

**PREDICTING MORAL INJURY WITH MORAL FOUNDATIONS AND LENGTH OF
SERVICE AMONG EMERGENCY PARAMEDICS**

by

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Abstract

The purpose of the study was to investigate if aspects of morality and length of service would predict moral injury in emergency paramedics. To address the gap in the literature, five domains of morality (care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, sanctity/degradation) and length of service (measured in years), and the combination of these variables were examined to see whether they predicted moral injury. A quantitative nonexperimental methodology was used. The responses from a purposive sample were collected online through SurveyMonkey. The participants were paramedics working primarily in emergency EMS ambulance systems for at least one year. A simultaneous multiple linear regression was used to determine the predictor variables' unique predictive ability on the outcome variable. A stepwise multiple linear regression was used to analyze which predictor variable or combination of predictor variables predicted the most variance in moral injury. The results indicated that MI was significantly predictable collectively $F(6, 69) = 3.318, p = .006, R^2 = .224$, and the variables collectively accounted for 22.4% of the variance of MI (the effect size was small). Two predictor variables, purity ($t = 2.478, p = .016$) and fairness ($t = 2.111, p = .038$), were significantly unique contributors, with purity ($r = .388$) accounting for 33.8% of the variance in MI and fairness ($r = .337$) accounting for 33.7% of the variance in MI, both which are effect sizes of medium. The results of the stepwise multiple regression indicated that the best combination of predictor variables was purity, fairness, and ingroup collectively $F(3, 72) = 6.643, p = .001, R^2 = .217$, and the variables collectively accounted for 21.7% of the variance in MI (the effect size was small). Also, a surprise finding was that 92% of the sample had clinical moral injury scores. The results of this study suggest that the purity and fairness aspects of morality contribute the most to moral injury in emergency paramedics with at least one year of

experience. Future research could examine replication of the results with emergency paramedics since this study was unique, including more diverse geographical response areas of paramedic populations and exploration of moral injury and the associated adverse outcomes in emergency paramedics.

Dedication

To the little boy locked away deep within the unconscious: you are not forgotten, and we are in this together.

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CHAPTER 1. INTRODUCTION

Chapter 1 provides a background for how moral injury (MI) may be present and affecting emergency paramedics and the need to research this population. Although there is not an agreed definition for the construct of MI at the time of this study, there are concepts that are shared within the differing definitions which include the shared foundation of some type of negative personal outcomes from a conflict of transgression (by commission or omission to address, or witnessing an act) that is against a deeply held belief (Eikenaar, 2022). The gap in the literature for this population and why it is important to address is shown in the problem statement. This study aims to identify MI in the emergency paramedic population, especially since most MI research has been within the veteran community (Currier et al., 2018; Jinkerson, 2016; Litz et al., 2009; Schorr et al., 2018; Wisco et al., 2017; Yeterian et al., 2019). Only recently have researchers started identifying MI in civilian populations but not paramedics with a high similarity of dynamic and high-stakes job environments as the military. The significance of the study is that it addressed an unrepresented population in MI research, could help progress future research for this population and other emergency responders, and used moral foundations theory (MFT) of Haidt and Joseph (2004) in a new context that fits into the goal of general psychology. A nonexperimental, correlational design was used with purposeful sampling through an internet survey to allow anonymity and minimize bias. Assumptions, limitations, and a conclusion will be included in this chapter.

Background of the Problem

Emergency paramedics have a random and chaotic work environment due to the nature of answering emergency 911 calls. One call could be in a person's home for a medical emergency, and the next just minutes later for a stabbing in the street. Paramedics respond to emergency and non-emergency calls regardless of danger or exposure (Bureau of Labor Statistics [BLS], 2023). This high-stakes, unpredictable job also places the paramedic into situations that may be morally ambiguous compared to most other professions. For paramedics, the concept of morality could be an aspect of the immediate unfolding context of the situation rather than a rigid dipole of right or wrong. An example would be the triage of a multiple casualty incident that exceeds the ambulance crew's medical treatment capability; the paramedic has to choose who has the best chance to live but also decides which patients may die. Normal circumstances dictate that paramedics help all patients, yet in this context, the paramedic decides actively choosing right or wrong (life or death). The paramedic must act for the health and safety of the public but also has organizational policies and procedures, governmental codes and laws, medical directives (Bledsoe et al., 1994), as well as unwritten in-group biases with other public safety entities such as police and fire personnel that interact with frequently, and their moral compass (Roth et al., 2023). This structuring of multiple, and at times competing and conflicting, institutional demands on the paramedic along with the demands of constant exposure to high-stakes decision-making, witness to suffering, and potentially conflicting moral dilemmas may affect the wellness of the paramedic, which could increase the severity with time in the position as well (Bentley et al., 2013). The construct of MI is likely present but highly underestimated within the emergency paramedic population. This set of unique conditions in job roles is shared by military and paramedics because of the ties to several community value systems, which may cause moral

conflict in action (Currier et al., 2018; Guglielmo, 2015; Torabi et al., 2018) and morally ambiguous circumstances (Bremer et al., 2015; Nazarov et al., 2015).

Although the current literature does not reach a consensus at this time (Bravo et al., 2020; Griffin et al., 2019; Grimell & Nilsson, 2020; Yeterian et al., 2019), and Hodgson and Carey (2017) stating at the time of their research there were 17 different definitions for MI, the foundation for MI can be synthesized to stem from acts or perceived acts of betrayal by omission or commission from events of transgressions against one's morality and sense of agency. This transgression can lead to secondary reflective thoughts of guilt and shame, which may lead to clinical impacts of depression, post-traumatic stress disorder (PTSD), and burnout (Hodgson & Carey, 2017). Mantri et al. (2020) expanded this definition to include deep feelings of shame, grief, guilt, and remorse from such violations, especially in heightened outcome situations (i.e., a mass casualty situation where the paramedic has to decide who receives immediate care and who has to wait which may be a factor in life and death for the latter) and involving authority figures. Deeply held personal beliefs are considered morals/morality (Williamson et al., 2018), which have long been discussed in philosophical, religious, and scientific debates on how humans *obtained* them through divine intervention, learned behavior, or some innate abilities.

MI can impact both paramedic performance and ethical decision-making, reduce the ability to trust others, and affect personal well-being (Bremer et al., 2015; Bryan et al., 2015; Murray et al., 2018) which could consequently alter or hinder the paramedic's ability to perceive and perform ethically and appropriately while caring for their patients. Paramedic duties demand quick and ethical decision-making abilities, especially when exposed to events that conflict with the paramedic's ethics and morals and their professional role organizational expectations

(Bremer et al., 2015). Paramedic morals are crucial for ethical decision-making, which impacts patient safety and treatment.

MI has been extensively researched among military populations and has been measured in several modified versions for other professional target populations (Bryan et al., 2015; Koenig et al., 2018a; Litz et al., 2009; Mantri et al., 2020; Nash et al., 2013; Nazarov et al., 2015), but has been studied for medical professionals (Mantri et al., 2020; Wang et al., 2020), medical students that functioned on ambulances (Murray et al., 2018), social workers (Haight et al., 2016), police officers (Papazoglou et al., 2020), and teachers (Currier et al., 2015; Sugrue, 2020). What is not known is how MI factors into other occupations, such as paramedics; therefore, this research is needed (Braitman et al., 2018; Mantri et al., 2020; Papazoglou et al., 2020; Williamson et al., 2018).

MFT (Haidt & Joseph, 2004) has different applications, with the strongest attachment to politics from the original authors (Graham et al., 2012; Haidt, 2013), business (Chowdhury, 2019); criminology (Harper & Harris, 2017; Vaughn et al., 2019), and a case that MFT of Haidt and Joseph (2004) should be used within medical education (Paros & Tilburt, 2018). MFT (Haidt & Joseph, 2004) includes the five core moral foundations but also states that the main premises of the theory can be used cross-culturally and within any group since the theory is a range of combinations of the five core foundations (Graham et al., 2012; Haidt, 2013). However, after an extensive review of the literature, there was not any literature showing MFT (Haidt & Joseph, 2004) used for paramedics and MI, other than a dissertation that explored MFT within military members with MI (Perez, 2020). Ethical decision-making comes from the morals of an individual, group, and organization. However, there is no literature on how those morals

influence ethical decision making and wellness among paramedics found at the time of this study.

The literature has shown the effects of length of service (LOS) on decision-making, wellness, and feelings of betrayal (Francis et al., 2018; Roy et al., 2020; Wagner et al., 2009). Francis et al. (2018) found that the LOS of paramedics and firefighters had significance when measuring moral judgment and moral actions during virtual testing. However, they stated a limitation of not specifically delineating the length of experience in paramedic or firefighter categories and how the study needed a better moral assessment instrument while calling for future research to account for those limitations. Roy et al. (2020) showed how feelings of betrayal by the employer, lack of social support and increased clinical responsibilities increase with the LOS and affect decision-making despite still enjoying treating patients. Roy et al. (2020) did not have a component for moral assessments and alluded to the extreme effects on mental wellbeing impacting the LOS for paramedics. However, after a thorough review of the literature, studies addressing paramedics' LOS and MI were not found.

