0.46 – 0.96
More than post-secondary graduation	0.95	0.50 – 1.80	0.86	0.51 – 1.37
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.14	0.93 – 1.40	1.05	0.89 – 1.23
Rank Group				
Junior NCM	0.91	0.55 – 1.27	1.19	0.92 – 1.53
Senior NCM	0.96	0.69 – 1.35	1.61 ***	1.26 – 2.07
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.05	0.78 – 1.43	1.23	0.98 – 1.55
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.23	0.86 – 1.75	1.16	0.90 – 1.49
241-360 days	1.05	0.66 – 1.64	1.40 *	1.04 – 1.90
Over 361 days	1.85 **	1.25 – 2.74	1.74 ***	1.30 – 2.34

Characteristic	Unable to respond due to ROE		Seen injured women/children unable to help	
	AOR	95% CI	AOR	95% CI
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.41 ***	0.30 – 0.56	0.81	0.64 – 1.03
Age (years)				
19-24	1.61	0.91 – 2.85	1.24	0.72 – 2.14
25-34	1.02	0.64 – 1.62	1.07	0.70 – 1.64
35-44	0.98	0.63 – 1.55	1.30	0.52 – 1.97
45-54	0.95	0.61 – 1.51	0.95	0.63 – 1.45
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Divorced	1.00	0.77 – 1.32	1.11	0.88 – 1.41
Single (never married)	0.97	0.80 – 1.17	1.04	0.86 – 1.24
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.80	0.56 – 1.15	0.89	0.62 – 1.28
Some post-secondary	0.74	0.50 – 1.12	0.86	0.57 – 1.29
Post-secondary graduation	0.62 **	0.43 – 0.88	0.82	0.57 – 1.17
More than post-secondary graduation	0.66	0.40 – 1.10	1.39	0.89 – 2.17
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.08	0.93 – 1.25	1.19 *	1.03 – 1.37
Rank Group				
Junior NCM	1.59 ***	1.26 – 2.02	1.12	0.92 – 1.37
Senior NCM	1.88 ***	1.49 – 2.38	1.46 ***	1.19 – 1.79
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.07	0.85 – 1.34	1.07	0.87 – 1.31
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.34 *	1.06 – 1.70	1.27 *	1.03 – 1.56
241-360 days	1.22	0.92 – 1.62	1.26	0.97 – 1.63
Over 361 days	1.53 **	1.15 – 2.03	1.48 **	1.15 – 1.92

Characteristic	Felt responsible for the death of Canadian or allied personnel		Difficulty distinguishing between combatants and non-combatants	
	AOR	95% CI	AOR	95% CI
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.93	0.61 – 1.43	0.33 ***	0.25 – 0.43
Age (years)				
19-24	1.91	0.67 – 5.49	1.55	0.85 – 2.81
25-34	2.22	0.90 – 5.45	1.17	0.73 – 1.88
35-44	1.84	0.77 – 4.39	1.20	0.75 – 1.92
45-54	1.52	0.63 – 3.64	1.01	0.64 – 1.61
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Divorced	0.80	0.48 – 1.31	1.00	0.78 – 1.29
Single (never married)	1.06	0.78 – 1.42	0.94	0.79 – 1.13
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.85	0.44 – 1.68	1.15	0.80 – 1.66
Some post-secondary	1.07	0.51 – 2.24	0.95	0.63 – 1.43
Post-secondary graduation	0.91	0.47 – 1.75	1.06	0.75 – 1.52
More than post-secondary graduation	1.86	0.86 – 4.04	1.07	0.68 – 1.67
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.05	0.82 – 1.35	1.33 ***	1.15 – 1.53
Rank Group				
Junior NCM	0.78	0.54 – 1.14	0.72 **	0.58 – 0.89
Senior NCM	0.90	0.61 – 1.32	0.90	0.73 – 1.10
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.39	0.93 – 2.06	1.58 ***	1.29 – 1.93
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	2.13 ***	1.35 – 3.36	1.5 **	1.08 – 1.67
241-360 days	1.61	0.93 – 2.82	1.24	0.96 – 1.61
Over 361 days	2.05 **	1.23 – 3.41	1.83 ***	1.42 – 2.35

Note: AOR = Adjusted Odds Ratio, MHT = Mental Health Training, NCM = Non-Commissioned Member, PMIE = Potentially Morally Injurious Event, ROE = Rules of Engagement, SS = Secondary School
* $.01 < p \leq .05$, ** $.001 < p \leq .01$, *** $p \leq 0.001$

between 121 and 240 days or over 361 days (AOR: 1.18 – 1.48). Reporting having total deployment durations of between 121 and 240 days, or over 361 days was the only covariate that showed a statistically significant association with reporting feeling responsible for the death of Canadian or Allied personnel (AOR: 2.13 and 2.05, respectively). Finally, having difficulty distinguishing between combatants and non-combatants was significantly associated with an increased likelihood of being in the Reserves (AOR: 1.33, 95% CI: 1.15 – 1.54), and having deployments between 121 and 240 days, or over 361 days (AOR: 1.35 – 1.83), while being of the lowest rank grouping (i.e., Junior NCM) was associated with a decreased likelihood of endorsement (AOR: 0.72, 95% CI: 0.58 – 0.89) when compared with being an officer.

Discussion

Using data collected as part of the *Canadian Forces Mental Health Survey* (CFMHS), a cross-sectional survey of representative sample of all regular and reserve force members of the CF who were deployed in support of the mission to Afghanistan, the prevalence rate of exposure to various potentially morally injurious events (PMIE) during deployment was determined. The association between various demographic, military, and deployment related characteristics and endorsement of PMIE exposure was also established.

Prevalence rate for exposure to PMIE

Almost two-thirds of the CF members who were deployed to Afghanistan reported having experienced at least one PMIE during their deployments. While this result is significantly higher that the results of other studies investigating the prevalence of exposure to PMIE in military populations, it is in line with their respective findings regarding the pervasiveness of incident exposure. In their study of 867 active duty U.S. Marines who were deployed to Afghanistan, Jordan et al. (Jordan, Eisen, Bolton, Nash, & Litz, 2017) found that over 37% of respondents endorsed at least one question on the Moral Injury Events Scale (MIES) at the level of "slightly," "moderately," or "strongly agree." Wisco et al. found similar results in their investigation of U.S. combat veterans who took part in the National Health and Resilience in Veterans Study in 2013 using slightly more restrictive MIES criteria; 42% endorsed at least one question at the level of "moderately" or "strongly agree" (Wisco et al., 2017). Differences in typical deployment lengths between Canada and U.S. militaries make accurate comparisons between these results difficult however; the typical deployment duration for a CF member is 6-months (Peddie & Koundakjian, 2009), while for a member of the U.S. military it is 12-months. The only Canadian study reporting rates of exposure to PMIE was conducted by Nazarov, Fikretoglu, Liu, Thompson, and Zamorski (2018). As one of the stated goals of that study was to investigate the potential association between exposure to PMIE and the development of post-traumatic stress disorder, the questions used therein were more restrictive than those used in the current study. This difference in PMIE definition likely contributed to the difference in reported prevalence rates of any PMIE between their

study (58%; Nazarov, Fikretoglu, Liu, Thompson, & Zamorski, 2018) and the current study (65%).

As was the found in Nazarov et al. (2018), the two most commonly reported PMIE by CF members in the current study were seeing ill or injured women and children that they were unable to help (48%), and having difficulty distinguishing between combatants and non-combatants (43%). These results likely arose in part from the nature of the operational deployment undertaken (i.e., counter-insurgency operations) where combat often takes place in populated areas, against combatants who blended in with the civilian population, which in turn would increase the probability of civilians being unintentionally injured. In addition, insurgent forces have been known to use civilians as pseudo-combatants (e.g., as suicide bombers or distractions), often against their will. The complex combat environment created has been associated with increased incidents of operational stress injuries (i.e., and persistent psychosocial problem resulting from a military operation) and post-traumatic stress disorder with the highest incident rates being reported in service members deployed to Kandahar (17%) and Kabul (15%), the two most populated cities in Afghanistan (Boulos & Zamorski, 2008). Nazarov et al. (2018) acknowledge that the deployment related experiences that they used to create their PMIE exposure variable may not have captured the range of potentially morally injurious events that a service member might encounter while deployed. Using the three-factor structure proposed for the MIES (Bryan et al., 2015) as guide (i.e., transgression by self, transgression by others, and betrayal), the three questions selected by Nazarov et al. could all be categorized as "transgressions by self." The current study attempted to capture a wider variety of PMIE, and thereby create a more complete picture of PMIE exposure,

through the inclusion of additional questions drawn from both the deployment experiences (DEX) and post-traumatic stress (PTS) modules of the survey. Specifically, the DEX question about finding themselves a threatening situation where they were unable to respond due to rules of engagement (ROE), endorsed by over 35% of respondents, could be interpreted by the service member as a "betrayal" as the ROE prevented the individual from responding to a situation to which they believe they should have been allowed to respond. The United Nations (U.N.) peace-support and humanitarian aid operations in Somalia, the former Yugoslavia, and Rwanda where the ROE outlined by the U.N. actively prevented soldiers from intervening in situations that were not considered to be part of the mission's respective mandates (Dallaire, 2003; United Nations), would be examples of such a PMIE. Similarly, the included PTS question relating to the witnessing of atrocities or massacres, endorsed by over 29% of respondents in this study, could be viewed as an example of "transgression by others."

Characteristics associated with PMIE exposure.

The likelihood of being exposed to a PMIE was found to be associated with several sociodemographic, military, or deployment related covariates, though the direction of the association varied according to question. The most consistent finding, that females were less likely to report exposure to PMIE than males, was found on the "any PMIE" question and across 6 of the 7 PMIE subtypes. This sex difference in exposure likely results from females representing less than 15% of the total Canadian military with only 2.4% to 5.6% (Regular and Reserve Forces, respectively) serving in

combat arms roles[16] (Department of National Defence, 2014); the remainder serve in more distal roles such as logistic support, communications, or medical personnel. The only other variable that was associated with a lower prevalence for PMIE endorsement was education, specifically graduating from a post-secondary institution, which only reached statistical significance twice: once for witnessing atrocities or massacres, and again for inability to respond to threatening situations because of ROE (34% and 38% reductions relative to not finishing secondary school, respectively). Individuals in the rank grouping of Senior NCM (Sargent to Chief Warrant Officer) were found to have a greater likelihood of endorsing exposure to a PMIE, in particular witnessing atrocities, being unable to respond due to ROE, and seeing injured women or children that they were unable to help. This finding may be a function of the length of time they have been in the CF, and not their rank per se (i.e., the longer a person is in the military, the greater the likelihood that they would have advanced in rank). Having served for a longer period of time also increases the odds that they would have been deployed on the aforementioned UN missions to areas such as Rwanda or Somalia, where most of the associated PMIEs could have been experienced. Future studies should include a variable that accounts for length of time in the military in order to investigate this interpretation. The covariate that was most frequently associated with an increase in PMIE exposure endorsement was deployment duration, however, the underlying reason for this association potentially differs. Individuals whose total deployment duration ranged from 121 to 240 days were associated with between a 27% and 113% increase rate in PMIE

[16] The term "combat arms" is used by the Canadian Forces to describe the four combat-focused areas of occupation that make up the Canadian Army: infantry, armour, artillery, and combat engineers.

endorsement relative to those deployed for less than 121 days. This group, however, represented 57% of those surveyed and the result may be a reflection of the number of individuals deployed and therefore are available to be exposed to PMIEs and not duration per se. In comparison, individuals deployed for over 361 days were associated with between a 48% and a 156% increase in PMIE endorsement compared to those deployed for less than 121 days and thereby may be a more accurate reflection of the effect of deployment duration (the longer an individual is deployed, the more opportunities they have to be exposed to a PMIE) than those deployed between 121 and 240 days. Future researchers interested in the influence of deployment duration on PMIE exposure might wish to create a variable that standardizes the relationship (e.g., number of PMIE exposures per days deployed).

It is important to remember that since the outcome variables of interest relates to exposure to PMIEs and not the development of a moral injury, these results are associational in nature and not causal; none of the demographic, military, or deployment characteristics will either cause or protect service members from exposure to a PMIE. Using receiving a flu shot as an analogy, there is nothing inherent in receiving a flu shot [demographic characteristics] that will increase or decrease an individual's likelihood of coming in contact with the flu virus [exposure to a PMIE], what the flu shot does affect is the likelihood that the individual will go on to develop the flu should they encounter the virus [moral injury]. The variable that would have a causal relationship with PMIE exposure, and in effect may underly all of the characteristics found to have significant associations, was not measured as part of the CFMHS – exposure to combat situations. Not everyone who was deployed in support of the mission to Afghanistan would be

engaged in combat operations, so not everyone had the opportunity to be exposed to the types of PMIE that were captured in this study. Consequently, future research into both PMIE and moral injury might wish to incorporate some type of a "combat exposure" variable, be it one of frequency, intensity, or duration.

Limitations

There are some notable limitations to this study. The first limitation stems from the necessity to use a proxy measure of PMIE composed of questions available in the CFMHS rather than using an established and validated measure of PMIE such as the MIES (Nash et al., 2013) or the MIQ-MV (Currier, Holland, Drescher, et al., 2015). As a result, the questions used may not reflect the complete spectrum of PMIE that a service member may encounter while deployed, and consequently, the results may be underestimates of true exposure prevalence. While these measures were not available at the time of either survey creation or administration, they are currently available and future iterations of the CFMHS would benefit from their inclusion as well as the inclusion of measures specifically focussed on moral injury such as the MISS-M (Koenig et al., 2017) or the EMIS-M (Currier et al., 2017). Related to the use of proxy measures for PMIE was the questions that were selected to use as symptom and behavioural comparisons between PMIE exposure groups. As the primary goal of the study was to estimate the prevalence rate of PMIE exposure within the Canadian Armed Forces as a proxy for moral injury, it was necessary to select questions that had been administered to all survey respondents to maintain this representativeness. While there existed within the CFMHS questions pertaining to symptoms and behaviours more typically associated with moral injury (e.g., feelings of shame and guilt), these questions were contained within the

Depression module of the survey, a module that was only administered to individuals that screened positive for possible depression based on earlier questions; approximately 64% of respondents (Statistics Canada, 2014b). Consequently, the answers from these questions would not be representative of the whole CF, rather only that subgroup within the CF.

A second limitation relates to the cross-sectional nature of the CFMHS. As with all studies that use this design, since it only captures the participants' responses at a single time point, its results cannot be used to predict future events. As the development of moral injury in particular is a function of the individual's reprocessing of the PMIE, which can happen at any time after the event (Litz et al., 2009), longitudinal studies will need to be conducted to determine precisely how exposure to PMIE may be linked to the development of moral injury. Third, the CFMHS is a self-report questionnaire and, as such, is vulnerable to a number of recall biases most importantly, social desirability bias. While Statistics Canada took all appropriate steps to ensure both the anonymity of participants and confidentiality of their responses, some of the questions asked delve into areas where service members may still be hesitant to respond to truthfully. The questions that formed the PMIE exposure variable in particular relate to situations that by definition may violate the service members deeply held moral beliefs, they may have difficulty admitting the truth to themselves let alone a stranger who is not part of the military. As self-report measures will likely continue to be the default method for obtaining information of this nature, future research might wish to also include supplemental information sources to corroborate the individual's responses (e.g., after-action reports), as well as taking formal steps to ensure that there are no legal or military repercussions

for service members who admit engaging in unsanctioned behaviours (e.g., formal waivers of culpability). Fourth, the CFMHS at times made use of multi-barrelled questions (e.g., *Have you ever purposely injured, tortured, or killed another person?*) which can lead to conflicted answers, especially when answer options are limited to yes or no. Using this question as an example, injuring, or killing other people is sometimes a necessary part of a service members role, especially when deployed on a combat mission, so high levels of endorsement of these actions would be expected. Purposely torturing people, in contrast, is not part of their role and is expressly prohibited under international law, and as such, low levels of endorsement would be expected. In addition to the aforementioned waivers from prosecution, future researchers need to be sure that all the options contained within multi-barrelled questions (when they cannot be avoided) relate to the same concept. For example, "injure" and "kill" both exist as points on the same conceptual spectrum relating to the amount or degree of harm caused to another person (the injury is the result of an action). The concept of torture, in contrast, which may involve causing injury to an individual, also contains the underlying purpose of causing that injury (e.g., to get information); injury is the method of action to achieve the outcome and not the outcome itself. Another potential limitation is the absence of a variable in the CFMHS that specified the specific year(s) each service member was deployed to Afghanistan, thus precluding the analysis of potential cohort effects and how these related to exposure to PMIEs. The purpose and scope of the Canadian Forces deployment to Afghanistan changed over the duration of their various operations; combating international terrorism post-9/11 (2001-2003), combating insurgents and securing the capital of Kabul so that a new Afghan government could take power (2003-

2008), conducting combat operations throughout the whole of Kandahar Province (2006-2011), and finally delivering training and professional development support to various Afghan National Security Forces (2011-2014) so they could assume responsibility for the country's security when the Canadian Forces mission ended in 2014 (Department of National Defence, 2018). Related to these changes during different operational phases were increases in the number of fatalities the Canadian Forces sustained which peaked between 2006 and 2009 averaging 33 individuals per year during this time (Veterans Affairs Canada, 2019).

Finally, the CFMHS was only administered to currently serving members of the Canadian Armed Forces, which may have led to an incomplete picture of the prevalence of PMIE exposure in those service members who were deployed in support of the mission to Afghanistan; individuals who served in Afghanistan but have since been discharged from the military due to physical or psychological injury, for example, would not have been captured in this sample. This could mean that the prevalence rates presented in this study may be more representative of a "high functioning" sample of CF members – those who were exposed to PMIE but are still able to function adequately to continue in their current roles. Future research into prevalence rates of both PMIE and moral injury itself would benefit from administering the updated versions of CFMHS to all CF members who were deployed to Afghanistan, whether they are currently members of the military or are now considered to be veterans.

Notwithstanding these limitations, this investigation found that exposure to potentially morally injurious events was a common occurrence for those Canadian Armed Forces members deployed to Afghanistan. As such, further focussed research into the

exposure to potential morally injurious events and the concomitant emotional, psychological, and behavioural ramifications of such exposure is needed. The results of these studies will provide a needed foundation for developing training procedures that will better prepare service men and women for when they encounter this new aspect of the ever-changing battlespace.

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Chapter 4

Connection between exposure to PMIE and Self-Rated Positive Mental Health

The World Health Organization (WHO) described mental health as "a state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her own community" (World Health Organization, 2004, p. 10). Central to this definition is the individual's ability to function, both as an individual and as part of their larger community. Notably absent from this definition however is any mention of mental illness, specifically, it contains no requirement for the individual to be free of mental illness. According to this description, it would be possible for an individual who has been diagnosed with a mental illness (e.g., depression, anxiety, post-traumatic stress disorder), but is functioning well in society as a result of psychotherapy or medications, for example, to still be considered to be mentally healthy. By extension, it also allows for the opposite to be true; an individual may not be mentally healthy even though they have not been diagnosed with a mental illness, solely because they are not functioning well. Mental health and mental illness, rather than existing as opposing poles on a single continuum (Figure 4.1a), are seen as existing on two separate continua ranging from a maximal level of mental health (or mental illness) to a complete absence of mental health (or mental illness) (Keyes, 2014) (Figure 4.1b). Using a physical malady as an analogy, an individual with untreated diabetes can experience a variety of symptoms as a result of their illness including fatigue, blurred vision, and slower healing of injuries. With appropriate treatment such as lifestyle change or medication, these

(a)

(b)

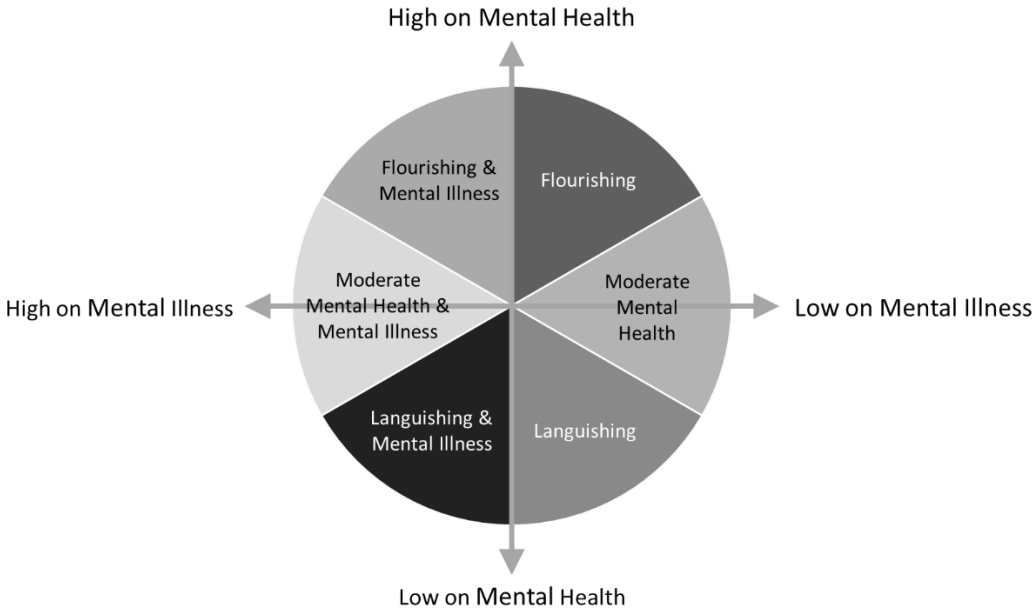

Figure 4.1a. Traditional Single Continuum Model
Figure 4.1b. Dual Continuum Model (adapted from Keyes, 2014)

symptoms can be managed, and the individual can live a normal life (i.e., function in society). Even though they are no longer experiencing symptoms and are functioning well, they are nonetheless still a diabetic. Applying the WHO definition to this example, they could be considered to be both "sick" and "healthy" (i.e., functional) at the same time. A similar inclusion of a functional component can be seen in the frequently used diagnostic criterion within the latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), requiring that the symptoms the individual experiences "cause clinically significant distress or impairment in social, occupational, or other

important areas of functioning" (American Psychiatric Association, 2013); if this criterion is not met, the individual does not receive the diagnosis.[17] This conceptualization of mental health and mental illness as existing on two separate continua (dual continuum model), also reflects a change in practice focus for those treating individuals who are living with mental illness, moving away from what has been termed an illness-driven model where the goal of treatment is the reduction in symptoms, to a model that now includes the reinforcement of behaviours that encourage positive mental health. (For a detailed review of the positive mental health concept, see Hubka & Lakaski, 2013)

Keyes and colleagues have operationalized this dual-continua concept through the creation of the Mental Health Continuum – Short Form (MHC-SF; Keyes, 2009). The MHC-SF was designed to measure well-being in three interrelated spheres: First, emotional well-being, is characterized by happiness and an interest in and satisfaction with one's life. Second, psychological well-being, is characterized by self-acceptance, a perceived mastery of one's environment, a sense of autonomy and purpose in life, the ability to have personal growth, as well as having positive, trusting relationships with others. Finally, social well-being, which is characterized by feelings of social acceptance, social growth, social coherence, and that one is contributing to society. Based on their responses to questions designed to measure these respective spheres, individuals are categorized as "flourishing," "languishing," or as possessing "moderate" mental health. The MHC-SF has been administered and validated in non-clinical

[17] Realistically speaking, if their symptoms were not causing some form of distress (for them or others), it is unlikely that the individual would be seen by a clinician for diagnosis or treatment to begin with.

populations in a number of countries including Canada (Hubka & Lakaski, 2013), the Netherlands (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011), the United States of America, South Africa, France, South Korea, Poland, Italy, Portugal, Iran, and Argentina (cited in: Franken, Lamers, Ten Klooster, Bohlmeijer, & Westerhof, 2018; Keyes, 2009), as well as in a population of Dutch psychiatric out-patients (Franken et al., 2018). The MHC-SF has also been incorporated into the Canadian Community Health Survey (CCHS); an annual cross-sectional survey designed to collect information of the health status, health care utilization, and determinants of health for the Canadian population, since the 2012 iteration.

Exposure to the traumas associated with military service and how these exposures are related to the prevalence of mental illness has been the focus of many researchers, in particular the recent deployments to Afghanistan and Iraq (e.g., Garber, Zamorski, & Jetly, 2012; Hoge et al., 2004; Visco, 2009). These conflicts have brought with them exposure to a new type of warfighting not experienced by service members in previous wars; one where their opponents are seemingly not constrained by the international recognized rules of war (e.g., Geneva Conventions, International Humanitarian Law). This abandonment of rules by one party can create situations where service members may witness, be unable to prevent, or even act in ways that can conflict with their core moral beliefs about themselves, others, and their role in the world. The reprocessing of these events, alternately called potentially morally injurious events (PMIE; Litz et al., 2009) or transgressive events (Frankfurt & Frazier, 2016), after the fact can lead them to realize that a core moral belief may have been violated. This realization may lead to a state of inner psychic conflict or dissonance being created that the individual cannot resolve for

themselves. The affect that these types of combat experiences may have on service members self-perceived mental health has not yet been investigated however and forms one of the objectives for this study.

Aims of this study

Using the results of the Canadian Forces Mental Health Survey (Statistics Canada, 2014b), this study aims to answer the following questions: What are the prevalence rates of positive mental health (i.e., flourishing, languishing, and moderate mental health) in Canadian Forces members deployed in support of the mission to Afghanistan? What sociodemographic, military, or deployment characteristics might be associated with positive mental health in this population? How are the prevalence rates of positive mental health affected by Canadian Forces members' exposure to potentially morally injurious events (PMIE)?

Methods

Data source and study population

The Canadian Forces Mental Health Survey (CFMHS, Statistics Canada, 2014b) was the source of the data for this study. Conducted by Statistics Canada between April and August 2013, the CFMHS is a cross-sectional survey containing a variety of questions directly and indirectly related to the mental health status of the Canadian Armed Forces (CF) members surveyed. A subset of this population, specifically all regular and reserve force members of the CF who had been deployed in support of the mission to Afghanistan between 2001 and 2013 (n = 4,854), forms the target population for this study.

Sampling and data collection

Statistics Canada utilized a stratified random sampling framework (stratified by military rank) to ensure that the resultant sample would remain representative of the whole of the CF. In order to reinforce the confidentiality of the survey, interviews were conducted on-base by Statistics Canada personnel using a computer assisted personnel interview. Respondents were informed that these Statistics Canada personnel were neither affiliated with nor would they report back to the CF any responses received during survey administration.