Statement of the Problem

The review of the literature indicated that MI was significant for military and veterans who were exposed to events that transgressed their individual beliefs of right and wrong and either responded by omission or commission for these transgressions due to their roles as military members (Bryan et al., 2015; Schorr et al., 2018). For example, witnessing an abuse of force against unarmed enemies and not stopping it or following orders to commit such an action against them. The research showed how MI affected military personnel and how to measure it (Nash et al., 2013; Schorr et al., 2018), but it is not known if MI exists in paramedics who encounter similar events. For paramedics, ethical decision-making as an emergency caregiver is

a professional demand. Nevertheless, paramedics are often exposed to situations that involve a transgression of individual beliefs and policy and procedure demands expected from the organizations that the paramedic works beneath (EMS agency, medical command system, local and regional governmental agencies) and works alongside (police, fire department, emergency management) which are usually authoritarian (Bremer et al., 2015). Paramedics are most commonly in crews of two people (as opposed to a standard fire crew of at least four fire personnel and several police units, depending on urgency). They are expected to handle most situations without additional EMS resources. This EMS crew configuration can leave one paramedic to attend to the patient while the other paramedic is handling the scene (safety, resource management that includes other agency personnel, communications, bystander and family interactions, and procedural needs of other agencies) if immediate additional medical attention is not required and can be handled by one paramedic. This configuration and attention demands also create situations where it is one voice among many.

The working environment and role of an emergency paramedic share many of the experiences of military veterans of combat that may lead to MI. However, no survey instruments address a paramedic's unique role. To posit that emergency paramedics of ground ambulances, have similar exposures and conditions to military veterans and similar civilian roles concerning MI can allow a solid research base from which to continue rather than be treated as a completely separate entity devoid of similarities.

At this time, a thorough review of the literature did not find studies of MI in paramedics and how that may affect performance and decision-making. Bremer et al. (2015) suggested research into how paramedics develop their morals; Haight et al. (2016) and Currier et al. (2015) recognized the need for MI research in other occupations. Paramedics most likely have the

closest civilian bond with military members as they have policies, a chain of command power structure, specific oaths outside that power system, and are exposed to events that may transgress deeply held beliefs of right and wrong. Paramedics might have personal agency to stop the transgression when being committed by other public safety personnel in situations that are not well-defined illegal actions or break established policies. However, in-group bias pressures and a more communal morality mindset may hinder that response. It is that later statement that makes the paramedics closer to the military than other civilian positions, as the majority of professions may not expose the workers to random, chaotic environments where life and death decisions need to be made and ever-present concerns for personal safety are paramount. Morality may become ambiguous when one assigns roles of victim and perpetrator, justice and injustice, and loyalty and betrayal within minutes of a situation occurring or witnessing the events. This set of moral transgression issues is what most likely differentiates MI as a separate construct from ones diagnosed as clinical mental health disorders such as post-traumatic stress disorder, depression, or anxiety (Molendijk et al., 2022; Neira & Pickover, 2019; Williamson et al., 2018).

Literature has presented that younger and less educated veterans served at higher rates (i.e., active duty military versus reserve or national guard component); and in higher combat tempo scored higher for MI (Koenig et al., 2018a). For example, younger active-duty military members are more likely to be lower-ranking enlisted personnel who joined after high school (Department of Defense, 2023). In contrast, national guard personnel are typically older and may have further education from college or trade schools (Department of Defense, 2023). For instance, it stands to reason that paramedics that serve in a full-time capacity (especially where forced overtime demands are a regular concern) in 911 systems with higher call volumes (number of ambulance dispatches per available ambulances over a regular paramedic shift) may

also have higher rates of MI than paramedics who serve in a part-time capacity or 911 systems that have lower call-volumes. Also, paramedics are not dependent on achieving a college degree to obtain their certification (BLS, 2023). However, the paramedic training is mentally and physically rigorous and completed within 1-2 years, depending on program structure (BLS, 2023).

Purpose of the Study

The study aimed to determine if MI exists in emergency paramedics and to what degree, if MFT (Haidt & Joseph, 2004) can predict MI in emergency paramedics, and to learn if there were significant variances of MI when factoring in LOS. It is important to establish MI in emergency paramedics because of the potential impact on the ethical decision-making of the paramedic in the performance of their duties and the overall impact on the operational and personal wellness of the paramedic. This study is expected to contribute to the knowledge of MI, identify an unresearched population that most likely would have MI, and contribute to the knowledge that already exists for ethical decision-making for emergency paramedics that does not account for potential MI.

Significance of the Study

The goal of general psychology is to incorporate multiple perspectives from psychology's sub-disciplines, which include moral psychology (American Psychological Association [APA], 2020). These multiple perspectives were accomplished in this study by using MFT (Haidt & Joseph, 2004) for an unrepresented population in conjunction (for the first known time) with the MISS-HP survey instrument of Koenig et al. (2020) and adding knowledge to the unsettled psychological construct of MI. The role of the emergency paramedic is unique because they have an ethical oath to protect people but also an organizational duty with policies, procedures, and

expectations that may conflict and can impact paramedic performance and well-being (Bledsoe et al., 1994; Roth et al., 2023). Since the potential conflicts exist and have not been studied for paramedics, this topic needs to be researched in the psychology field to explore styles of moral judgments for this population that can impact paramedic social and occupational performance, well-being, sleep disturbances, risk of suicide, and risk of MI (Awais et al., 2021; Mantri et al., 2020; Murray, 2019; Nazarov et al., 2015). For research into MI in emergency paramedics, the proper moral framework needs to be chosen to understand and predict occurrences of MI. MFT (Haidt & Joseph, 2004) is an accepted and validated psychological theory for general psychology and can address individual and group preferences within moral foundations most adequately (Graham et al., 2012).

Addressing the emergency paramedic population in areas of MFT (Haidt & Joseph, 2004) and MI would close these literature gaps. In addition, this would elucidate scientific psychological knowledge to understand the lived experience of potential MI better (Williamson et al., 2021b) within a population that was birthed from (civilian paramedics evolved from the use and success of American military medics especially during the Vietnam Conflict) and strongly mimics the well-studied military population. The identification of MI in emergency paramedics, along with possible connections to MFT (Haidt & Joseph, 2004) and LOS, could lead to further specific research that addresses the lack of paramedic populations as well as further use of MFT (Haidt & Joseph, 2004) outside of politics which the authors' called for in Graham et al., (2012). Further research may also lead to better and more appropriate assessment tools for predicting MI before it occurs, from conditions that are clinical disorders (i.e., post-traumatic stress, depression, anxiety), and allow mitigation or appropriate education that may improve paramedic overall wellness.

Along with finding scores that suggest MI (or not) within the sample of paramedics, this will be the first study to attempt to correlate MFT (Haidt & Joseph, 2004) and MI within paramedics (that is known at this time). Using MFT (Haidt & Joseph, 2004) will allow a better understanding of MI and paramedics and prompt future research for paramedics and other public safety professions (Lentz et al., 2021; Williamson et al., 2021b). Currently, after an exhaustive review of the literature, the only study that used MFT (Haidt & Joseph, 2004) and MI, or MFT and public safety roles, is a dissertation that uses MFT and MI for a sample of police officers (Perez, 2020). Therefore, the current study added to this gap in the literature.

Research Questions

The primary research question asks, “Among emergency paramedics, does a construct for moral foundations along with length of service time (in years) predict significant variance in moral injury construct scores?” A quantitative design will allow the appropriate statistical analysis of the independent (moral foundations, service length) and dependent variables (moral injury) to help answer the primary question. To explore this sufficiently, three sub-questions would be used:

Research Question 1

Do moral foundations and length of service predict moral injury in emergency paramedics?

Research Question 2

What is the unique ability of moral foundations and length of service to predict moral injury in emergency paramedics?

Research Question 3

Which variable or combination of variables of moral foundations and length of service best predicts moral injury in emergency paramedics?

Definition of Terms

Throughout this section, terms that may be esoteric regarding emergency first responder roles and definitions are provided for clarity. Collectively, these are commonly accepted terms within the public safety field. Several terms are used interchangeably or colloquially in public safety; therefore, these terms are used as defined below for this study.

Emergency Medical Service (EMS). EMS is a state-licensed service that provides prehospital medical care and transportation sick or injured people (BLS, 2023). States have primary jurisdiction over how EMS is delivered, required certification levels, and standards of care. EMS can be delivered through fire departments, autonomous EMS agencies, hospitals, private ambulance companies, and even police departments. EMS can include ground ambulances, air ambulances (helicopters and fixed-wing), response units not authorized for patient transport (on fire trucks or specialized EMS response vehicles like SUVs, bicycles, and motorcycles), technical rescue vehicles, and law enforcement special operation teams (BLS, 2023).

Emergency Medical Technician (EMT). The minimum level of EMS certification to transport patients in an ambulance is EMT (NHTSA, 2007). EMTs provide basic life support care and are limited in authorized EMS skills. The EMT is subordinate to the paramedic in decision making and responsibility. Sometimes, *EMT* is used to generally describe all EMS ambulance personnel by the general public. This is further confused since some jurisdictions and agencies may use the full nomenclature for paramedics, Emergency Medical Technician -

Paramedic (EMT-P). Relatively recently, the National Registry of EMT's changed the title for paramedics by removing the *EMT* from the official title (NREMT, 2021), but this title change is not mandated to any jurisdictions that are not in partnership with the National Registry.