Measures

Potentially Morally Injurious Experiences (PMIE)

Several scales related to exposure to PMIEs and moral injury have been published since the CFMHS was administered in 2013 (e.g., Moral Injury Events Scale (MIES; Nash et al., 2015), Moral Injury Questionnaire – Military Version (MIQ-M; Currier et al., 2017), Moral Injury Symptoms Scale – Military Version (MISS-M; Koenig et al., 2017), Expressions of Moral Injury Scale (EMIS-M; Currier et al., 2017)), however, these tools were not available at that time. Consequently, exposure to potentially morally injurious events (PMIE) was determined using a composite measure based on prevailing moral injury theory and questions that refer specifically to PMIE from the psychometrically validated MIES and MIQ-M as a guide. The resultant measure was composed of questions drawn from the Deployment Experiences (DEX) and Post-Traumatic Stress (PTS) modules of the CFMHS. The final list of questions selected was sent to a content expert for review and verification that they met the criteria for PMIE (B. Litz, personal communication, 03 August 2017).

The DEX questions[18] selected were DEX-2 "found yourself in a threatening situation where you were unable to respond because of rules of engagement;" DEX-4 "ever seen ill or injured women or children you were unable to help;" DEX-6 "ever felt responsible for the death of Canadian or allied personnel;" and DEX-8 "ever had difficulty distinguishing between combatants and non-combatants." Selected PTS questions included were PTS-25 "Have you ever done something that accidentally lead to serious injury or death of another person;" PTS-26 "Have you ever purposely injured, tortured, or killed another person;" and PTS-27 "Have you ever seen atrocities or massacres such as mutilated bodies or mass killings." In an effort to restrict participant inclusion to only those who had experienced PMIE during deployment(s), participants must have also endorsed one of the two following questions for the aforementioned PTS questions to be included in the measure: "Have you ever participated in combat, either as a member of the military, or as a member of an organized non-military group," or "Have you ever served as a peacekeeper or relief worker in a war zone or in a place where there was ongoing terror of people because of political, ethnic, religious, or other conflicts?" (PTS questions 1 and 2, respectively). Individuals who positively endorsed any of selected DEX or PTS questions were considered to have been exposed to a PMIE (PMIE+), the remaining participants were considered to have not been exposed to a PMIE (PMIE-).

The CFMHS also contains information relating to the sociodemographic and military characteristics of the participants gathered from two sources: Department of National Defence and Canadian Forces administrative records and directly from the

[18] All DEX questions are preceded by "During any [Canadian Forces] deployment, have you …"

respondents. This information includes the participants' age, sex, marital status, educational attainment, rank category (Junior Non-Commissioned Member (NCM) [Private to Master Corporal], Senior NCM [Sargent to Chief Warrant Officer], or Officer), component (regular force, reserve force), previous exposure to mental health training, and information relating to their Afghanistan deployment.

Self-rated Mental Health

The CFMHS module on positive mental health utilized the Mental Health Continuum – Short Form (MHC-SF) (Keyes, 2009). The MHC-SF is a 14-item, self-report questionnaire in which each item is designed to measure a single dimension of well-being within three interrelated spheres, namely, emotional well-being, psychological well-being, and social well-being. Available response options are arranged to indicate frequencies of experiencing within the last month ranging from "every day" through "never" on a 6-point Likert scale (see Appendix A). Based on their responses to the questions, individuals are categorized as having "flourishing" mental health if they responded at a high level (i.e., "every day" or "almost every day") on at least one of the emotional well-being questions and at a high level on least 6 of the remaining questions, "languishing" if they responded at a low level (i.e., either "never" or "once or twice") to the emotional well-being questions and at a low level on at least 6 of the remaining questions, and "moderate" if they do not meet the criteria for either flourishing or languishing.

Statistical Analyses

Statistical analyses were conducted using SPSS 23 and STATA 15, with results being weighted and an alpha level set to 0.05. List-wise deletion was used to ensure all

analyses were conducted on complete cases. Statistics Canada provided the final sample weights (adjusting for initial sampling weight, removal of outliers, and participant non-response) so that the estimates produced from the CFMHS data would be reflective of the entire Canadian Armed Forces population at time of survey (n = 68,866) (Statistics Canada, 2014a). A bootstrapping technique using sampling weights (500 bootstrap samples also provided by Statistics Canada) was used to account for the complex survey design (Statistics Canada, 2014c). Per Statistics Canada guidelines, all final cell counts were rounded to the nearest 20, so as to protect the identity of respondents. Descriptive statistics were calculated for each variable used in the analyses (e.g., socio-demographic, military, mental-health training, and deployment related characteristics), and used as covariates in logistic regressions to determine the effect of PMIE exposure on self-rated positive mental health. With regards to Mental Health Training, only the final composite question (i.e., "*Any mental health training in the last 5 years"*) was used as a covariate in the regression analysis. Adjusted Odds Ratios (AOR) were calculated for the logistic regressions rather than the usual regression coefficient (i.e., β) to ease the interpretation of results. The AOR indicates the odds of a given outcome occurring (e.g., developing the flu) if the individual was exposed to a specific event or stimulus (e.g., receiving the flu shot) compared with the odds of the same outcome occurring without said exposure (e.g., not receiving the flu shot), when all other covariates (e.g., age, sex, marital status, etc.) are kept constant.

Ethics approval

The original data collection procedures for the survey and access to the resultant database containing the survey results were reviewed and approved by the relevant

committees at Statistics Canada that serve these purposes in terms of ethical treatment of participants, following the principles detailed in the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans TCPS-2 (Secretariat on Responsible Conduct of Research, 2014). The Research Ethics Board of Western University provided a waiver for this study as it constitutes a secondary data analysis, which does not require an ethical review under TCPS-2.

Results

The weighted sociodemographic, mental health, military, and deployment characteristics for survey respondents are presented in Table 4.1. Of those deployed in support of the mission to Afghanistan who were surveyed, almost 73% indicated that they were either married or in a common-law relationship, 41% were under the age of 35, and over half had completed post-secondary education (i.e., a university degree or college diploma). Almost 84% of respondents indicated they had received mental health training from the CF in the previous five years with the periods prior to and following a CF deployment receiving the highest rates of endorsement (59% and 64%, respectively). Those CF members who felt their mental health was either very good or excellent accounted for 56% of respondents, and almost 73% would be classified as "flourishing" on the MHC-SF.

Logistic regressions were conducted to investigate the association between proportion of respondents assigned to each of the three levels of positive mental health classification according on the MHC-SF and the selected respondent characteristics are presented in Table 4.2. Variables associated with statistically significant increases in proportions of respondents classified as "flourishing" included being between 19 and 24

Table 4.1
Demographic, military, and deployment characteristics

Characteristic	Weighted %	95% CI
Sociodemographic		
Sex		
Male	89.20	88.20 – 90.20
Female	10.80	9.80 – 11.80
Age (years)		
19-24	4.06	3.43 – 4.69
25-34	36.58	35.23 – 37.92
35-44	34.43	33.11 – 35.74
45-54	22.97	21.79 – 24.16
55 and over	2.03	1.70 – 2.35
Marital Status		
Married or Common-law	72.73	71.42 – 74.04
Widowed, Separated, or Divorced	8.41	7.54 – 9.28
Single (never married)	18.85	17.73 – 19.98
Education		
Less than secondary school graduation	4.55	3.93 – 5.17
Secondary school graduate	28.90	27.48 – 30.33
Some post-secondary	9.22	8.32 – 10.11
Post-secondary graduation	51.23	49.66 – 52.79
More than post-secondary graduation	6.10	5.49 – 6.72
Mental Health Related		
Self-rated mental health		
Poor	3.40	2.83 – 3.97
Fair	12.77	11.73 – 13.81
Good	27.86	26.52 – 29.21
Very Good	39.38	37.94 – 40.81
Excellent	16.65	15.50 – 17.79
Positive Mental Health (MHC-SF)		
Flourishing	72.48	71.11 – 73.85
Moderate	24.96	23.64 – 26.27
Languishing	2.63	2.10 – 3.15
Mental Health Training last 5 years (endorsed)		
Preparation for a CF deployment	58.92	57.47 – 60.38
End of a CF deployment	63.71	62.26 – 65.17
Preparation for a higher rank	33.35	31.90 – 34.81
During trades training	13.89	12.81 – 14.98
By PSP personnel/health office	20.48	19.20 – 21.76
Routine training/professional development	46.83	45.27 – 48.38
Any mental health training in the last 5 years	*83.89*	*82.77 – 85.01*
Military Factors		
Military Component		
Regular Forces	86.69	86.61 – 86.78
Reserve Forces	13.37	13.28 – 13.45

Rank Group*		
Junior NCM	48.21	47.74 – 48.68
Senior NCM	31.74	31.35 – 32.14
Officer	20.05	19.78 – 20.31
Deployment Related		
Total number of days deployed (days)		
< 120	13.67	12.60 – 14.74
121-240	57.25	55.74 – 58.77
241-360	14.15	13.04 – 15.25
Over 361	14.93	13.85 – 16.00
Potentially Morally Injurious Events (PMIE)		
Not exposed	34.84	33.37 – 36.32
Exposed	65.21	63.74 – 66.68
Specific PMIE (endorsed)		
Accidentally caused serious injury or death of another person	6.11	5.31 – 6.92
Purposely injured, tortured, or killed another person	15.94	14.77 – 17.11
Saw atrocities or massacres	29.33	27.87 – 30.79
Found self in threatening situation where you were unable to respond due to ROE	35.41	33.90 – 36.92
Seen injured women or children who you were unable to help	48.37	46.68 – 50.07
Felt responsible for the death of Canadian or allied personnel	8.41	7.48 – 9.35
Had difficulty distinguishing between combatants and non-combatants	43.55	41.87 – 45.24

Note: Some proportions may not total to 100% as a result of Statistics Canada rounding requirements.
PSP = Personnel Support Program, MHC-SF = Mental Health Continuum – Short Form, NCM = Non-Commissioned Member, Junior NCM = Private to Master Corporal, Senior NCM = Sargent to Chief Warrant Officer, ROE = Rules of Engagement

relative to being 55 and over (AOR: 1.92, 95% CI: 0.04 – 1.27), having more than a post-secondary education (AOR: 1.96, 95% CI: 1.19 – 3.22), and reporting having received any mental health training in the previous 5 years (AOR: 1.32, 95% CI: 1.08 – 1.61). Being either single or widowed, separated, or divorced were associated with decreased in rates of flourishing compared to those who were married or living common-law (AOR: 0.57 – 0.65, see Table 4.2 for respective 95% CIs), as was having a non-commissioned

rank compared to being an officer (AOR: 0.57 – 0.80). The proportion of respondents classified as possessing "moderate" mental health was significantly increased in respondents who were of Junior NCM rank (AOR: 1.58, 95% CI: 1.26 – 1.99) versus Officers, and those who were not married or living common-law (AOR: 1.40 – 4.68). In contrast, having more than a post-secondary education and having received mental health training in the previous 5 years were associated with statistically significant decreases in rates of moderate mental health classification (AOR: 0.49 and 0.76, respectively). Finally, being single (never married) was associated with an increased prevalence of a languishing classification on the MHC-SF (AOR: 2.23, 95% CI: 1.25 – 3.96), as did being of a Junior NCM rank (AOR: 3.55, 95% CI: 1.47 – 8.53). Deployment duration was not statistically significantly associated with classification in any mental health classification ($p > 0.05$).

Logistic regression models for the association between PMIE exposure types and the proportion of respondents flourishing, moderate, or languishing are presented in Table 4.3 (full regression models are presented in Appendices B, C, and D, respectively). Controlling for sociodemographic, military, and deployment characteristics, all of the possible PMIE exposure types were associated with almost equal decreases in rates of flourishing (AOR: 0.63 to 0.75, see Table 4.3 for full AOR and 95% CI) versus not flourishing, with "feeling responsible for the death of Canadian or allied personnel" having the strongest association (AOR: 0.63, 95% CI: 0.49 – 0.82). Similarly, all possible types of PMIE exposure were associated with statistically significant increases in

Table 4.2
Associations between sociodemographic, military, and deployment factors and self-reported mental health categories.

Characteristic	**Flourishing**		**Moderate**		**Languishing**	
	AOR	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Sociodemographic						
Sex						
Male	Reference		Reference		Reference	
Female	0.97	0.77 - 1.22	1.07	0.85 - 1.34	0.75	0.32 - 1.79
Age (years)						
19-24	1.92 *	1.03 - 3.58	0.63	0.34 - 1.17	0.23	0.04 - 1.27
25-34	1.25	0.77 - 2.04	0.96	0.59 - 1.58	0.58	0.07 - 1.05
35-44	0.96	0.60 - 1.52	1.22	0.76 - 1.94	0.40	0.11 - 1.42
45-54	1.07	0.66 - 1.72	1.01	0.62 - 1.63	0.66	0.18 - 2.42
55 and over	Reference		Reference		Reference	
Marital Status						
Married or Common-law	Reference		Reference		Reference	
Widowed, Separated, or Divorced	0.57 ***	0.44 - 0.73	1.68 ***	1.31 - 2.17	1.70	0.90 - 3.20
Single (never married)	0.65 ***	0.43 - 0.80	1.40 **	1.13 - 1.72	2.23 **	1.25 - 3.96
Education						
Less than SS graduation	Reference		Reference		Reference	
SS graduate	0.94	0.66 - 1.35	1.16	0.80 - 1.68	0.59	0.24 - 1.45
Some post-secondary	1.28	0.84 - 1.94	0.79	0.52 - 1.22	0.86	0.33 - 2.26
Post-secondary graduation	1.16	0.91 - 1.66	0.92	0.63 - 1.34	0.65	0.27 - 1.54
More than post-secondary graduation	1.96 **	1.19 - 3.22	0.49 **	0.30 - 0.82	1.05	0.25 - 4.36

Military Factors						
Component						
Regular Forces	Reference		Reference		Reference	
Reserve Forces	0.95	0.81 - 1.11	1.09	0.93 - 1.27	0.85	0.54 - 1.32
Rank Group						
Junior NCM	0.57 ***	0.45 - 0.71	1.58 ***	1.26 - 1.99	3.55 **	1.47 - 8.53
Senior NCM	0.80 *	0.63 - 1.00	1.20	0.95 - 1.51	1.96	0.83 - 4.62
Officer	Reference		Reference		Reference	
MHT in last 5 years						
Any Mental Health Training	1.32 **	1.08 - 1.61	0.76 **	0.62 - 0.93	0.88	0.52 - 1.51
Deployment Related						
Total number of days deployed (days)						
< 120 days	Reference		Reference		Reference	
121-240 days	0.96	0.77 - 1.20	1.08	0.86 - 1.36	0.78	0.40 - 1.51
241-360 days	1.09	0.82 - 1.45	0.94	0.70 - 1.26	0.81	0.35 - 1.89
Over 361 days	0.85	0.65 - 1.13	1.19	0.89 - 1.58	0.97	0.44 - 2.16

Note: AOR = Adjusted Odds Ratio, MHT = Mental Health Training, NCM = Non-Commissioned Member, ROE = Rules of Engagement, SS = Secondary School

* $.01 < p \leq .05$, **$.001 < p \leq .01$, *** $p \leq 0.001$, Reference category has an AOR = 1.00

rates of languishing (AOR: 1.71 to 3.29, see Table 4.3 for full AOR and 95% CI) compared with not languishing, with "accidentally causing the serious injury or death of another person" having the strongest association (AOR: 3.29, 95% CI: 1.78 – 6.10).

Discussion

Using data collected as part of the Canadian Forces Mental Health Survey (CFMHS), a cross-sectional survey of representative sample of all regular and reserve force members of the CF who were deployed in support of the mission to Afghanistan, the prevalence rate and potential sociodemographic, military, or deployment predictors of self-reported positive mental health as measured by the Mental Health Continuum (Keyes, 2009) was determined. As well, the association between exposure to potentially morally injurious events (PMIE) and positive mental health was examined.

Prevalence rates for self-reported positive mental health

Of the Canadian Forces members who were deployed in support of the recent mission to Afghanistan, almost 73% would be classified as flourishing, 3% as languishing, and 25% as having moderate (i.e. neither flourishing nor languishing) mental health according to the Mental Health Continuum – Short Form (Keyes, 2009). These finding differ slightly from those found on the 2012 Canadian Community Health Survey– Mental Health (CCHS-MH), where, using the complete sample, the respective percentages were 77%, 1.5%, and 22% (Gilmour, 2014). When individuals who had experienced a mental disorder (i.e., mood disorder, generalized anxiety disorder, substance use or abuse disorder) in the preceding 12 months were removed from the CCHS-MH sample, the percentages flourishing, languishing, or possessing moderate mental health changed to 80.7%, 0.7%, and 18.7%, respectively (calculated from data

Table 4.3
Effect of PMIE exposure on Positive Mental Health category.

PMIE Type Experienced		Positive Mental Health		
		Flourishing	**Moderate**	**Languishing**
Any PMIE	**AOR**	0.63 ***	1.46 ***	2.38 **
	95% CI	0.54 - 0.74	1.24 - 1.70	1.36 - 4.17
Accidentally caused serious injury or death of another person	**AOR**	0.66 *	1.20	3.29 ***
	95% CI	0.48 - 0.91	0.86 - 1.67	1.78 - 6.10
Purposely injured, tortured, or killed someone	**AOR**	0.68 ***	1.23 *	2.62 ***
	95% CI	0.56 - 0.84	1.02 - 1.56	1.49 - 4.60
Saw atrocities or massacres	**AOR**	0.75 **	1.24 *	1.71 *
	95% CI	0.63 - 0.94	1.04 - 1.49	1.06 - 2.76
Unable to respond due to ROE	**AOR**	0.68 ***	1.34 ***	2.24 ***
	95% CI	0.58 - 0.79	1.14 - 1.58	1.42 - 3.53
Seen injured women/children unable to help	**AOR**	0.66 ***	1.44 ***	1.82 **
	95% CI	0.56 - 0.77	1.22 - 1.70	1.16 - 2.86
Felt responsible for the death of Canadian or allied personnel	**AOR**	0.63 ***	1.34 *	2.81 ***
	95% CI	0.49 - 0.82	1.02 - 1.75	1.58 - 4.99
Difficulty distinguishing between combatants and non-combatants	**AOR**	0.68 ***	1.35 ***	2.10 ***
	95% CI	0.59 - 0.79	1.16 - 1.58	1.36 - 3.23

Note: PMIE = Potentially Morally Injurious Event, ROE = Rules of Engagement
* = $0.01 < p \leq 0.05$, ** = $0.001 < p \leq 0.01$, *** = $p \leq 0.001$

provided in: Gilmour, 2014). Researchers investigating population prevalence rates of positive mental health in other countries have found proportions that are significantly different than those found herein (e.g., flourishing: 20%, languishing: 14%, and moderate: 66% found by (Keyes, 2002)), however, these surveys are not directly comparable due to differences in language and format of survey administration, population of interest, and age ranges.

Characteristics associated with MHC-SF classifications

The most consistent characteristics associated with positive mental health classification were Marital Status and Rank Group. Relative to those respondents who reported being either married or living in a common-law relationship, individuals who were widowed, separated, or divorced were 43% less likely to be classified as having flourishing mental health, and 68% more likely to be placed in the moderate mental health category; they were also 70% more likely to be classified as languishing, but this last difference did not reach statistical significance ($p = 0.10$). Similarly, individuals who were single (never married) were 35% less likely to be classified as having flourishing mental health, 40% more likely to be classified in the moderate mental health category, and were 123% more likely to be classified as languishing, than those who were married or in a common-law relationship. These results, in particular those regarding decreases in flourishing and increases in languishing, coincide with the findings of Smith et al. who also found that being married was associated with a more favourable health status (Smith et al., 2007) and may be explained using social causation theory (Lee & Kim, 2009). This theory asserts that marriage improves psychological well-being either directly or through the moderating (or buffering) of negative life events. This buffering effect is

believed to occur in part as a result the increased levels of social support provided by the family structure and increased social network size created by marriage (e.g., combination of social circles of both partners, in-laws) assisting individuals to deal with stressful situations that could affect their mental health. Individuals who are single (never married) theoretically would not have access to this type of enhanced social support network when they return from deployment, while service members who are no longer married but once were (i.e., separated, divorced, or widowed), once had access to this network but through their change in marital status, have lost it, potentially compounding the effect (Williams, Frech, & Carleson, 2010). This mediation of positive mental health through the social support provided by family and household characteristics was also found in a sample of Canadian Forces members conducted in 2016 (Therrien, Richer, Lee, Watkins, & Zamorski, 2016). The definitions used in the CFMHS with regards to marital status, however, potentially miss another potential "relationship-type" grouping which both the single and widowed, separated, and divorced individuals may be a part – those in a romantic relationship with a non-cohabiting partner who could potentially provide for them the same kind of social support network as that of married individuals. The relationship between marital status and mental health is a potentially complex one as factors such as marriage quality (e.g., good versus bad), marriage length, gender of individuals, age of individuals, and if this is a first versus a successive marriage may all potentially have an effect, and would benefit from further study, especially in a military context.

When compared with Officers, individuals in the Junior NCM (Private to Master Corporal) rank group were 43% less likely to be classified as possessing flourishing

mental health, 58% more likely to be classified as having moderate mental health, and 255% more likely to be languishing. Senior NCM (Sargent to Chief Warrant Officer) were found to be 20% less likely to be classified as flourishing compared to those of Officer rank. The pattern of increasing likelihood of classification as possessing moderate or languishing mental health was also seen in the Senior NCM rank grouping, however, failed to reach statistical significance ($p > 0.05$). This finding aligns with those of other researchers (e.g., Smith et al., 2007; Watkins, Lee, & Zamorski, 2017) who found that having an Officer rank was associated with more favourable mental health status. Rank had also been found to have a significant correlation with an individual's marital status with NCM being more likely to be single (never married) than Officers, and Officers more likely to be married (Therrien et al., 2016), so the aforementioned explanation regarding social causation theory may hold for rank as well. Also related to the buffering effect of a solid social network, individuals at the lowest ranks (i.e., Junior NCM), tend to have been in the military for shorter periods of time and may not have rebuilt the same depth of a social network as they may have possessed before they enlisted. The nature of military service often entails long periods separated from (non-military) friends and families, people may not understand why they enlisted and in turn begin to distance themselves from the recruit, and the increased risk of injury and death itself can put stresses on relationships and can cause them to falter. In contrast, individuals of higher ranks, tend to have been in the military for longer and may have (re)formed a social network where their being in the military is potentially less problematic; their friends are either in the military themselves so they know and accept the associated hardships that come with service, or they entered into the social circle

when the service member were already in the military so there is no change in the service members social role in terms of their relationship. As was the case with marital status, rank within the military is a potentially more complex concept than it may first appear (e.g., rank can be related to the types of duty assignments an individual receives, roles they serve while deployed, branch of service, etc.) and its association with an individual's mental health will be similarly complicated

Effect of PMIE exposure on MHC-SF classification

Probably the most dramatic finding of this study was the affect that exposure to PMIE had on positive mental health classification. Holding all other demographic, military, and deployment characteristics constant, it was found that individuals who reported having been exposed to any PMIE were 37% less likely of being classified as flourishing, 138% more likely to be classified as languishing, and 46% more likely to be classified as possessing moderate mental health (i.e., neither flourishing or languishing) when compared to those did not report a PMIE exposure. This pattern of decreased levels of flourishing (ranging from 25% less [saw atrocities or massacres] to 37% less [felt responsible for the death of Canadian or allied personnel]) and increased levels of languishing (ranging from 71% [saw atrocities or massacres] to 229% increase [accidentally caused serious injury or death of another person]) held for all reported sub-types of PMIE exposure. These findings provide strong support for both the presence of exposure to PMIE in CF members who were deployed in support of the mission to Afghanistan, and it's associated detrimental effect on the mental health of those members. This is especially true for PMIEs that involved causing the death, be it intentional or accidental, of another individual, which would reinforce the specific

relationship between of this traumatic event later development of PTSD, increased rates of suicidal ideation and attempts, and substance use and abuse disorders proposed by Maguen and others (Jensen & Simpson, 2014; Maguen et al., 2017; Maguen et al., 2010; Maguen et al., 2011; Tripp, McDevitt-Murphy, & Henschel, 2015).

Limitations

There exist some notable limitations to this study. The first stems from the use of a proxy measure to capture PMIE exposure that was composed of questions available in the CFMHS and as a result, the complete spectrum of PMIEs a service member may encounter while deployed may not have been captured. Future iterations of the CFMHS would benefit from the inclusion of a validated measure of PMIE such as the MIES (Nash et al., 2013) or the MIQ-MV (Currier, Holland, Drescher, & Foy, 2015) or ideally a measure focussed specifically on moral injury, the actual outcome of interest, such as the MISS-M (Koenig et al., 2017) or the EMIS-M (Currier et al., 2017).

A second limitation relates to the cross-sectional nature of the CFMHS. Since it only captures the participants' responses at a single time point, the results found cannot be used to predict future events. To determine how exposure to PMIE is linked to the development of moral injury, longitudinal studies will need to be conducted. Third, the CFMHS is a self-report questionnaire and, as such, is vulnerable to recall bias, especially social desirability bias. While test administrators took steps to ensure both the anonymity of participants and confidentiality of their responses were maintained, some questions still delve into areas where service members may be hesitant to respond to truthfully despite these assurances. The questions that formed the exposure to PMIE variable in particular relate to situations that, by definition, may violate the service members deeply

held moral beliefs, they may have difficulty admitting the truth to themselves let alone someone who is not in the military. As self-report measures will likely continue to be the default method for obtaining information of this nature, future research might benefit from the inclusion of supplemental information sources that can be used to corroborate the individual's responses (e.g., content of after-action reports), as well as taking formal steps to ensure that there are no legal or military repercussions for service members who admit engaging in unsanctioned behaviours (e.g., formal waivers of culpability).

The absence of a variable in the CFMHS that specified the specific year(s) each service member was deployed to Afghanistan, thus precluding the analysis of potential cohort effects and how these related to exposure to PMIE and self-rated positive mental health, is another potential study limitation. In particular, the number of fatalities the Canadian Forces (CF) experienced fluctuated significantly over the 12-year duration of the Afghan deployment peaking between 2006 and 2009 when on average 33 individuals were killed each year (Veterans Affairs Canada, 2019). These fluctuations in fatalities were associated with changes in both the purpose and scope of the various operations that comprised the mission as a whole. Between 2001 and 2003, for example, the CF were focussed on combating international terrorist entities hiding in-country and the regime believed to be supporting them. This focus was modified between 2003 and 2008 when the security of the nation's capital, Kabul, became paramount such that a new Afghan government could be established; the CF mandate was broadened further to encompass combating the insurgency in Kandahar Province (2006-2011). Finally, beginning in 2011 CF members were responsible for assisting with the training and professional development support of various Afghan National Security Force personnel so that they

would be ready to take over responsibility for the nation's security when the CF mission to Afghanistan would come to an end in 2014 (Department of National Defence, 2018).

Finally, as the CFMHS was only administered to currently serving members of the Canadian Armed Forces, it may present an incomplete picture of both the prevalence of positive mental health in the CF and the affect that exposure to a PMIE may have on the same. For example, individuals who served in Afghanistan but have since been discharged from the military due to physical or psychological injury, would not have been captured in this iteration of the CFMHS. Consequentially, the prevalence rates presented in this study may be more representative of a "high functioning" sample of CF members. Future research regarding prevalence rates of mental health issues including positive mental health and moral injury would benefit from broadening the sample to include both current members of the CF as well as those who would not be considered veterans to ensure that the results are as representative of the CF membership as possible.