However, for this study, *EMT* and *paramedic* are explicitly used as defined in this section.

Emergency Paramedic. This study requires a distinction is required concerning the paramedic's primary response roles. This study defines an *emergency paramedic* as one whose primary response role is on an emergency ambulance and who responds to 911 emergency calls for the designated area of operations (BLS, 2023). See *Paramedic* for a detailed definition.

First Responders. Although *first responders* is an exoteric generalization of the emergency response system, which is comprised of firefighters, police officers, EMTs, and paramedics (commonly heard in news reporting), many jurisdictions have certifications of emergency first responders (BLS, 2023; NREMT, 2021). These positions are the entry point into emergency prehospital medicine and most commonly held by area/community police departments and fire departments to begin rapid basic treatment before EMS arrives (BLS, 2023). For this study, the paramedics are all from EMS agencies that are not part of a fire or police department. Some states have a separate EMS certification called Emergency First Responder, which that is not used or relevant to this study (NREMT, 2021). First responders in the context of this study will be the above definition.

Medical Command Protocols. For EMS providers, the entity with jurisdiction mandates a set of protocols that provide a rigid frame of action for each EMS provider's role concerning medical treatment (NREMT, 2021).

Medical Command System. Each EMS agency and its personnel work under the guidelines of a medical command system (of specialized medical doctors) for the medical direction of treatment and fitness of the certified member (NREMT, 2021).

Paramedic. The EMS certification above EMT and AEMT (an EMT with training in some advanced skills), where the individual can perform advanced life support (ALS) primarily used in ground ambulances but also can be used on fire vehicles, aeromedical vehicles, bicycles, motorcycles, police special operations, hazardous material teams, and technical rescue teams (BLS, 2023). A paramedic must maintain medical command privileges for the organization(s) they perform their role for and maintain local, regional, and state requirements for a paramedic. The most common configuration is a paramedic and an EMT or AEMT per ambulance, although several agencies have dual paramedic staffing for their ground ambulances (Shotwell et al., 2018). Unless an EMS-certified prehospital nurse or doctor is on the scene (and is authorized by the paramedic's medical command physician), the paramedic has the highest responsibility for EMS duties. One must be a certified EMT or AEMT to become a certified paramedic (BLS, 2023).

Research Design

A quantitative methodology with a nonexperimental research design was used to establish if MI is present in emergency paramedics and if moral foundations theory can predict MI in this population. A nonexperimental design measures variables that are believed to be related without the researcher's manipulation (Warner, 2013). A correlational design for the study is appropriate because of the nonexperimental nature and examination of how the variables correlate or vary (Cozby & Bates, 2018). This study presented scores from MFQ30 (Graham et al., 2011) and MISS-HP (Koenig et al., 2020) among paramedics who perform primarily as

emergency responders. The study intended to predict relationships of moral foundations results across the five domains of care, harm, loyalty, authority, and sanctity, MI, and the paramedic's longevity in this role.

Two survey instruments were used in this study: the Moral Foundations Questionnaire (MFQ30) of Graham et al. (2011) and the Moral Injury Symptom Scale - Health Professional (MISS-HP) of Koenig et al. (2020). Both instruments were administered using electronic surveys and a closed-ended descriptive survey that included LOS. These three questionnaires were provided to participants on the internet by a weblink for the participants to complete anonymously. Access was only available to those who met the entry criteria presented on the landing page of the weblink.

After a thorough review of the literature, this research study is the first of its kind, not only among paramedics but also for using MFT (Haidt & Joseph, 2004) and the MISS-HP (Koenig et al., 2020) to predict MI. This study was developed from the strengths of prior qualitative and quantitative research performed primarily on military veterans and recent research on MI in civilian professions that encounter potentially traumatic and morally ambiguous events and interactions with people. The research design for this study was chosen, along with an ability to analyze numerical data, for its purposeful sampling, ease of participant consent, the ability for participants to stop participation, to maintain participant autonomy, have minimal researcher influence, and provide minimized risk to participants by having relatively short exposure to general questions concerning MI (APA, 2017; Cook & Cook, 2008; Morgado et al., 2018; OHRP, 1979; Reio, 2016; Williamson et al., 2021a).

Assumptions and Limitations

Assumptions

The philosophical assumptions of quantitative research theory have four categories for each interpretive framework: ontological (nature of reality), epistemological (how reality is known), axiological (role of values), and methodological beliefs (approach to inquiry; Aliyu et al., 2015). This quantitative study relied on positivism that follows the scientific method approach of research (objective) with logic, multiple perspectives of participants on a tangible reality that can be measured empirically (Morgado et al., 2018), and that a researcher can study the variables/participants without influencing the results (Aliyu et al., 2015; Reio, 2016). Using a nonexperimental design ensures the researcher acts without influencing the participants or manipulating the variables, allowing deductive reasoning with the data observed with descriptive statistics and using empirical testing and predictive tools available by inferential statistics.

The assumption was that a correlational design for the study was appropriate because of the nonexperimental nature and examination of how the variables correlate or vary (Morgado et al., 2018; Reio, 2016). A further assumption was that each respondent would answer the survey questions honestly. Although there is no current, ethical manner to force honesty from volunteer research participants, I am assuming that the state certified paramedics the time to participate in this research study do so without malicious intentions. Paramedics are taught in their education and are expected to abide to ethical oaths for patient care, public trust, virtue, and veracity in performance of their responsibilities (Bledsoe et al., 1994). Also, the assumption that the construct variables would accurately reflected MI with the MISS-HP (Koenig et al., 2020) and MFQ (Graham et al., 2011). This was not only because the MISS-HP (Koenig et al., 2020) and MFQ30 (Graham et al., 2011) are validated survey tools; there was an assumption chosen for this

study that MI was a quantifiable construct that took the position that MI was measurable through symptomatic presentations that may arise from inner moral conflicts (Hodgson & Carey, 2017). Agreeing to one unified definition for MI appeared to be argued in how it manifests within a person and the proper method of treatment to resolve MI (Hodgson & Carey, 2017).

Limitations

Weaknesses and limitations exist within quantitative/nonexperimental designs. Aspects such as internal validity (researchers, instruments, and results are credible) and external validity (method and results can be applied and replicated) need to be considered as part of the research process (Leedy & Ormrod, 2019; Morgado et al., 2018). First, there is no way to account for every difference within a group (Cook & Cook, 2008). For example, although paramedics have equivalent certifications, there needed to be a viable method to account for all life experiences, religious or spiritual beliefs, and cultural influences a human has had from birth to the present day in this study. The appropriate variables were used, but through omission (just naturally not being able to account for the unknown) or commission (the researcher chooses only the variables to help their pre-conceived results or is not rigorous), there cannot be a definitive causal inference when using nonexperimental research methods since the predictor variables cannot be ethically or realistically manipulated (Cook & Cook, 2008; Johnson, 2001; Reio, 2016). Also, self-reporting errors can occur due to the participants' potential for social desirability bias, which may not give the correct response for a question due to the participant's desire to fit in socially or not be judged for specific responses (Morgado et al., 2018). The assumption with survey response is that the respondent is honest, although there is not a realistic measure for this compliance. In addition, coverage bias may limit the population sample by excluding those who cannot be selected to participate, such as those paramedics who chose not to check their

organizational email for long periods (Morgado et al., 2018). Winter (2000) discussed the validity of quantitative designs and suggested that quantitative research needs researcher anonymity (regarding to potential biases) from the research process. Researcher bias was removed as much as allowed insofar as the variables and values are set and not open to the researcher's influence, as prior hypotheses will guide the statistical analyses (Reio, 2016; Haverkamp, 2005). However, true researcher anonymity was not possible due to the guidelines set by the university for research recruitment materials, which may have allowed potential response bias (answers that do not match the respondent's true feelings; Sedgwick, 2014) that is unknown to the researcher; a participant may be familiar with the researcher's name through past working or teaching environments, and they may have answered differently because of that familiarity.

Delimitations

There were several delimitations in this study. To ensure a better understanding of the potential influence of MFT (Haidt & Joseph, 2004) and LOS on MI, all the descriptive data that was collected in the study which could have been used as predictor variables were not included. This decision was also influenced by the institutional IRB guidelines to limit the amount of predictor variables for this study. This descriptive data that was not included is listed in detail in Chapter 5. Also, although this study was conceived planning to use multiple EMS agencies for the sample, ultimately only one site consented to participate. Although this one research site was large enough to meet the minimum number of participants, one site could still potentially introduce homogeneity in responses.

Organization of the Remainder of the Study

This chapter provided an introduction, background, and statement of the problem of the gap in the literature for MI in emergency paramedics. The information in this chapter addressed the purpose and significance of this study, the research design, research questions, and assumptions and limitations. The remainder of this research study is presented in four additional chapters. Chapter 2 provides a literature review of moral injury, moral foundations theory, moral and ethical decision-making within emergency personnel, and effects of LOS within the public safety community. Chapter 3 discusses the methodology for collecting the data and analysis. Chapter 4 presents the results of the data analysis. Chapter 5 discusses the results, implications, recommendations for this study, and future research considerations.