These limitations aside, this investigation found that the positive mental health of Canadian Forces members deployed in support of the mission to Afghanistan is similar to that of the general Canadian population as a whole, but exposure to potentially morally injurious events while deployed has a detrimental effect on the mental health of these service members. As such, further research into how the exposure to potential morally injurious events and the concomitant emotional, psychological, and behavioural ramifications of such exposure is needed. The results of these future studies will provide a foundation for developing training procedures that will better prepare service men and women for when they encounter this new aspect of the everchanging battlespace.

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Chapter 5 – Overall Discussion

Using data from the *Canadian Forces Mental Health Survey* (CFMHS; Statistics Canada, 2014), the current study examined a representative sample of Canadian Armed Forces (CF) members who were deployed in support of the recent mission to Afghanistan and their experiences with and exposure to potentially morally injurious events (PMIE). As the Canadian Forces and Department of National Defence (DND) do not currently collect information on exposure to PMIE, the primary focus of the study was to estimate the prevalence rate of exposure to PMIE in this population. Next, two groups were created according to Canadian Forces members' reported exposure to PMIE (i.e., exposed to a PMIE, not exposed to a PMIE) to determine how this exposure affects the self-rated mental health of these CF members. The extent and type of ethical training currently provided to CF members and its applicability to situations that might represent a PMIE was also reviewed in order to establish context for the subsequent empirical analyses.

Prevalence estimates for exposure to PMIE

Questions relating to seven different events that would meet the criteria for a PMIE according to the definition given by Litz (Litz et al., 2009) were asked including if the respondent had difficulty distinguishing between combatants and non-combatants, ever accidentally injured or killed another person, seen injured women or children that they were unable to help, or witnessed atrocities or massacres while on a CF deployment (see Table 3.1 for complete list of questions). Of those CF members that took part in the CFMHS, almost two-thirds reported having experienced an event that would meet the criteria for being a PMIE, with the most frequently endorsed PMIEs relating to seeing ill or injured women and children they were unable to help (48%) and having difficulty

distinguishing between combatants and non-combatants (43%). As the CFMHS used a stratified random sampling framework to ensure that survey respondents would be representative of the whole of the CF, this would translate to approximately 45,000 service members having potentially been exposed to some type of a PMIE, with 33,000 reporting they were unable to help sick or injured women and children, and 30,000 having experienced difficulty distinguishing combatants from non-combatants. These are likely conservative estimates of the actual exposure rates since the CFMHS only surveyed currently serving Regular and Reserve Force members, meaning that individuals who had left or been discharged from the CF prior to survey completion would not have been captured.

Exposure to PMIE and self-reported mental health of CF members

While the number of individuals exposed to a PMIE that go on to develop a moral injury is not currently known, in part due to the highly personal and thereby variable nature of the injury itself. However, if one were to use the past-year prevalence rate of PTSD as a rough guideline for moral injury prevalence (i.e., 5.3%; Pearson, Zamorski, & Janz, 2014), this would mean that over 3,600 currently serving CF members may be experiencing the effects of a moral injury. The effect that exposure had on the results of the MHC-SF (Keyes, 2009), a self-report measure of mental health and functioning, would seem to support this assumption. When the responses of all CFMHS participants were analysed the rates of flourishing (i.e., positive mental health and functioning) and languishing (i.e., negative mental health and functioning) reported by CF members were similar to those of the Canadian population as reported in the 2012 Canadian Community Health Survey – Mental Health (CCHS-MH; Gilmour, 2014). However, when analyses

were conducted comparing the mental health statuses of those CF members exposed and not exposed to PMIEs the rates of flourishing and languishing diverged significantly. Individuals who reported having been exposed to a PMIE were found to be 37% less likely to be classified as flourishing and 138% more likely to be classified as languishing than those members who did not report experiencing a PMIE exposure.[19] This increased in rate of languishing is most dramatic for those CF members who report accidentally killing or seriously injuring another person with this group having a 229% greater likelihood of languishing than those who had not. These results clearly indicate that exposure to PMIEs has a detrimental effect on the mental wellbeing of CF members, however it is measured.

CF training around mental health and resilience

The mental health and resilience training (MHT) program utilized by the CF, entitled the Road to Mental Readiness (R2MR), has been the subject of a variety of research regarding content and format of delivery (e.g., Fikretoglu, Beatty, & Liu, 2014; Fikretoglu, D'Agata, Sullivan-Kwantes, & Richards, 2017; Fikretoglu, Liu, & Blacker, 2016; Gaspar, Fikretoglu, Liu, & Blacker, 2017), the analysis of CFMHS data conducted herein may have uncovered related issue that the CF and DND may wish to address, namely the ability of CF members to recognize that the training they received constitutes MHT. According to the training materials reviewed, R2MR training begins at the basic military qualifications training levels and continues throughout the service member's time in the CF becoming more specialized as they rise in rank and deployment

[19] This means that for every 100 individuals who were *not* exposed to a PMIE and are flourishing, only 63 individuals who *were* exposed to a PMIE are flourishing. For every 100 individuals who were *not* exposed to a PMIE that are languishing, 238 individuals who *were* exposed to a PMIE are languishing.

requirements change. This would suggest that the R2MR training is a frequent and consistent part of every members' career while in the CF and yet, a significant proportion of CFMHS respondents (16%) reported having received no MHT in the 5 years prior to survey administration. As part of the administration of the mental health and resilience training section, MHT was defined for participants as any "psychologically oriented training done in a group setting that is meant to help you cope better with stresses or personal problems" (p. 207; Statistics Canada, 2014) so respondents would have understood the types of programs and training the questions referred to. Based on the questions that made up the MHT section, this result would mean that 16%, or over 11,000 individuals in the whole of the CF, were never deployed [even though the inclusion criteria required that they have been deployed in support of the mission to Afghanistan], did not advance in rank, undertook no professional development training, and did not receive any routine unit, trade specific, or other work-related training in the preceding 5 years; all areas into which the R2MR has been incorporated. While it is possible that these individuals may actually not have received any MHT during the recall timeframe, confirmation is not possible as the CF does not currently maintain registration lists for these courses (Zamorski, Rusu, Guest, & Fikretoglu, 2018). An alternative explanation might be that these respondents did receive R2MR training but may not have recognize it as MHT training and, as such, failed to report having received training. Support for this interpretation could be seen in the results of the only R2MR effectiveness study conducted to date (Carleton et al., 2018). This study, involving a municipal police force, found that there were no statistically significant differences in mental health knowledge, resilience, or stress levels between levels determined prior to R2MR training and those at

either 6- or 12-month follow-up testing points. Attitudes around mental health stigma did significantly improve immediately following training, however, by 6- and 12-month follow-ups these improvements had dissipated. Since the primary objectives of the R2MR program was to increase mental health literacy and reduce stigma, that these results were either not found or were not maintained could be seen as reinforcing the interpretation that the memory of receiving the training had waned and more work needs to be done to improve R2MR to maximize its efficacy. Specific research within the CF itself will be required to determine if the results from a police force are also applicable to a military sample. Finally, establishing an ongoing attendance record for the mental health and resilience training programs will also help ensure that the programs' messages are successfully delivered to all members of the CF in the future.

CF training around ethics and ethical decision making

A review of the content of ethics instruction provided to CF members and the ethical decision-making model they are trained to utilize in potentially ethically challenging situations lead to the conclusion that neither adequately prepares service members for exposure to PMIE when they are deployed. Specifically, the *DND and CF Code of Values and Ethics* (Department of National Defence, 2012), the central document that codifies the requisite values, obligations, and behaviours members of both the DND and CF are to conform to, is missing the chapter specifically relating to appropriate values and ethics during operations (i.e., when CF members are deployed). This critical chapter has been absent since the *DND and CF Code of Values and Ethics* came into force in June 2012, since which the CF has been engaged in numerous peace support operations and humanitarian aid missions, as well as the recent combat mission to

Afghanistan. Without the direction that this chapter is meant to provide CF members are required to employ the remaining chapters of the *DND and CF Code of Values and Ethics*, as well as *Duty with Honour: The profession of arms in Canada* (Canadian Defence Academy - Canadian Forces Leadership Institute, 2003), and related key doctrines to guide their behaviour while on operations. These documents are often of little applicability in the complex, time limited situations that arise in deployment situations in general, let alone the kinds of nuanced situations that can potentially lead to a moral injury for those involved.

Similarly, the ethical decision-making model that CF members are taught as part of the Defence Ethics Program (DEP) is also too cumbersome and time consuming to work in an operational environment; a conclusion arrived at by others regarding previous iterations of the DEP and its decision-making process as well (e.g., Sanschagrin, 2006; Woodgate, 2004). The major impediments to applying the DEP decision-making process to operational environments are the following. First, the model requires that all the relevant information about the situation be available to the CF member at the time they need to make their decision, so they can appropriately weigh the respective advantages and disadvantages of all possible option alternatives and then select the 'right one.' In operational environments such as combat operations, service members may need to make these kinds of decisions in seconds, if not instantaneously, to avoid serious injury or death, making the kind of step-by-step decision-making process taught by the DEP inapplicable and potentially harmful. As well, in situations involving PMIEs, the required information on which they are to base their decision may not become available until after the decision has been made (e.g., does the bundle the person running at me

with contain a bomb or a baby?) Second, the model is only applicable to situations where the CF member involved can affect the outcomes, so it is inapplicable to situations that are out of the member's control due to either restrictive rules of engagement, or situations that have already occurred and, as such, cannot be changed (e.g., the child soldier or abuse of a minor scenarios in Chapter 2).

That the chapter relating to values and ethics in operations is currently missing from the central reference document for the CF provides stakeholders with a unique opportunity. Rather than having to attempt to revise and update an existing chapter to make it fit with the modern realities of military deployments, a completely new chapter can be written specifically designed to address the morally and ethically complex realities that service members may encounter in the field, whether they be on peace-support operations or are once again engaged in a combat role.

Potential directions for future research

Research regarding moral injury is still in its early stages thus there are several avenues still needing to be explored. One of these relates to how an individual's role in the military, or role during a particular deployment, might affect what an individual would consider a potentially morally injurious event (PMIE) as well as how they may present with a moral injury. For example, a doctor who must provide medical care to a captured enemy combatant who is known to have been responsible for the deaths of members of the doctor's team. As a doctor, he or she is bound both by their Hippocratic oath to help the sick, and by the Geneva conventions as a military officer (see Table 1.1, point 8 relating to the treatment of the sick and injured, and point 9 relating to treatment of prisoners of war), irrespective of her or his own beliefs about how this individual

should be treated (or not treated). According to Litz (Litz et al., 2009), a PMIE involves the perpetrating of, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations. What may make the issue reflected in the preceding example a PMIE may not be that the doctor behaved unethically or immorally by treating the enemy combatant, but rather that they *did not* behave unethically or immorally and refuse to treat the enemy combatant (as their core beliefs regarding justice may have required they do) and now they feel guilt or shame about having done so, or perhaps they may even feel guilty about having considered not treating the individual and thereby violated their various oaths.

Related to this question is how proximity to the outcomes of one's potentially morally injurious actions may affect the experience and development of a MI; this proximity may be physical or psychological. With regards to physical proximity, much of the recent research into moral injury has been conducted with members of the Army or Marines who were deployed to either Iraq or Afghanistan in combat roles; roles that would allow these individuals to directly observe the results of their actions. Compare this level of exposure to that of members of an air force who would (hypothetically) fly into a combat zone, drop a bomb, then exit the area again; beyond potentially seeing the bomb explode, they generally would not directly witness the person-level effects of their actions. In the cases of Iraq and Afghanistan, members of the navy would likely be the most distally connected with the results of their actions being that these conflicts occurred in land-locked areas. The topic of inquiry is not the branch of service per se, while this may be the easiest variable to group respondents according to, but rather their distance from the results of their actions (e.g., an army surgeon would be located away from the

actual combat, and a naval aviator may still drop bombs in a land war). With the increasing use of unmanned aerial vehicles (UAV; "drones") in combat situations, the idea of psychological distance from one's actions may be best exemplified in the role of a drone pilot. Drone pilots can operate their UAV from hundreds if not thousands of kilometres away through a satellite uplink viewing the UAV's surroundings and behaviour on a video screen, similar to a video game. This allows the operator to act, react, and witness the results of these actions in (near) real-time, however, they are not physically present in the same way as a fighter pilot conducting a similar combat mission would be. Questions around how this possible psychological distance from their actions might affect the drone pilots' view of the moral repercussions of their actions (e.g., killing) and how this might relate to their development of moral injury also will require further research.