CHAPTER 2. LITERATURE REVIEW

This research study aimed to identify MI in emergency paramedics and examine relationships between their moral foundations' scoring and LOS. The methods for the literature search are listed and contain the search terms and databases used. The review examined the current literature for MI in emergency paramedics, MFT (Haidt & Joseph, 2004), and LOS in military and public safety roles. An exhaustive review of the current literature quickly identified a gap in addressing MI in paramedics. The review of current literature showed that the best guide for theoretical orientation within general psychology was MFT (Haidt & Joseph, 2004). Also, the most appropriate measurement tool for this study was the MISS-HP (Koenig et al., 2020). The research design that best answered the research questions posed in this study was nonexperimental. After the literature review, a synthesis of the literature and critique of previous research follows. Chapter 2 concludes with a summary.

Methods of Searching

Most of the literature search was through Capella University's online Summon search engine. Other methods included internet search engines such as Google Scholar, DuckDuckGo.com, Google.com, the Capella University Bookshelf website for course textbooks, and a personal library of physical books. The internet search terms included *moral injury*, *morality*, *moral foundations theory*, *paramedic*, *length of service*, *ethical reasoning*, and *decision-making*. When viable, the search parameters included peer-reviewed articles with publication dates within the 2017-2022 range. Concepts such as morality and the origins of MFT (Haidt & Joseph, 2004) demanded older search dates to best encapsulate the intent of current research. These searches led to academic and professional journals such as *Military Psychology*, *Traumatology*, and *Prehospital Emergency Care*. After reviewing the initial

literature search, combined search terms such as *paramedic morality*, *moral foundations theory* and *moral injury*, *moral injury public safety*, and *moral injury paramedics* were used in the same search engines previously listed. The literature review also included Capella University's Dissertations @ Capella and Dissertations and Theses Global databases.

Theoretical Orientation for the Study

In this research study, predicting MI in emergency paramedics demanded an established research theory with an appropriate measurement tool to assess meaningful relationships between MI, LOS, and moral decision-making. The theory needed to include general psychology's mission by using diverse evidence-based specialties within psychology and other related fields (APA, 2020). The theoretical framework that best addressed these concerns used for this research study was MFT (Haidt & Joseph, 2004).

Moral Foundations Theory

MFT (Haidt & Joseph, 2004) was the confluence of anthropology, evolutionary theory, and psychological study of individuals and relationships of social factors of ingroup/outgroup and cross-cultural moral development that contains five foundations through validated empirical methods (Graham et al., 2012). These five foundations are care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Graham et al., 2011). However, they are not equally weighted (Graham et al., 2012), so care/harm is not 20% of a moral foundation (since there are five). Each foundation may score different percentages of total weight across different cultures and geographic locations (Haidt & Graham, 2007). Graham et al. (2011) indicated that an individual's moral foundations started as innate knowledge that changes with cultural experiences to help the individual obtain the most successful solutions to evolutionary and cultural pressures (Graham et al., 2012). MFT (Haidt & Joseph, 2004) indicated that an

individual's moral composition was from the five foundations but could also account for a correlation to certain events that would elicit distress in those five moral foundations. Graham et al. (2012) suggested MFT (Haidt & Joseph, 2004), summarized by four central claims addressing morality's multifaceted foundations: nativism, cultural learning, intuitionism, and pluralism.

The first claim of MFT (Haidt & Joseph, 2004) is that the human brain has innate knowledge organized before the experience (Marcus, 2004, as cited in Graham et al., 2012). Graham et al. (2012) addressed this innate knowledge as modules. Graham et al. (2012) suggested the term *module* for the non-fixed location of specialized mechanisms that work together for rapid cognitive solutions for recurrent adaptive problems. Modules of information within the mind are built from the most effective adaptations for survival from various evolutionary pressures and help individuals address challenges (Graham et al., 2012). In addition, using these successful modules would equate to survival and then be passed on generationally (Graham et al., 2012). For example, stealing food from tribe members likely resulted in physical harm/death or social isolation, which meant death. Those who did not steal would have a greater chance of survival and pass that information along genetically.

The second claim of MFT (Haidt & Joseph, 2004) is that cultural learning builds upon an evolutionary *first draft* of moral foundations (Marcus, 2004, as cited in Graham et al., 2012). Using the illustrative example of innate advanced knowledge (modules) being like the first (and incomplete) draft of a book, Graham et al. (2012) suggested that the first draft receives an *edit* from the individual's culture. Culture differs across the Earth, and so does morality, as it would have to fit the local customs, history, principles, and laws. The cultural edits help fill in and revise the first draft to navigate their moral matrix successfully (Graham et al., 2012).

However, the basic foundations (first draft) must be present for individuals to build upon them for their specific circumstances.

For example, Haidt (2013) indicated the five taste receptors of the tongue/mouth and individuals' food/taste preferences as a metaphor for moral judgments. Individuals (barring genetic abnormality) possess these five taste receptors within their oral cavity and tongue (Wooding et al., 2021). Evolution has given preference to particular tastes for biological functions and balance, such as bitter cravings when the body requires a bitter substance (Wooding et al., 2021). Individual food choices and taste preferences could not be explained just by knowing the five taste receptors and evolutionary drives for particular compounds found in food. Humans do not like all of the same foods, and a complex investigation would need to occur to parse out individualistic food likes and dislikes (Haidt, 2013). Such would be the same for individualistic moral proclivities. Humans may have an aversion to mistreating a weaker human from the innate care/harm module (Graham et al., 2012). However, some cultures and sub-cultures (e.g., religious or political party affiliations) may or may not favor abortion rights for distressing fetal developmental concerns. Individuals within those cultures/sub-cultures may have other experiences that cause a separation from their group beliefs. Knowing that an individual has modules for the care/harm foundation does not explain their individual preferences, just as the presence of taste receptors cannot predict individual taste preferences.

The third claim of MFT (Haidt & Joseph, 2004) deals with moral intuitions. Haidt and Bjorklund (2008) indicated *moral intuition* as an evaluative feeling of an individual or their action without conscious reasoning causing a moral evaluation, such as witnessing a bully's violent actions against a weaker person, which causes despising for that bully. Moral evaluations lead to moral judgments, deciding if something is right or wrong (Graham et al., 2012). Moral

judgments blend automatic responses with decisions an individual must reason, coined System 1 and System 2 by Kahneman (2011). Kahneman (2011) suggested that automatic, unconscious decisions are System 1 functions, and conscious thinking and reasoning are System 2 functions. Individuals can use reasoning to justify their moral judgments (System 2), but moral judgment is primarily intuitive (System 1, Graham et al., 2012). The System 2 response is how individuals clarify, defend, and justify their moral judgments in a social setting (Graham et al., 2012).

The fourth claim of MFT (Haidt & Joseph, 2004) is that moral intuitions are pluralistic, derived from many recurrent social challenges throughout evolution (Graham et al., 2012). These moral intuitions fall within groups cross-culturally and allow individuals to experience moral sensitivities, which are moral intuitions that cause distress reactions without thought (Graham et al., 2012). Graham et al. (2012) indicated the commonality of moral sensitivities for a small set of issues that may culturally vary. For example, thinking of having sex with one's sibling may cause a distressing innate reaction that does not require conscious reasoning. This family mating avoidance may be a genetic caution because of the poor viability of sibling offspring versus the high evolutionary cost of pregnancy and childbirth (Buss, 2019; Lieberman & Patrick, 2018). However, a social stigma may vary among different groups (Lieberman & Patrick, 2018) that may strengthen or lessen particular moral sensitivities (Graham et al., 2011).

These modules described in the four claims of MFT (Haidt & Joseph, 2004) are remnants of successful evolutionary adaptations that help individuals detect objects and circumstances (original triggers) that need the correct response (Graham et al., 2012; Sperber, 1994). An example of an original trigger would be seeing people not from one's tribe approach, which would cause fear of harming the individual and group. A current trigger may occur when an unfamiliar person is in the neighborhood, and the immediate response may elicit fear and

cautiousness. However, after conscious reflection, this response may seem inappropriate. This deep drive and desire for loyalty to one's perceived group (the neighborhood) may seem unproportionate and complicated to explain until factoring in our genetic mandate for survival, guarded by evolutionary modules.

Graham et al. (2011) used their findings and cross-cultural interpretation to identify five pillars of humans' most prolonged evolutionary adaptive problems (such as suffering and distress of offspring, cooperation and deception, threats to group, group hierarchy, and waste and disease). These respective modules (and their triggers) would have been passed generationally with the survival of the individual. MFT (Haidt & Joseph, 2004) built on patterns that offered the most success in those evolutionary pressures and became the five pillars of moral foundation: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation.

Care/harm Foundation

Care is an innate feeling of individualistic survival, considered an evolutionary protective measure for oneself and their child (Graham et al., 2012). The emotion of caring may be a way to ensure self-preservation in evolutionary terms and genetic survival (Dawkins, 2016), e.g., we survive by having our genes survive through our children. Also, there is a high evolutionary cost for an individual caring for their children (Buss, 2019; Graham et al., 2012; Haidt, 2013). The pregnant female needs health and safety for months, then spends years protecting and providing for a defenseless human child, which will also take the father's or a group's effort to have a higher chance of survival (Buss, 2019; Graham et al., 2012).