One important question that underlies most future studies relating to moral injury relates to establishing how exposure to PMIE is connected to the eventual development of a moral injury (MI). As was stated earlier, if an individual develops a moral injury, they must have been exposed to a PMIE, however not everyone exposed to a PMIE will develop a moral injury; the conversion rate is unknown. As is the case with most conversion research, to determine this rate will require longitudinal studies be conducted that follow individuals who report having been exposed to a PMIE to see who goes on to later develop a MI and when. The results of these studies would be informative to researchers in a number of ways. First, they would allow researchers to determine potential risk and protective factors relating to MI development. Second, knowledge of the natural conversion rates would allow predictions to be made regarding future mental

illness and treatment requirements for those currently deployed to environments where PMIE may be common. The best conduct of this research would necessitate that standardized measures be used to determine both exposure to a PMIE (e.g., the MIES or MIQ-M; Currier, Holland, Drescher, & Foy, 2015; Nash et al., 2013) as well as a screening for the presence of a MI (e.g., EMIS-M, or MISS-M; Currier et al., 2017; Koenig et al., 2017, 2018) so that results can be compared across studies. Unlike with other disorders and diseases where the outcome of interest is another point on the course of a disease and thus is as such out of the researcher's control (e.g., the progression from mild-cognitive impairment to dementia; Mitchell & Shiri-Feshki, 2009), the actual injury in a moral injury is caused by the individual's realization that a moral transgression has occurred (Litz et al., 2009), which can be effected by the researcher's actions through the Hawthorne effect (or observer) effect. Repeated administrations of a standardized MI screening measure, as would be typical in a longitudinal conversion study, may cause participants to think about their experiences more than they might have if they had not been part of the study. This increase in thoughts relating to the PMIE (e.g., 'The researcher keeps asking me if I feel guilt or shame about what I did when I was deployed. Did I do something that I should be guilty or ashamed about?') may lead them to realize that their moral beliefs may have been transgressed and, in turn, potentially alter the natural course of MI development for that individual invalidating the predictive aspects of the research study. How a longitudinal conversion study should be designed where part of the conduct of the research itself may affect the study's outcome, is a question that is deserving of study on its own.

In conclusion, the results of the examinations conducted herein lend credence to the belief that potentially morally injurious events are a very real threat to the continued good mental health and functioning of the world's militaries, whether they are deployed for combat or on peace support operations. As a result, further research into both the assessment and treatment of moral injury as well as best practices for pre-deployment training and preparation are required as it is unlikely that warfighting will revert to the more ordered form of the past again.

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Appendix A
Adult Mental Health Continuum – Short Form (MHC-SF)

Please answer the following questions about how you have been feeling during the last month. Place a checkmark in the box that best represents how often you have experienced or felt the following:

	During the past month, how often did you feel …	Never	Once or twice	About once a week	2 or 3 times a week	Almost every day	Every day
Emotional well-being	1 Happy?						
	2 Interested in life?						
	3 Satisfied with life?						
Social well-being	4 That you had something important to contribute to society?						
	5 That you belonged to a community (like a social group, or your neighbourhood)?						
	6 That our society is becoming a better place for people like you?						
	7 That people are basically good?						
	8 That the way our society works makes sense to you?						
Psychological well-being	9 That you liked most parts of your personality?						
	10 Good at managing the responsibilities of your daily life?						
	11 That you had a warm and trusting relationship with others?						
	12 That you had experiences that challenged you to grow and become a better person?						
	13 Confident to think or express your own ideas and opinions?						
	14 That your life has a sense of direction or meaning to it?						

[1] Adapted from Keyes, 2009. Used with permission

Note: The left-most column is not included on the actual questionnaire; it is included here to indicate which questions relate to each of the three spheres of well-being assessed by the MHC-SF.

Appendix B
Effect of PMIE exposure on PMH category - Flourishing

Characteristic	Any PMIE		Accidentally caused serious injury or death of another person	
PMH - Flourishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	0.63 ***	0.54 - 0.74	0.66 *	0.48 - 0.91
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.89	0.71 - 1.12	0.94	0.72 - 1.24
Age (years)				
19-24	2.06	1.10 - 3.83	2.14 *	1.10 - 4.16
25-34	1.26	0.79 - 2.12	1.32	0.79 - 2.24
35-44	0.99	0.62 - 1.59	1.05	0.64 - 1.73
45-54	1.07	0.66 - 1.74	1.06	0.64 - 1.75
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	0.57 ***	0.44 - 0.73	0.58 ***	0.43 - 0.76
Single (never married)	0.65 ***	0.53 - 0.80	0.68 ***	0.54 - 0.85
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.91	0.64 - 1.32	1.05	0.72 - 1.53
Some post-secondary	1.26	0.83 - 1.92	1.38	0.90 - 2.12
Post-secondary graduation	1.12	0.78 - 1.61	1.35	0.92 - 1.99
> Post-secondary graduation	2.00 **	1.21 - 3.30	2.53 ***	1.47 - 4.36
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.98	0.84 - 1.14	0.94	0.79 - 1.11
Rank Group				
Junior NCM	0.56 ***	0.44 - 0.70	0.55 ***	0.43 - 0.72
Senior NCM	0.81	0.65 - 1.02	0.84	0.66 - 1.08
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.42 ***	1.16 - 1.73	1.41 **	1.12 - 1.77
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.02	0.81 - 1.27	1.11	0.86 - 1.43
241-360 days	1.15	0.87 - 1.53	1.28	0.92 - 1.77
Over 361 days	0.93	0.70 - 1.23	0.95	0.70 - 1.29

Characteristic	Purposely injured, tortured, or killed someone		Saw atrocities or massacres	
PMH - Flourishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	0.68 ***	0.56 - 0.84	0.75 **	0.63 - 0.94
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.92	0.67 - 1.20	0.92	0.70 - 1.21
Age (years)				
19-24	2.36 *	1.21 - 4.60	2.16 *	1.11 - 4.22
25-34	1.44	0.85 - 2.42	1.33	0.79 - 2.25
35-44	1.11	0.67 - 1.84	1.07	0.65 - 1.78
45-54	1.09	0.66 - 1.81	1.07	0.64 - 1.79
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	0.58 ***	0.44 - 0.76	0.58 ***	0.44 - 0.76
Single (never married)	0.67 ***	0.54 - 0.84	0.67 ***	0.54 -00.84
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.06	0.72 - 1.56	1.04	0.70 - 1.53
Some post-secondary	1.38	0.89 - 2.14	1.35	0.97 - 2.08
Post-secondary graduation	1.35	0.92 - 2.00	1.33	0.90 - 196
> Post-secondary graduation	2.54 ***	1.47 - 4.37	2.50 ***	1.45 - 4.32
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.94	0.79 - 1.12	0.94	0.79 - 1.11
Rank Group				
Junior NCM	0.55 ***	0.43 - 0.72	0.56 ***	0.43 - 0.73
Senior NCM	0.84	0.66 - 1.08	0.86	0.67 - 1.11
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.44 **	1.12 - 1.78	1.43 **	1.13 - 1.80
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.12	0.87 - 1.44	1.12	0.87 - 1.44
241-360 days	1.28	0.92 - 1.76	1.30	0.94 - 1.80
Over 361 days	0.98	0.72 - 1.33	0.98	0.92 - 1.33

Characteristic	Unable to respond due to ROE		Seen injured women/children unable to help	
PMH - Flourishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	0.68 ***	0.58 - 0.79	0.66 ***	0.56 - 0.77
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.86	0.66 - 1.12	0.89	0.69 - 1.16
Age (years)				
19-24	2.27 *	1.17 - 4.39	2.21 *	1.16 - 4.22
25-34	1.37	0.82 - 2.30	1.14	0.82 - 2.29
35-44	1.04	0.63 - 1.72	1.07	0.65 - 1.74
45-54	1.03	0.61 - 1.72	1.02	0.62 - 1.70
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	0.56 ***	0.43 - 0.73	0.57 ***	0.43 - 0.74
Single (never married)	0.67 ***	0.54 - 0.83	0.68 ***	0.55 - 0.84
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.98	0.67 - 1.44	0.99	0.68 - 1.45
Some post-secondary	1.27	0.82 - 1.97	1.29	0.83 - 1.99
Post-secondary graduation	1.21	0.83 - 1.78	1.24	0.45 - 1.82
> Post-secondary graduation	2.16 **	1.27 - 3.65	2.31 **	1.36 - 3.92
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.93	0.79 - 1.10	0.94	0.80 - 1.11
Rank Group				
Junior NCM	0.43 ***	0.42 - 0.69	0.51 ***	0.40 - 0.67
Senior NCM	0.81	0.64 - 1.03	0.80	0.63 - 1.01
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.43 **	1.14 - 1.79	1.43 **	1.14 - 1.79
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.00 **	0.78 - 1.28	1.00	0.78 - 1.28
241-360 days	1.10	0.81 - 1.51	1.10	0.82 - 1.51
Over 361 days	0.89	0.66 - 1.19	0.89	0.66 - 1.20

Characteristic	Felt responsible for the death of Canadian or allied personnel		Difficulty distinguishing between combatants and non-combatants	
PMH - Flourishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	0.63 ***	0.49 - 0.82	0.68 ***	0.59 - 0.79
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.92	0.71 - 1.19	0.84	0.64 - 1.09
Age (years)				
19-24	2.18 *	1.13 - 2.21	2.24 **	1.14 - 4.38
25-34	1.39	0.83 - 2.32	1.37	0.81 - 2.33
35-44	1.05	0.64 - 1.72	1.05	0.63 - 1.75
45-54	1.03	0.62 - 1.73	1.02	0.60 - 1.73
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	0.56 ***	0.43 - 0.73	0.56 ***	0.43 - 0.73
Single (never married)	0.68 ***	0.55 - 0.84	0.57 ***	0.54 - 0.83
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.00	0.68 - 1.46	1.02	0.70 - 1.49
Some post-secondary	1.31	0.84 - 2.03	1.30	0.84 - 2.01
Post-secondary graduation	1.27	0.86 - 1.86	1.28	0.88 - 1.87
> Post-secondary graduation	2.32 **	1.36 - 3.94	2.25 **	1.33 - 3.80
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.93	0.79 - 1.09	0.95	0.81 - 1.12
Rank Group				
Junior NCM	0.52 ***	0.40 - 0.66	0.50 ***	0.40 - 0.64
Senior NCM	0.77 *	0.60 - 0.98	0.76 *	0.60 - 0.97
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	1.43 **	1.15 - 1.79	1.48 ***	1018 - 1.85
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.00	0.78 - 1.28	1.01	0.79 - 1.29
241-360 days	1.09	0.80 - 1.49	1.11	0.82 - 1.51
Over 361 days	0.87	0.65 - 1.18	0.91	0.67 - 1.22

Note: AOR = Adjusted Odds Ratio, Div. = Divorced, MHT = Mental Health Training, NCM = Non-Commissioned Member, PMH = Positive Mental Health, PMIE = Potentially Morally Injurious Event, ROE = Rules of Engagement, SS = Secondary School. * $0.01 < p \leq 0.05$, ** $0.001 < p \leq 0.01$, *** $p \leq 0.001$

Appendix C
Effect of PMIE exposure on PMH category – Moderate

Characteristic	Any PMIE		Accidentally caused serious injury or death of another person	
PMH - Moderate	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	1.46 ***	1.24 - 1.70	1.20	0.86 - 1.67
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.15	0.91 - 1.44	1.06	0.81 - 1.39
Age (years)				
19-24	0.60	0.32 - 1.11	0.63	0.32 - 1.23
25-34	0.94	0.57 - 1.54	0.97	0.57 - 1.64
35-44	1.18	0.74 - 1.89	1.18	0.71 - 1.98
45-54	1.01	0.62 - 1.64	1.07	0.64 - 1.79
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.68 ***	1.30 - 2.16	1.64	1.25 - 2.16
Single (never married)	1.40 **	1.13 - 1.72	1.34	1.07 - 1.68
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.19	0.82 - 1.72	1.05	0.71 - 1.56
Some post-secondary	0.80	0.52 - 1.23	0.76	0.49 - 1.19
Post-secondary graduation	0.95	0.65 - 1.38	0.81	0.54 - 1.20
> Post-secondary graduation	0.48 **	0.29 - 0.81	0.40 ***	0.23 - 0.70
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.06	0.90 - 1.24	1.10	0.92 - 1.31
Rank Group				
Junior NCM	*1.59* ***	*1.26 - 2.01*	*1.57* ***	*1.21 - 2.04*
Senior NCM	1.18	0.93 - 1.49	1.13	0.87 - 1.45
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.72 ***	1.12 - 1.77	0.72	0.57 - 0.92
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.03	0.82 - 1.30	0.95	0.73 - 1.22
241-360 days	0.90	0.67 - 1.20	0.82	0.59 - 1.13
Over 361 days	1.11	0.83 - 1.47	1.09	0.79 - 1.48

Characteristic	Purposely injured, tortured, or killed someone		Saw atrocities or massacres	
PMH - Moderate	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	1.23 *	1.02 - 1.56	1.24 *	1.04 - 1.49
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.08	0.83 - 1.42	1.09	0.83 - 1.42
Age (years)				
19-24	0.60	0.31 - 1.17	0.63	0.32 - 1.23
25-34	0.92	0.54 - 1.58	0.97	0.57 - 1.16
35-44	1.14	0.68 - 1.92	1.17	0.70 - 1.95
45-54	1.05	0.63 - 1.77	1.06	0.63 - 1.78
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.63 ***	1.24 - 2.14	1.64 ***	1.24 - 2.15
Single (never married)	1.34 **	1.07 - 1.69	1.34 *	1.07 - 1.69
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.05	0.71 - 1.55	1.06	0.72 - 1.58
Some post-secondary	0.76	0.49 - 1.19	0.78	0.50 - 1.21
Post-secondary graduation	0.81	0.54 - 1.21	0.82	0.5 - 1.22
> Post-secondary graduation	0.40 ***	0.23 - 0.70	0.41	0.23 - 0.71
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.09	0.91 - 1.30	1.09	0.92 - 1.31
Rank Group				
Junior NCM	*1.57* ***	*1.21 - 2.04*	*1.56* ***	*1.20 - 20.4*
Senior NCM	1.13	0.87 1.46	1.05	0.86 - 1.43
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.72 **	0.57 - 0.91	0.72 **	0.56 - 0.91
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	0.94	0.73 - 1.21	0.94	0.73 - 1.21
241-360 days	0.82	0.59 - 1.13	0.80	0.58 - 1.11
Over 361 days	1.07	0.78 - 1.46	1.06	0.77 - 1.45