From this adaptive challenge of caring for children (Buss, 2019; Dawkins, 2016; Haidt 2013) suggested that humans want to care for other humans that appear to be suffering or defenseless, which Haidt and Graham (2007) indicated equated to compassion. For example, the

original trigger of being aware of our children's suffering can lead to attention and action for the child, which will help our selfish gene survival (Dawkins, 2016). Nevertheless, it also allows for noticing distress in other children and the vulnerable, which elicits a desire to help, either for the compassion of our kind (the individual seeing the other as possible kin) or for species survival (Buss, 2019; Dawkins, 2016; Graham et al., 2012). An example of a current trigger could be seen with the use of children or animals in advertising, purposefully trying to activate the care/harm domain (Graham et al., 2012).

Fairness/cheating Foundation

The fairness domain comes from adaptive social pressures and non-kin altruism (Buss, 2019; Graham et al., 2012; Haidt, 2013). Not only did humans have to cooperate with other humans, but they also managed not to get taken advantage of for such actions. One would have to cooperate with another focused on self-preservation to further individual survival. For example, sharing food with another family, but that other family needs to work to gather food for themselves or repay the shared food. Fairness ensures balance and demands that humans identify those cheating or not doing their share (Haidt, 2013; Saad, 2020). Buss (2019) suggested this was beneficial mutualism. Graham et al. (2012) stated that original domain triggers were other people involved in direct interactions (e.g., the food sharers and recipients). However, now the current domain triggers can be from any source where the exchange relationship is unfair—for example, helping a friend move residences. However, when asked to reciprocate, they do not.

Loyalty/betrayal Foundation

Loyalty is a more expansive domain of fairness (Graham et al., 2011). Loyalty involves individuals who trust each other and work for a common cause (Buss, 2019; Graham et al., 2011), such as members of the same tribe fighting against a rival tribe. Any violation or

suspicion of betrayal evokes hatred against that person because it would most likely lead to suffering or death (e.g., running away while the tribe engaged in battle). Furthermore, it is worse with ingroup members than with members of an opposing group (Haidt, 2013). For example, fire station members would feel more betrayed by one of their own who refused to go into a burning building with them versus a firefighter from another department on the same fire. Haidt (2013) suggested that humans are designed from evolutionary pressures to pick out traitors for survival. The original domain trigger for loyalty is found now within current domains of ingroup/outgroup loyalties (Dunne, 2018; Graham et al., 2012). For example, sports team rivalries between colleges or cities can be viewed as one tribe versus another (Winegard & Deaner, 2010, as cited in Graham et al., 2011).

Authority/subversion Foundation

Haidt (2013) suggested that the need for authority comes from an individual being able to sort interactions in a hierarchy, knowing when and whom to fear, and recognizing dominance (power) to know when to engage or not engage an individual. In group settings, this is useful as it is not just about power but also about how the dominant individuals use their role with responsibility for the group (Haidt, 2013). Buss (2019) suggested that respect for authority helps individuals restrain their actions and helps keep the group's cooperation in order. Subversion could break the group's mutual agreements and lessen the protection and trust that the group offers. Graham et al. (2012) indicated that the original trigger would lead to evolutionarily favorable outcomes for those who could recognize this hierarchy versus those who did not understand or participate. An example would be going against the hierarchy for individual gains, such as consuming resources outside the established rules, resulting in exile or death.

The current triggers are found within our constructed power systems, such as government, policing, and workplace hierarchies (Graham et al., 2012). For example, workers may have collective bargaining units (unions) that use hierarchies such as seniority (LOS) and adhere to a collective bargaining agreement with the employing organization. Union members following the hierarchy are protected and benefit. Union members acting outside the collective bargaining agreement for individualistic reasons are seen as disobedient and would incur union penalties and unfavorable responses from other union members.

Sanctity/degradation Foundation

Graham et al. (2012) presented the evolutionary history of human adaptive changes that increased risks from pathogens and parasites, such as living in larger, more dense groups and eating meat. Haidt (2013) stated that the omnivore's dilemma of being able to travel and eat different things increased exposure to new and unknown foods to be harmful. These adaptive challenges for food consumption led to disgust as a method of aversion to things that are not clean or pure and threatened individual and group survival (Graham et al., 2011; Haidt, 2013; Lieberman & Patrick, 2018). The original trigger would be disgust at seeing and smelling rotten meat.

Disgust is an innate emotion that binds what the individual holds pure and clean, including sacred values and symbols (Haidt, 2013; Horberg et al., 2009; Lieberman & Patrick, 2018). Degrading what one holds sacred can draw on that original trigger and elicit fear for individual or group survival (Graham et al., 2012; Haidt, 2013; Lieberman & Patrick, 2018). Human societies and cultures have social constructs (such as religion or authoritarian beliefs) placed well above reproach (Graham et al., 2012; Haidt, 2013). An example of a current trigger

is denying a religion's god, which may lead to shunning, violence, or death from those who find that religion/god sacred.

Review of the Literature

Predicting MI in emergency paramedics and investigating potential relationships between MI, moral concerns, and LOS demanded an understanding of the previous research literature on this topic. This review of current literature allowed for identifying areas where MI has been researched and revealing the gap in the literature concerning the specific population of emergency paramedics. The review of the current literature did not identify any research that discussed relationships between emergency paramedics' moral concerns or the effects of LOS. This research study will address this literature gap by predicting MI in emergency paramedics and identifying relationships between moral concerns and LOS. An exhaustive review of current literature included the military and other roles associated with the role of the emergency paramedic, such as law enforcement, firefighters, and front-line healthcare workers. *Front-line healthcare workers* for this study are roles/positions that involve in-person interactions with people in distress and having the capacity to ease their distress, such as emergency physicians, nurses, and social workers. This review of literature will provide insight into applications of MFT (Haidt & Joseph, 2004) for different roles, effects of LOS for the above-listed groups, and MI and the tools for measurement.

Applications of MFT

Graham et al. (2012) indicated that MFT (Haidt & Joseph, 2004) had real-world applications. Graham et al. (2011) suggested that MFT (Haidt & Joseph, 2004) could empirically reveal moral similarities and differences between groups and the psychological processes behind them, which allows identifying patterns in what has been unseen or considered unrelated in

attitudes and judgments against groups. Haidt (2013) presented that MFT (Haidt & Joseph, 2004) explored moral concerns between political parties, primarily American liberals and conservatives, and why such ingrained staunch party affiliations had specific reactions. Graham et al. (2012) indicated consistency in MFT (Haidt & Joseph, 2004), with liberals favoring the pillars of care/harm and fairness/cheating more than conservatives. In contrast, conservatives were more likely to favor authority/subversion and sanctity/degradation pillars than liberals. This example may provide a deeper understanding of why a liberal may feel so strongly against a conservative for health care availability (fairness/cheating and care/harm pillars) and why a conservative may feel so strongly against a liberal for abortion (authority/subversion and sanctity/degradation pillars).

Graham et al. (2012) suggested that MFT (Haidt & Joseph, 2004) also had applications outside psychology, and the authors called for more diverse use of MFT (Haidt & Joseph, 2004). Graham et al. (2012) presented examples of MFT (Haidt & Joseph, 2004) in public policy (Oxley, 2010, as cited in Graham et al., 2012), climate science (Markowitz & Shariff, 2012, as cited in Graham et al., 2012), and neuropsychology (Young & Saxe, 2011, as cited in Graham et al., 2012). The review of current literature also revealed the application of MFT (Haidt & Joseph, 2004) research studies for autistic moral thinking (Dempsey et al., 2020), business (Chowdhury, 2019), sex offenders (Harper & Harris, 2017), jury decisions (Vaughn et al., 2019), video game play (Krcmar & Cingel, 2016), medical education (Paros & Tilburt, 2018), and a dissertation concerning combat veterans (Perez, 2020). MFT (Haidt & Joseph, 2004) contributed an empirical psychological measure for moral concerns and judgments for various disciplines and roles. Identifying moral concerns helps to find patterns within a group, which would be

beneficial for predicting and understanding MI in emergency paramedics who frequently make high-stakes decisions involving the moral concerns encapsulated in the five pillars of MFT.

To summarize, MFT (Haidt & Joseph, 2004) has been used for psychological and non-psychological studies by empirically revealing moral similarities and differences between groups and their psychological processes. Identifying patterns in attitudes and judgments against groups by other groups can help understand and mitigate such bias and actions (Graham et al., 2011). Since MFT (Haidt & Joseph, 2004) can contribute with an empirical psychological measure for moral concerns and judgments for various disciplines, it would be appropriate to use paramedics to identify patterns in moral reasoning while performing their duties in that role.

Length of Service

Length of service was used in this research study as a variable and corresponded to how long the individual has been operating in their defined role. After an exhaustive review of the literature, no studies were found that addressed the LOS and MI. The closest findings concerning the LOS and MI were for exposures to PMIEs in the military (Jinkerson & Battles, 2019; Koenig et al., 2018a; Litz et al., 2009; Nash et al., 2013) and adverse professional and personal effects of LOS in health care and rescue workers (Bentley et al., 2013; Francis et al., 2018; Nilsson et al., 2015; Roy et al., 2020; Wagner et al., 2009).

In the military studies related to MI, the concept of LOS was not addressed, such as civilians per se, as the studies focused on exposure to PMIEs, time served in combat theaters (areas of military operations where combat is occurring), and time since the last deployment to combat theater (Jinkerson & Battles, 2019; Koenig et al., 2018a; Litz et al., 2009; Nash et al., 2013). The military studies evaluated PMIEs that mostly came from combat deployment but may have also occurred during traumatic events or from non-combat deployments, such as sexual

assault (Bryan et al., 2015; Harper et al., 2020). Grimell and Nilsson (2020) indicated interesting findings, showing that although the PMIEs are more frequent during military deployment, the individual does not reflect on the events until after deployment due to combat tempo and job performance demands. However, Litz et al. (2009) suggested that more prolonged and frequent deployments increased anger and frustration with losses and sacrifices, showing an increase in unethical behaviors on the battlefield.

LOS in health care providers and rescue workers (EMS, firefighters) has been a by-product of research studies examining psychological conditions, syndromes, and disorders such as burnout, depression, anxiety, moral decision-making, and suicidal ideations (Bentley et al., 2013; Francis et al., 2018; Nilsson et al., 2015; Roy et al., 2020). Bentley et al. (2013) indicated three statistically significant characteristics of depression, anxiety, and stress in EMS: certification level, service type, and LOS. Francis et al. (2018) indicated that the LOS had weak significance when measuring moral judgment and actions during virtual testing (although this may be an erroneous finding discussed in the Critique section). Nilsson et al. (2015) suggested that cumulative stress worsens the long-term effects of workplace stress. Roy et al. (2020) indicated that with increased LOS came a decline in ambulance personnel's well-being, feelings of betrayal (from workplace relationships, such as co-workers, hospital staff, and management), and a distrust in authority.

To summarize, research on LOS has shown that increased LOS had worse impacts on personal wellness and job performance for the military and civilian healthcare and rescue workers. The military studies presented showed increased negative impacts with the frequency of exposures to PMIEs, but none assessed the total LOS (Jinkerson & Battles, 2019; Koenig et al., 2018; Litz et al., 2009; Nash et al., 2013), whereas the civilian healthcare workers and rescue

personnels' LOS was assessed as cumulative time served in that respective position along with the frequency of exposure for rescue workers (Bentley et al., 2013; Francis et al., 2018; Nilsson et al., 2015; Roy et al., 2020). Knowing that LOS (cumulative) and frequency of PMIE exposures can cause negative impacts on personal wellness and job performance, LOS proves its importance as a variable in this research study for predicting MI in paramedics.

Moral Injury

An exhaustive review of the current literature found no accepted single definition of MI (Atuel et al., 2020; Griffin et al., 2019; Levi-Belz & Zerach, 2022; Lindert, 2021; Neria et al., 2019; Williamson et al., 2021b; Yeterian et al., 2019). Along with a lack of a unified definition, there is no consensus if MI is a psychological construct of an average human experience, psychological distress or syndrome, or a clinical disorder (Atuel et al., 2020; Bravo et al., 2020; Griffin et al., 2019; Grimell & Nilsson, 2020; Hodgson & Carey, 2017; Lancaster & Harris, 2018; Levi-Belz & Zerach, 2022; Litz & Kerig, 2019). Hodgson and Carey (2017, as cited in Lancaster & Harris, 2018) found 17 conceptualizations for MI in their literature review focused on MI. Lancaster and Harris (2018) conducted a non-experimental study that stated 18 different conceptualizations of MI. Levi-Belz and Zerach's (2022) research study of 846 mental health professionals (MHP) cited that MHPs had a low familiarity with MI and were likelier to attribute the conditions in the testing scenarios as PTSD even when the criteria for PTSD diagnosis (per the DSM-V) were not reached. A contextual search for the origins of MI in the research literature aided in understanding such a multi-conceptualized construct.

The specific use of *moral injury* as a reference to a psychological construct surfaced in Shay (1991). Shay (1991/1994) indicated relationships with psychological injuries from moral and philosophical betrayal (from veterans' accounts of the Vietnam War) and found that these

injuries traced back as far as Homer's 8th century B.C.E. poems of the Iliad and Odyssey (Griffin et al., 2019; Grimell & Nilsson, 2020; Shay, 1994). Richardson et al. (2004) indicated the same injury theme of betrayal and accountability in ancient Greek Aristotelian ethics. However, not of psychological study, Leyburn (1970) presented the Scots-Irish (the colloquial 18th-century term for Scottish people who lived in the north of Ireland and then came to the United States) of forced emigration to Pennsylvania in the early 18th-century and their resentment towards the English as *moral injury*. The history of the Scots-Irish forced emigration from Scotland to Ireland plantations. The betrayal of the Irish shortly after that forced emigration to the American colonies is rife with betrayal and injustice (Leyburn, 1970). Pederson (2020) contributed to this historical search for MI in his essay by examining three classic novels by Dostoevsky, Camus, and Powers, which all show the individual's struggle with perceived right or wrong and their actions witnessing or committing transgressive acts and acts of betrayal.

Litz et al. (2009) authors were the first to take the concept of MI from Shay (1991) and made a scientific study about MI (Atuel et al., 2020; Griffin et al., 2019). The research literature on MI has become substantial over the last decade, partially attributed to findings from returning veterans of recent conflicts in the Middle East. However, the construct of MI was initially discussed and developed from veterans' experiences in Vietnam (Jinkerson, 2016; Shay, 1991/2014).

Litz et al. (2009) authors were the first to mention PMIEs (Atuel et al., 2020; Griffin et al., 2019) and offered a working definition of PMIEs falling into perpetration, witnessing, or learning about acts that transgressed deeply held beliefs (which equate to morals). Litz et al. (2009) also suggested that MI was separate from PTSD, although there was an overlap of symptoms, and that a PMIE is always involved in MI. However, Litz et al. (2009) indicated that

more prolonged and frequent deployments increased anger and frustration with losses and sacrifices, increasing unethical behaviors on the battlefield. For example, prolonged combat experiences with the same group may increase bonding, leading to unethical behaviors outside the established rules of engagement (i.e., destroying a whole civilian village) in retaliation for a group member being killed or wounded. Litz et al. (2009) indicated current PTSD symptoms stemming from a traumatic act involving a threat to life and active commission of a deeply held belief (e.g., killing a civilian). Litz et al. (2009) further suggested PTSD symptoms as hyperarousal of traumatic events, fear, intrusive thoughts, anger, and actively avoiding recall of the incident. In contrast, MI was based on shame and betrayal and did not share most of the above PTSD symptoms, especially hyperarousal for potential life threats and fear (Litz et al., 2009). Further research in the 2010s (Litz et al., 2009; Nash et al., 2013; Shay, 2014; Vargas et al., 2013) built upon the areas identified in Litz et al. (2009): MI resulted from a betrayal (committed by an authority) that the individual does not have the power to change or stop, and the individual's perception of themselves for allowing the transgression from their deeply held belief to occur (Drescher et al., 2011; Harris et al., 2015.; Jinkerson, 2016; Litz et al., 2009; Mantri et al., 2020; Shay, 2014).

Most of the current literature had conclusions that were shared with Litz et al. (2009): that MI is distinct from PTSD but may overlap in components (Barnes et al., 2019; Drescher et al., 2011; Jinkerson, 2016; Levi-Belz & Zerach, 2022; Shay, 2014). In Drescher et al.'s (2011) qualitative study, 32 VA mental health providers and chaplains (with one educator) unanimously agreed that MI was a valid concept. Also, the authors concluded that MI should be better defined and more easily understood by veterans, and MI was separate from PTSD (Drescher et al., 2011). Jinkerson (2016) indicated that PTSD is more associated with fear, which MI is not, but that MI

is more of a trauma-related syndrome. Alternatively, Litz and Kerig (2019) suggested that MI should not be a syndrome nor abnormal and that it is a part of the natural healing process. These findings suggest that MI and PTSD are separate constructs. However, either can exist independently, or both co-exist in an individual depending on the traumatic situation (and how the individual views the trauma). This separation of constructs would also suggest that assessment tools for PTSD may falsely detect PTSD when it may be MI and that treatment for PTSD may not be effective for the individual experiencing MI. Alternatively, the converse is that MI would not be detected or addressed.

However, it was not until the mid-2010's that the literature explicitly exploring MI became abundant (Brenner et al., 2015; Currier et al., 2015; Drescher et al., 2011; Farnsworth et al., 2017; Frankfurt et al., 2017; Harris et al., 2015; Jinkerson, 2016; Litz et al., 2009; Nash et al., 2013; Shay, 2014; Vargas et al., 2013). During this time, the literature included a spiritual or religious component for MI that sometimes involved questioning, loss of faith, or a more profound sense of guilt and shame because of this higher-power connection (Atuel et al., 2021; Currier et al., 2015; Drescher et al., 2011; Koenig et al., 2018; Mantri et al., 2021; Vargas et al., 2013; Wang et al., 2020). The different approaches for conceptualizing MI began to obfuscate a unified definition, but two themes emerged: MI was separate from PTSD, and MI resulted in some form of PMIE. Also, Grimell and Nilsson (2020) suggested that MI and moral distress might be the same construct. Grimell and Nilsson (2020) indicated a linear, time-based model with moral stress leading to moral distress, then to MI, then PTSD if not recognized and mitigated by training/education of the individual.