Characteristic	Unable to respond due to ROE		Seen injured women/children unable to help	
PMH - Moderate	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	1.34 ***	1.14 - 1.58	1.44 ***	1.22 - 1.70
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.16	0.89 - 1.51	1.13	0.87 - 1.46
Age (years)				
19-24	0.57	0.29 - 1.11	0.58	0.30 - 1.12
25-34	0.93	0.55 - 1.58	0.93	0.55 - 1.56
35-44	1.18	0.71 - 1.97	1.16	0.70 - 1.91
45-54	1.09	0.54 - 1.83	1.09	0.65 - 1.93
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.71 ***	1.31 - 2.24	1.69 ***	1.30 - 2.22
Single (never married)	1.33 *	1.07 - 1.67	1.33 *	1.07 - 1.66
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.11	0.75 - 1.64	1.10	0.75 - 1.63
Some post-secondary	0.79	0.51 - 1.24	0.79	0.50 - 1.23
Post-secondary graduation	0.88	0.59 - 1.31	0.86	0.58 - 1.29
> Post-secondary graduation	0.46 **	0.27 - 0.78	0.43 **	0.25 - 0.74
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.11	0.94 - 1.31	1.10	0.93 - 1.30
Rank Group				
Junior NCM	*1.66* ***	*1.29 - 2.13*	*1.69* ***	*1.32 - 2.17*
Senior NCM	1.17	0.91 - 1.50	1.18	0.92 - 1.52
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.71 **	0.56 - 0.90	0.71 **	0.56 - 0.89
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.07	0.82 - 1.38	1.07	0.82 - 1.38
241-360 days	0.95	069 - 1.32	0.95	0.69 - 1.31
Over 361 days	1.19	0.88 - 1.62	1.18	0.87 - 1.61

Characteristic	Felt responsible for the death of Canadian or allied personnel		Difficulty distinguishing between combatants and non-combatants	
PMH - Moderate	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	1.34 *	1.02 - 1.75	1.35 ***	1.16 - 1.58
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.10	0.85 - 1.43	1.19	0.92 - 1.54
Age (years)				
19-24	0.59	0.30 - 1.15	0.58	0.30 - 1.13
25-34	0.92	0.55 - 1.56	0.93	0.55 - 1.58
35-44	1.17	0.71 - 1.96	1.17	0.70 - 1.97
45-54	1.08	0.54 - 1.83	1.09	0.64 - 1.86
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.72 ***	1.31 - 2.25	1.71 ***	1.31 - 2.24
Single (never married)	1.33 *	1.07 - 1.66	1.34 **	1.08 - 1.67
Education				
Less than SS graduation	Reference		Reference	
SS graduate	1.09	0.74 - 1.62	1.08	0.73 - 1.596
Some post-secondary	0.78	0.50 - 1.22	0.78	0.50 - 1.22
Post-secondary graduation	0.85	0.57 - 1.27	0.84	0.57 - 1.26
> Post-secondary graduation	0.44 **	0.25 - 0.75	0.44 **	0.26 - 0.76
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	1.11	0.94 - 1.31	1.09	0.92 - 1.29
Rank Group				
Junior NCM	*1.71* ***	*1.33 - 2.19*	*1.74* ***	*1.35 - 2.23*
Senior NCM	1.22	0.95 - 1.57	1.23	0.96 - 1.58
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.71 **	0.56 - 0.89	0.69 **	0.44 - 0.87
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	1.07	0.83 - 1.39	1.06	0.82 - 1.38
241-360 days	0.96	0.70 - 1.32	0.95	0.68 - 1.31
Over 361 days	1.21	0.89 - 1.64	1.17	0.86 - 1.59

Note: AOR = Adjusted Odds Ratio, Div. = Divorced, MHT = Mental Health Training, NCM = Non-Commissioned Member, PMH = Positive Mental Health, PMIE = Potentially Morally Injurious Event, ROE = Rules of Engagement, SS = Secondary School. * $0.01 < p \leq 0.05$, ** $0.001 < p \leq 0.01$, *** $p \leq 0.001$

Appendix D
Effect of PMIE exposure on PMH category – Languishing

Characteristic	Any PMIE		Accidentally caused serious injury or death of another person	
PMH - Languishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	2.38 **	1.36 - 4.17	3.29 ***	1.78 - 6.10
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.88	0.37 - 2.12	0.99	0.39 - 2.54
Age (years)				
19-24	0.21	0.04 - 1.18	0.14 *	0.20 - 0.91
25-34	0.26	0.07 - 1.01	0.23 *	0.06 - 0.91
35-44	0.37	0.10 - 1.35	0.32	0.09 - 1.17
45-54	0.66	0.18 - 2.44	0.59	0.16 - 2.17
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.66	0.87 - 3.15	1.75	0.89 - 3.43
Single (never married)	2.21 **	1.23 - 3.96	2.16 *	1.15 - 4.07
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.62	0.25 - 1.54	0.58	0.24 - 1.41
Some post-secondary	0.88	0.33 - 2.30	0.67	0.26 - 1.75
Post-secondary graduation	0.69	0.29 - 1.63	0.55	0.23 - 1.29
> Post-secondary graduation	1.02	0.24 - 4.22	0.68	0.14 - 3.34
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.81	0.52 - 1.27	0.89	0.55 - 1.43
Rank Group				
Junior NCM	*3.57 **	*1.49 - 8.59*	*4.02 **	*1.46 - 11.08*
Senior NCM	1.89	0.81 - 4.39	1.88	0.69 - 5.14
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.77	0.46 - 1.32	0.80	0.44 - 1.47
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	0.71	0.36 - 1.39	0.69	0.33 - 1.47
241-360 days	0.73	0.31 - 1.71	0.69	0.23 - 1.80
Over 361 days	0.84	0.73 - 1.88	0.85	0.36 - 2.03

Characteristic	Purposely injured, tortured, or killed someone		Saw atrocities or massacres	
PMH - Languishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	2.62 ***	1.49 - 4.60	1.71 *	1.06 - 2.76
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.06	0.41 - 2.75	1.00	0.39 - 2.56
Age (years)				
19-24	0.10 *	0.02 - 0.63	0.13 *	0.02 - 0.85
25-34	0.18 *	0.05 - 0.69	0.22 *	0.05 - 0.89
35-44	0.26 *	0.70 - 0.96	0.29	0.08 - 1.09
45-54	0.53	0.14 - 1.92	0.53	0.14 - 2.04
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.69	0.86 - 3.33	1.75	0.89 - 3.46
Single (never married)	2.18 **	1.15 - 4.13	2.15 *	1.14 - 4.05
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.55	0.22 - 1.38	0.59	0.23 - 1.51
Some post-secondary	0.67	0.25 - 1.83	0.73	0.27 - 1.99
Post-secondary graduation	0.53	0.22 - 1.31	0.56	0.22 - 1.40
> Post-secondary graduation	0.66	0.14 - 3.24	0.70	0.14 - 3.42
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.89	0.55 - 1.42	0.88	0.55 - 1.43
Rank Group				
Junior NCM	*3.95 **	*1.45 - 10.70*	*3.89 **	*1.42 - 10.62*
Senior NCM	1.88	0.70 - 5.02	1.83	0.69 - 4.91
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.80	0.44 - 1.44	0.79	0.43 - 1.43
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	0.66	0.32 - 1.39	0.67	0.32 1.40
241-360 days	0.68	0.26 - 1.76	0.65	0.25 - 1.73
Over 361 days	0.79	0.33 - 1.89	0.79	0.33 - 1.91

Characteristic	Unable to respond due to ROE		Seen injured women/children unable to help	
PMH - Languishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	2.24 ***	1.42 - 3.53	1.82 **	1.16 - 2.86
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	1.05	0.43 - 2.56	0.95	0.40 - 2.30
Age (years)				
19-24	0.17 *	0.03 - 0.95	0.18	0.03 - 1.04
25-34	.23 *	0.06 - 0.89	0.23 *	0.06 - 0.90
35-44	0.32	0.09 - 1.17	0.31	0.08 - 1.15
45-54	0.61	0.16 - 2.29	0.61	0.16 - 2.31
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.63	0.83 - 3.20	1.59	0.81 - 3.11
Single (never married)	2.31 **	1.26 - 4.23	2.27 **	1.25 - 4.13
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.61	0.25 - 1.53	0.61	0.24 - 1.51
Some post-secondary	0.91	0.34 - 2.40	0.88	0.33 - 2.34
Post-secondary graduation	0.66	0.28 - 1.59	0.60	0.26 - 1.51
> Post-secondary graduation	0.90	0.21 - 3.88	0.82	0.19 - 3.52
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.83	0.53 - 1.32	0.83	0.53 - 1.32
Rank Group				
Junior NCM	*3.73* **	*1.47 - 9.51*	*4.00* **	*1.56 - 10.25*
Senior NCM	1.96	0.79 - 4.84	2.10	0.84 - 5.24
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.91	0.45 - 1.46	0.81	0.45 - 1.46
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	0.65	0.33 - 1.30	0.67	0.34 - 1.32
241-360 days	0.68	0.29 - 1.61	0.70	0.30 - 1.65
Over 361 days	0.75	0.33 - 1.70	0.76	0.34 - 1.71

Characteristic	Felt responsible for the death of Canadian or allied personnel		Difficulty distinguishing between combatants and non-combatants	
PMH - Languishing	**AOR**	**95% CI**	**AOR**	**95% CI**
PMIE Exposure				
Not exposed	Reference		Reference	
Exposed	2.81 ***	1.58 - 4.99	2.10 ***	1.36 - 3.23
Sociodemographic				
Sex				
Male	Reference		Reference	
Female	0.91	0.38 - 2.20	1.11	0.46 - 2.70
Age (years)				
19-24	1.18 *	0.03 - 0.99	0.17	0.03 - 1.01
25-34	0.22 *	0.06 - 0.83	0.23 *	0.06 - 0.91
35-44	0.30	0.08 - 1.10	0.31	0.08 - 1.18
45-54	0.57	0.15 - 2.14	0.59	0.15 - 2.31
55 and over	Reference		Reference	
Marital Status				
Married or Common-law	Reference		Reference	
Widowed, Separated, or Div.	1.62	0.83 - 3.19	1.60	0.81 - 3.17
Single (never married)	2.27 **	1.25 - 4.12	2.29 **	1.26 - 4.19
Education				
Less than SS graduation	Reference		Reference	
SS graduate	0.61	0.24 - 1.54	0.58	0.23 - 1.45
Some post-secondary	0.87	0.33 - 2.30	0.87	0.33 - 2.28
Post-secondary graduation	0.62	0.25 - 1.50	0.60	0.25 - 1.46
> Post-secondary graduation	0.78	0.18 - 3.46	0.85	0.20 - 3.68
Military Factors				
Component				
Regular Forces	Reference		Reference	
Reserve Forces	0.83	0.52 - 1.33	0.81	0.51 - 1.28
Rank Group				
Junior NCM	*4.12 **	*1.59 - 10.67*	*4.29 **	*1.67 - 11.03*
Senior NCM	2.22 **	0.88 - 5.61	2.28	0.91 - 5.69
Officer	Reference		Reference	
MHT in last 5 years				
Any Mental Health Training	0.89	0.43 - 1.42	0.76	0.42 - 1.37
Deployment Related				
Total number of days deployed (days)				
< 120 days	Reference		Reference	
121-240 days	0.65	0.33 - 1.29	0.65	0.33 - 1.29
241-360 days	0.71	0.30 - 1.65	0.68	0.29 - 1.60
Over 361 days	0.76	0.34 - 1.72	0.73	0.32 - 1.65

Note: AOR = Adjusted Odds Ratio, Div. = Divorced, MHT = Mental Health Training, NCM = Non-Commissioned Member, PMH = Positive Mental Health, PMIE = Potentially Morally Injurious Event, ROE = Rules of Engagement, SS = Secondary School. * $0.01 < p \leq 0.05$, ** $0.001 < p \leq 0.01$, *** $p \leq 0.001$

Western Research

[redacted]

15 September 2017

Dear Dr. Kirkwood,

RE: REB#109544 Prevalence of moral injury in Canadian Forces members deployed to Afghanistan

Thank you for consulting with Western University's Research Ethics Board (REB) with regard to the disposition of your project.

Please retain this letter as a formal waiver of the requirement for REB approval of this activity. Based on the information that you have supplied, Western University's REB considers your project not to be research as described in the Tri-Council Policy Statement V.2 (Article 2.4) and, therefore, it does not fall under the purview of the REB (reference secondary use). Please note that in order to undertake your project you may need to seek permissions from other parties such as clinical managers or directors, your supervisor, the Privacy office, etc.

Western University's REB recommends that you manage and mitigate ethical issues, privacy risks, or other concerns that relate to your project. If applicable, participants should be informed of reasonably foreseeable risks and consent forms may be helpful in communicating these possibilities. Please note that there should be no references to the Western University's REB in your communications with participants (including, but not limited to, the consent form) as the REB does not provide oversight for this project.

If, during the course of this study, there are changes to the project or new information comes to light, which would affect the determination stipulated above, these should be brought to the immediate attention of the REB for re-assessment.

Best wishes for the successful completion of your project.