To summarize, attempting to unify a definition for MI is outside the scope of this research study, but finding commonalities within the conceptualizations for MI to predict MI in

emergency paramedics is needed. Delineating past use of moral distress for healthcare professions and MI elucidates the construct of MI more efficiently in the context of emergency paramedics as well. Understanding PMIEs and PMIE measurement tools is also paramount to accurately predicting MI in emergency paramedics more accurately.

Moral Distress

Moral distress is the experience of moral transgressions while practicing under accepted professional values and standards (Whitehead et al., 2015) and has a strong presence in scientific literature associated with healthcare professions, namely the field of nursing (Borges et al., 2020; Lentz et al., 2021; Whitehead et al., 2015), with confusion about a clear definition for MI, Grimell and Nilsson (2020) suggested that MI is a later-stage worsening of moral distress. Aside from Grimell and Nilsson (2020), the review of the literature supported moral distress associated primarily with nursing and clinic-based healthcare, with moral transgressions within the confines of a hospital (and its policies and procedural hierarchy) and limitations of the healthcare worker's ability to effect change on the situation (Borges et al., 2020; Campbell et al., 2016; Lamiani et al., 2017). Emergency paramedics may loosely share some of the frameworks of clinical healthcare workers within a hospital or office, such as having roles and responsibilities in the medical care of patients, ultimately under a doctor's supervision. However, most emergency paramedics' patient encounters are in dynamic environments such as people's homes, public areas, roadways, industrial and business settings, or non-hospital health facilities. Paramedics enter these situations requiring specific immediate risk assessments and operational variances in authority. Paramedics perform their duties under standing orders, allowing the paramedic to perform advanced medical skills before talking to a doctor.

In contrast, most healthcare professionals need in-the-moment orders to perform their duties involving advanced medical skills. The hospital environment may be chaotic and stressful, but it is a secure environment with established and well-known job roles for most situations. The emergency paramedic's environment can change at any moment.

The emergency paramedic role originated from the need for civilian emergency medical care outside the hospital, like the military medics and Corpsmen embedded with field units successfully provided during WWII, Korean, and Vietnam conflicts (Edgerly, 2013). A national report showed that in 1965, more Americans died in vehicle accidents than were lost in the Korean War and that Americans would have a better chance of survival if in a combat zone (Edgerly, 2013). This evolutionary tie with the military and relative autonomy further separates the emergency paramedic from other healthcare providers and the associated moral distress literature. However, this gap in the literature on paramedics and moral distress invites research into similarities between military and emergency paramedics regarding MI.

Military and Emergency Paramedics

The civilian emergency paramedic has similarities with the military combat veteran. The hierarchal system, emergent nature of actions and high-stakes outcomes, PMIEs, and events perceived as morally transgressive to the individual can be used to describe the military combat veteran and the emergency paramedic. PMIEs for military combat veterans have similarities with what emergency paramedics may come across daily: unnecessary or abusive harm to others, seeing deceased humans and their remains, interacting with sick or injured women and children, and witnessing those that they are unable to help (Drescher et al., 2011; Lentz et al., 2021; Litz et al., 2009; Jinkerson, 2016; Nelson et al., 2020; Shay, 2014). What needs to be added in the current MI literature is attention to civilian emergency paramedics in situations that can be

highly stressful and require rapid ethical decision-making, with potential conflicts of personal, organizational, and societal moral obligations.

Paramedics are pre-hospital health professionals who provide advanced and basic emergency and non-emergency care for those in distress (The National Registry of Emergency Medical Technicians [NREMT], 2021). The term *medic* can refer to physicians, nurses, or any healthcare worker in various countries. The military uses *medic* freely amongst those providing a range of healthcare options, not only explicitly for designated personnel focusing on emergency medical care in the official *medic* role. For example, a Navy Corpsman (closest equivalency to a military medic in other U.S. armed forces) can be a front-line emergency medical asset with Marine Corps or Navy Special Operations units (after more advanced training). However, the Corpsman role can range from an Independent Duty Corpsman (more like a Physician's Assistant in skillset and responsibility) to a Corpsman that may work specifically in the pharmacy or X-ray lab, all of which could receive colloquial use of *medic* (Kirkpatrick, 2021). In this literature review, a *paramedic* will represent the EMS profession described in NREMT (2021), where a paramedic refers to a non-military position and functions in an emergency role (e.g., a 911 response) at the certification role of paramedic.

Paramedics likely have the closest civilian bond with military combat veterans. They both have a hierarchical power structure specific oaths outside that power system, and are exposed to PMIEs but do not have the personal agency to stop the transgression. Paramedics, especially in busy 911 services, are often together with police officers on a wide range of calls and may witness or be asked to assist in disproportionate displays of power and authority, which can also trigger in-group bias (Dunne, 2018). For example, a paramedic might witness police aggression against an individual who may not appear to be resisting arrest. Although this act may

not formally break an official rule of the organization, it may violate an ethical oath of the paramedic's certification, local medical command, state and national EMS ethics and standards, or personal ethics and morals. Nevertheless, the in-group bias may demand loyalty to other uniformed personnel from the group, and if this is not followed, it could have consequences for betrayal (Buss, 2019; Dunne, 2018). This in-group bias loyalty is also present in military combat units (Watkins & Goodwin, 2019).

The nature of the job as an emergency paramedic can lead to seeing dead or mutilated human remains; however, training does not prepare the paramedic for every traumatic and PMIE event. Depending on local authority, paramedics are one of the only providers that can officially pronounce the death of victims of violent crimes, accidents, and suicide (Nelson et al., 2020). Paramedics often are on scene with family members and loved ones of those sick, injured, or killed and will bear witness to someone's dying words and pleas or that of their families or the public (Lentz et al., 2021; Nelson et al., 2020). EMS systems demand paramedics continue providing care after whatever call is finished, regardless of PMIE exposure. The following EMS call can be just minutes after a PMIE exposure (Bentley et al., 2013). Bentley et al. (2013) found that 69% of EMS professionals (EMTs and paramedics) stated they did not have enough time to recover emotionally after traumatic events.

To summarize, there is no literature on paramedics and MI, even though paramedics mimic the much-researched military population (for MI). Moral transgressions are at the core of the MI construct (Atuel et al., 2020; Griffin et al., 2019). Understanding moral foundations has been previously noted in the study by Bremer et al. (2015). In addition, the research of Haight et al. (2016) and Currier et al. (2015) suggested the need for MI research in other occupations,

while Awais et al. (2021), Murray (2019), and Williamson et al. (2021b) suggested a need for MI research specifically in emergency first-responders.

PMIE Outcome Measures

Potentially morally injurious events (PMIE) offer a way to describe an event that may not be a clear-cut MI event, but that might lead the individual to experience a transgression of a deeply held belief (Griffin et al., 2019; Jinkerson, 2016; Litz et al., 2009; Nash et al., 2013). For example, being in combat and shooting an unarmed combatant would most likely lead to adverse psychological effects on the perpetrator. In contrast, the seemingly needless intimidation of unarmed combatants with physical harm and death threats may or may not lead to adverse psychological effects such as guilt, shame, and depression. This quantifiable aspect of events linked with MI was started by Drescher et al. (2011), but the concept with the moniker *PMIE* came first in Litz et al. (2009).

The Moral Injury Event Scale (MIES, Nash et al., 2013) and the Moral Injury Questionnaire – Military (MIQ-M, Currier et al., 2015) were used to identify PMIEs in the military population. Around the same time, the research showed that MI is better explained as outcome symptoms since some traumatic events do not violate of personal morality (Koenig et al., 2018b; Nash et al., 2013; Yeterian et al., 2019). For example, being attacked with mortars (explosive shells launched from a tube from a distance) during a military engagement would be traumatic (physical/emotional injuries and death), but not likely to carry a transgression of deeply held beliefs. What is important to note is that both the MIES (Nash et al., 2013) and MIQ-M (Currier et al., 2015) were created for military populations and not meant to account for the reoccurrence of PMIEs (Lancaster & Harris, 2018). The study of Lancaster and Harris (2018) also indicated that neither PMIE scale could adequately account for psychological reactions to

the PMIEs over time, such as personal growth, rumination, or psychological treatment. Once again, exposure to PMIEs does not equate to MI, but those exposed to PMIEs are at a greater risk of developing psychological distress symptoms (Griffin et al., 2019).

To summarize, PMIEs are events that may or may not be perceived as traumatic, involving fear of harm or death, but may embody a transgression of a deeply held belief. However, although PMIE exposure may increase the risk of developing psychological distress symptoms, PMIE exposure alone does not equate to MI (Griffin et al., 2019). Acknowledging the existence of PMIEs outside what is typically considered a traumatic event can aid in understanding the concept of MI. Knowing that previous research found MI is not dependent on PMIE exposure and more on outcome symptoms (Griffin et al., 2019) suggested that this study does not need an assessment for PMIE exposure.