Western Research

[redacted]

Curriculum Vitae

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Post-Secondary Education & Degrees

Ph.D., Health and Rehabilitation Sciences
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2014 – 2019

Certificate in University Teaching and Learning
The University of Western Ontario
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2015 – 2018

M.A., Counselling Psychology (for Psychology Specialists)
University of Toronto
Toronto, Ontario, Canada
2002 – 2004

M.A., Psychology: Brain, Behaviour, and Cognitive Science
York University
Toronto, Ontario, Canada
2000 – 2002

Specialized Honours B.A., Psychology
York University
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1992 – 1996

Honours and Awards:

Western Graduate Research Scholarship ($14,000)
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Robert S. & Mary Gay, Donald, James and Helen (Taylor) Gay Endowed Research Fellowship in Veterans Care ($33,000)
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2016-2017

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Western Graduate Research Scholarship ($11,000)
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2015-2016

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2014-2015

Related Work Experience:

Teaching Assistant (Physical Therapy in Community Settings I)
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Allied Scientist, Parkwood Institute Research
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Research Associate, Specialized Geriatric Services
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2006 – 2016

Research Analyst, Law and Mental Health Division
Centre for Addictions and Mental Health, Toronto, Ontario, Canada
2003 – 2004

Teaching Assistant (Social Psychology)
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2002

Teaching Assistant (Abnormal Psychology)
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Publications:

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Poulin, P., **Hansen, K.T.**, Jolic, D., & Zakzanis, K.K. (1999). Schizophrenia and the temporal lobes: A quantitative review. The Clinical Neuropsychologist, 13, 221.

Conferences and Presentations:
6 International
8 National
9 Provincial

International

1. Montero-Odasso, M, Hall, M., **Hansen, K. T.**, Kloseck, M, & Speechley, M. (2009, July). Gait variability may assist in the identification of frailty. 19th IAGG World Congress of Gerontology and Geriatrics, International Association of Gerontology and Geriatrics (IAGG), Paris, France.
2. Hall, M., **Hansen, K. T.**, Kloseck, M., Speechley, M., & Montero-Odasso, M. (2009, May). Gait variability is associated with frailty. 2009 American Geriatric Society Annual Scientific Meeting, American Geriatrics Society. Chicago, IL.
3. Diachun, L, VanBussel, L, **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2008, March). Evaluating an Eldercare Clerkship: Effect on geriatric knowledge, attitude and clinical skills. American Association for Geriatric Psychiatry Annual Meeting. Orlando, FL.
4. Montero-Odasso, M., Casas, A., **Hansen, K. T.**, Gutmanis I., Wells, J., & Borrie, M.J. (2008, February). Increasing gait variability with dual tasks in people with MCI: Complexity of the task does matter, The 2nd International Congress on Gait & Mental Function, Amsterdam, The Netherlands.
5. Diachun, L.L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A.C., & Rieder, M.J. (2007, September). Evaluation of the Eldercare Clerkship: Year 1 results, Association of Academic Psychiatry Annual Meeting, Boston, MA.
6. Poulin, P., **Hansen, K.T.**, Jolic, D., & Zakzanis, K.K. (1999, August). Schizophrenia and the temporal lobes: A quantitative review. American Psychological Association Convention, Boston, MA

National

1. Diachun, L., Klages, K., **Hansen, K. T.**, Blake, K., & Gordon, J. (2011, April). Comprehensive Geriatric Assessment Guide (CGAG): Can elders and their caregivers give content feedback to medical students? Canadian Geriatrics Society 31st Annual Scientific Meeting, Vancouver, BC.
2. Montero-Odasso, M., Casas, A., **Hansen, K. T.**, Gutmanis I., Wells, J., & Borrie, M. J. (2008, May). Increasing gait variability with dual tasks in people with MCI: Complexity of the task does matter, 2008 American Geriatric Society Annual Scientific Meeting, Washington, DC.

3. Montero-Odasso, M, Casas, A, **Hansen, K. T.**, Gutmanis, I, Wells, J, & Borrie, M. J. (2008, May). Test-retest reliability of quantitative gait analysis in people with Mild Cognitive Impairment, 2008 American Geriatric Society Annual Scientific Meeting, Washington, DC.
4. Diachun, L. L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2008, May). Evaluating an Eldercare Clerkship: Effect on geriatric knowledge, attitude, and clinical skills, 2008 Canadian Conference on Medical Education, Canadian Association for Medical Education (CAME), Montreal, QC.
5. Diachun, L. L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2008, April). Evaluating an Eldercare Clerkship: Effect on geriatric knowledge, attitude, and clinical skills, 28th Annual Meeting of the Canadian Geriatrics Society, Montreal, QC.
6. Diachun, L. L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M.J. (2007, November). Evaluating an Eldercare Clerkship: Effect on geriatric knowledge, attitude, and clinical skills, Canadian Association of Gerontology Conference, Calgary, AB.
7. Montero-Odasso, M., Casas, A., **Hansen, K. T.**, Gutmanis, I., Wells, J., & Borrie, M. J. (2007, October). Test-retest reliability of quantitative gait analysis in people with Mild Cognitive Impairment, 4th Canadian Colloquium on Dementia, Vancouver, BC.
8. Smith, K. K., **Hansen, K. T.**, & Dasgupta, M. (2007, April). A preliminary look at the use of Observational Care in an Acute Care setting. 27th Annual Meeting of the Canadian Geriatrics Society, Banff, AB.

Provincial

1. Diachun, L., Klages, K., **Hansen, K. T.**, Blake, K., & Gordon, J. (2011, May). Comprehensive Geriatric Assessment Guide (CGAG): Can elders and their caregivers give content feedback to medical students? Canadian Conference on Medical Education, Toronto, ON.
2. Uniac, T., **Hansen, K. T.**, VanBussel, L., & Diachun, L. (2010, April). The mismatch: We're not teaching what they're seeing. Canadian Geriatrics Society 30th Annual Scientific Meeting, Canadian Geriatric Society, Toronto, ON.
3. Montero-Odasso, M., Hall, M., **Hansen, K. T.**, Kloseck, M., & Speechley, M. (2009, May). Does gait variability contribute to the identification of frailty? Department of Medicine, University of Western Ontario, Research Day, London, ON.
4. Montero-Odasso, M., Hall, M., **Hansen, K. T.**, Wells, J., & Borrie, M. (2009, May). Can cognitive enhancers reduce the risk of falls in older adults with dementia? An open-label study with controls. Department of Medicine, University of Western Ontario, Research Day, London, ON.
5. Hall, M., **Hansen, K. T.**, Kloseck, M., Speechley, M., & Montero-Odasso, M. (2009, April). Is gait variability associated with frailty? 29th Annual Scientific Meeting of the Canadian Geriatrics Society. Toronto, ON
6. Diachun, L. L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2007, November). Evaluating an Eldercare Clerkship: Effect on geriatric knowledge, attitude, and clinical skills, Aging, Rehabilitation & Geriatric Care Annual Research Day, London, ON.
7. Diachun, L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2007, June). Evaluating an Eldercare Clerkship: Year 1 Results. Regional Mental Health Care – London/St. Thomas Research Half-Day, St. Thomas, ON.
8. Diachun, L., VanBussel, L., **Hansen, K. T.**, Dumbrell, A. C., & Rieder, M. J. (2007, May). Evaluating an Eldercare Clerkship: Year 1 Results. Department of Medicine, Western University, Research Day, London, ON.
9. **Hansen, K.T.** (2002, April). The effect of age, activity level, and peripheral vision on attention to moving objects. Brain, Behaviour, and Cognitive Sciences Annual In-house Conference, York University, Toronto, Ontario, Canada

Administrative Experience:

Journal Reviewer (*ad hoc*):

Journal of Aggression, Maltreatment, & Trauma	2018 – Present
Military Behavioral Health	2018 – Present
Psychological Trauma: Theory, Research, Practice, and Policy	2018 – Present
Disability and Rehabilitation	2011 – Present
Geriatrics and Aging	2009 – 2010

Professional Affiliations:

Society for Military Psychology (APA Div. 19), Student Affiliate	2016-pres.
Trauma Psychology (APA Div. 56), Student Affiliate	2016-pres.
American Psychology-Law Society (APA Div. 41), Student Affiliate	2004-2017
Canadian Geriatrics Society, Associate	2006-2010
Clinical Neuropsychology (APA Div. 40), Student Affiliate	2001-2007

Professional Development and Additional Training:

Operational Stress Injury/Post-Traumatic Stress Disorder (OSI/PTSD)

- *Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) Clinician Training*, on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (July 25, 2017)
- *Impact of Deployment-Related Risk and Resilience Factors on Post-Deployment Mental Health,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (June 28, 2017).
- *Ethics and Professionalism – Moral Distress Series Part II: The Role of Courage and Culture,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (June 23, 2017).
- *Resilience to Trauma and PTSD,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (December 8, 2014).
- *Pharmacological Treatment of PTSD and Comorbid Disorders (Updated),* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (July 8, 2014).
- *Cognitive Behavioral Psychotherapies for PTSD,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (June 10, 2014).
- *Overcoming barriers to PTSD treatment engagement,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (March 27, 2014).
- *Couples and PTSD,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (March 4, 2014).
- *Sexual Harassment and Sexual Assault during military service,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (February 14, 2014).
- *Working together to address Domestic Violence among Veterans*, on-line CME, CME Institute of Physicians Postgraduate Press, Inc. (January 24, 2014).
- *Aging and PTSD,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (January 22, 2014).
- *Anger, Aggression, and PTSD (2010 VA/DoD Clinical Practice Guideline for PTSD),* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (January 15, 2014).
- *Combat Stress Injuries,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (December 5, 2013).

- *Cognitive Processing Therapy (2010 VA/DoD Clinical Practice Guideline for PTSD),* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (December 3, 2013).
- *Understanding military culture when treating PTSD,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (November 29, 2013).
- *What is PTSD?,* on-line CME, Veterans Health Administration, Department of Veterans Affairs [USA] (November 29, 2013).
- *Substance Abuse, Post-traumatic Stress Disorder, and Violence,* on-line CME, Medscape, LLC (May 28, 2008).
- *Traumatic Brain Injury: Diagnosis, Outcome, and Rehabilitation,* Rotman Research Institute Conference. Toronto, Ontario (1999).

Clinical Research

- *Test construction,* University of Western Ontario, London, ON (Winter 2016)
- *Investigator Training Program (ITP),* 1-day Workshop, Pfizer, St. Joseph's Health Care London, London, Ontario (October 3, 2008).
- *The Art and Science of Questionnaire Design*, University of Western Ontario – Schulich School of Medicine and Dentistry, London, Ontario (February 11, 2008).
- *Power Analysis,* University of Western Ontario – Schulich School of Medicine and Dentistry, London, Ontario (October 15, 2007).
- *Budgeting for Research Proposals,* University of Western Ontario – Schulich School of Medicine and Dentistry, London, Ontario (April 30, 2007).

Mental Health/General Medicine

- *Transforming Clinical Challenges in Mental Health*., Executive LinksInc. (June 4, 2013)
- *Crucial Conversations Training*, VitalSmarts L.C. (Nov – Dec 2009)
- *Highlights of the American Geriatrics Society 2006 Annual Scientific Meeting,* on-line CME, Medscape, LLC (April 17, 2007).
- *Treatment Resistant Depression: A guide for effective psychopharmacology,* on-line CME, Medical Education Collaborative [MEC] (September 24, 2001).
- *Recurrent Depression: Current Perspectives,* on-line CME, Medical Education Collaborative [MEC] (September 30, 2000).

Forensic Psychology

- *Bipolar Disorder and Aggression,* on-line CME, Medscape, LLC (July 9, 2009).
- *Violence in Schizophrenia rare in the absence of substance abuse,* on-line CME, Medscape, LLC (June 16, 2009).
- *Terrorism and trauma… The new reality, 9th Annual Forensic Conference,* Forensic Psychiatry Program, Schulich School of Medicine and Dentistry, London, Ontario (October 12, 2007).
- *Psychopathy Checklist-Revised (PCL-R),* 2-day Workshop, Darkstone Research Group, Whitby Mental Health Centre, and Multi-Health Systems, Whitby, Ontario, (February 22 - 23, 2007).
- *Static-99 Pilot Online Course,* Justice Institute of British Columbia (Jan. 17 - Feb.18, 2005)
- *Research, Applications, Public Policy, and Law,* Centre for Addiction and Mental Health – Law and Mental Health Conference, Toronto, Ontario (November, 2003).

Teaching

- *Communication of science concepts outside the bubble*, University of Western Ontario, London, ON (June 9, 2017)
- *Developing your own course – Aligning outcomes and assessments*, University of Western Ontario, London, ON (June 9, 2017)
- *Introduction to the scholarship of teaching and learning*, University of Western Ontario, London, ON (March 27, 2017)
- *Successful graduate student-supervisor relationship*, University of Western Ontario, London, ON (March 27, 2017)
- *Teaching Assistant Training program*, University of Western Ontario, London, ON (January 13, 2017)
- *Wrapping up the term – marking and proctoring strategies*, University of Western Ontario, London, ON (November 25, 2016)
- *Threshold concepts: Teaching troublesome knowledge in the disciplines*, University of Western Ontario, London, ON (November 25, 2016)
- *Navigating the sea of e-learning tools*, University of Western Ontario, London, ON (November 25, 2016)
- *Negotiating office hours*, University of Western Ontario, London, ON (October 17, 2016)
- *Teaching dossiers: What to include and why*, University of Western Ontario, London, ON (July 6, 2015)
- *Professionalism: Networking at academic conferences*, University of Western Ontario, London, ON (July 6, 2015)
- *Using social media effectively in the university classroom*, University of Western Ontario, London, ON (July 6, 2015)
- *Designing your own course: Components of a great syllabus*, University of Western Ontario, London, ON (July 6, 2015)