Moral Injury Outcome Measures

At the time of this literature review, there were three measurement tools for MI outcome symptoms: Expressions of Moral Injury Scale – Military Version (EMIS-M, Currier et al., 2018), Moral Injury Symptom Scale – Military (MISS-M, Koenig et al., 2018), and the Moral Injury Symptom Scale – Healthcare Professional (MISS-HP, Koenig et al., 2020) which was developed from the MISS-M (Koenig et al., 2018). The EMIS-M (Currier et al., 2018) was a 45-question assessment that relies heavily on wording for a military audience. When considering a quantitative assessment tool for outcome MI in this study, the EMIS-M (Currier et al., 2018) would have had to be changed in wording too much, possibly diminishing its validity. The MISS-M (Koenig et al., 2018b) also had the same concerns: it is 45 questions and focuses on the military population. The MISS-HP (Koenig et al., 2020) was the most appropriate choice for its healthcare population focus and validity and its conciseness being a 10-item inventory.

The MISS-HP (Koenig et al., 2020) was the MI assessment tool used in this study. At the time of the literature review, only two studies were found that used the MISS-HP (Koenig et al., 2020), which were Mantri et al. (2020) and Wang et al. (2020). The Wang et al. (2020) study was similar to the Mantri et al. (2020) study of hospital-based healthcare workers but was in China. The MISS-HP (Koenig et al., 2020) assessment has a range of scores 10–100, and Mantri et al. (2020) indicated a final score of 36 and higher maximized sensitivity for detecting functional impairment (moderate, very, or extreme impairment of family, social, or occupational functioning). The MISS-HP (Koenig et al., 2020) used three factors for scoring: guilt/shame, spiritual troubles, and condemnation. Guilt/shame contains guilt, shame, betrayal, and other moral concerns; spiritual troubles contain loss of trust, meaning, faith, and inability to forgive; condemnation contains both self-condemnation and punishment by a god or a higher power. These three factors mimic the core tenets of the operational construct of MI listed above. These factors of both MI and MISS-HP (Koenig et al., 2020) are the primary symptoms of MI (Litz et al., 2009; Griffin et al., 2019; Roth et al., 2023). The secondary symptoms and actions are how the participant responds to MI and possible detrimental outcome behaviors.

Secondary Outcome Behaviors

Lancaster and Harris (2018) suggested that exposure to PMIEs correlated with PTSD in military veterans. PTSD can share the same primary symptoms of guilt, shame, anxiety, depression, betrayal, loss of trust, loss of faith, and anger (Currier et al., 2015; Drescher et al., 2011; Jinkerson, 2016; Jinkerson & Battles, 2019; Lentz et al., 2021; Litz et al., 2009; MacLeisch, 2018) as MI. However, Jinkerson (2016) cited two distinguishing factors between PTSD and MI: PTSD develops from a traumatic event that involves an immediate threat to the life of self or others, and PTSD is a physiological disorder based on fear and avoidance

responses (Litz et al., 2009, as cited in Jinkerson, 2016; Molendijk et al., 2022). MI develops from transgressions (or perceived transgressions) of deeply held beliefs (morals), which may lead to an internal cognitive conflict in the individual (Jinkerson, 2016).

MI and PTSD can also have overlap with secondary outcome behaviors (Jinkerson & Battles, 2019). Many of the military MI studies contain secondary outcome behaviors that are present in health care and public safety wellness studies. Included are: suicidal ideation and increased suicide risk (Bryan et al., 2018; Mantri et al., 2020; Stanley et al., 2016; Vigil et al., 2019), substance abuse (Becker et al., 2013; Forkus et al., 2021; Jinkerson, 2016; Vigil et al., 2019), poor ethical decision making (Becker et al., 2013; Jinkerson, 2016; Lentz et al., 2021; Mantri et al., 2020), social isolation (Forkus et al., 2021; Frankfurt & Frazier, 2016; Litz et al., 2009), and burnout (Michaud et al., 2021; Rehder et al., 2021; Roy et al., 2020; Whitehead et al., 2015).

It would be beneficial to identify potential symptoms of MI before they develop into a syndrome or cause the individual to experience distress (Grimell & Nilsson, 2020). Public safety personnel report higher mental disorder symptoms than the general public (Lentz et al., 2021), and workplace stressors predict depression and PTSD in EMS personnel (Bentley et al., 2015). With the substantial overlap of military combat veterans and emergency paramedics with primary and secondary symptoms of MI, it would be beneficial to identify MI for the emergency paramedic population.

Findings

The overall goal of this research study was not only to predict MI through empirical measurement amongst the emergency paramedics but also to find patterns within the theoretical framework of MFT (Haidt & Joseph, 2004) with responses to the MFQ30 (Graham et al., 2011)

and paramedics' LOS. The results of the exhaustive review of literature for MFT (Haidt & Joseph, 2004), LOS within the military, public safety, healthcare populations, and MI revealed not only the current knowledge of this topic but also provided insight regarding the limitations. However, the literature review addressed information that allowed a bridging of the research gaps and addressed known limitations of previous MI research.

Not only were there no research studies focused on the paramedic population (as paramedics were defined in this study) and MI found at the time of the literature review, but there was not a unified definition of MI (Atuel et al., 2020; Levi-Belz & Zerach, 2022; Lindert, 2021; Williamson et al., 2021a). However, the core of the MI construct definitions was either the individual's appraisal of themselves after committing a moral transgression or being a victim of another's moral transgression (Griffin et al., 2019). Semantically, *committing* a moral transgression would include acts of omission, as choosing not to act is still a choice (Yeung et al., 2021). Also, a victim of another's moral transgression would be a first-hand witness or knowing the fact (such as watching torture or hearing about it from the source) or the recipient of the morally transgressive act (such as a sexual assault victim).

A cause for the absence of a commonly accepted definition for MI may be the need for a unified definition of what makes a moral right or wrong (Lancaster & Harris, 2018). The history of humanity involves philosophical discussions if morality is subjective or objective. Regardless of the debate of morality's origins, an empirical method was needed to measure what the individual paramedic believes to be a moral transgression for this study. Bremer et al.'s (2013) study indicated that cultural influences impacted ambulance care, and the authors concluded that future research was needed on how EMS personnel define morality.

MFT (Haidt & Joseph, 2004) is a theory that explains how morality develops through moral foundations of care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation. The literature review indicated that the only use of MFT (Haidt & Joseph, 2004) with MI was a dissertation by Perez (2020) regarding veterans. Graham et al. (2012) and Haidt (2013), which are the authors of MFT (Haidt & Joseph, 2004), stated that MFT could be used in any research that would benefit from empirically revealing moral similarities and differences between groups and individuals within a group. Therefore, using MFT (Haidt & Joseph, 2004) addressed empirical measurement of morality with a cross-culturally validated assessment tool in the MFQ30 (Graham et al., 2011), while adding knowledge (not only to the established theory) for MI literature gaps.

The literature review found that an increased frequency and long-term exposure to traumas and PMIEs and shorter or no time to process such traumatic events have long-term adverse health effects for the paramedic. Bentley et al. (2013) suggested that the type of EMS service correlated with trauma responses (e.g., a 911 emergency ambulance service exposed to more trauma than a small town or non-emergency ambulance service). Bentley et al. (2013) also indicated that 69% of EMS personnel reported not having enough time between traumatic events to recover while performing their job mentally. The Nelson et al. (2020) qualitative study of nine paramedics suggested that responding to 911 calls dealing with suicide/suicidal ideation often led to long-term psychological unwellness. Nelson et al. (2020) indicated that responding to such traumatic calls can evoke personal feelings of distress and disbelief and that the paramedic learns to suppress this distress and continue working without time to process it either personally or by an established coping mechanism in place. These findings mean the busier, emergency-oriented paramedic positions received more traumatic exposure. They had less time to process those

events mentally, which makes the job more psychologically and physically demanding and allows a build-up of this personal distress over time (Bentley et al., 2013; Nelson et al., 2020; Roy et al., 2020).

Frequent and increased exposure to PMIE increased MI probability in the military (Grimell & Nilsson, 2020; Litz et al., 2009), while the increased LOS in healthcare workers and EMS personnel increased primary and secondary adverse psychological outcomes (Bentley et al., 2013; Nilsson et al., 2015; Roy et al., 2020). Lancaster and Harris (2018) suggested that exposure to PMIEs worsens the individual's psychological wellness. Grimell and Nilsson (2020) suggested it is best to identify symptoms of MI to stop them from becoming a syndrome. This literature indicates that more frequent time and exposure to PMIEs increased primary and secondary psychological unwellness for both military and EMS personnel (Bentley et al., 2013; Grimell & Nilsson, 2020; Lancaster & Harris, 2018; Litz et al., 2009; Nilsson et al., 2015; Roy et al., 2022). Moreover, since the author asserts that military and paramedic populations are similar in structure and PMIE exposures, paramedics may be experiencing MI and other psychological issues that need to be identified and mitigated for their psychological well-being, which affects job performance.

Another essential element highlighted in the literature was the instruments used to measure MI. In particular, the MISS-HP (Koenig et al., 2020) offered the most accurate measurement tool for MI in emergency paramedics. Of the three MI measurement tools found during the literature review, the MISS-HP (Koenig et al., 2020) was the most concise and appropriate for emergency paramedics as it did not have to change verbiage in the instrument. There were two assessments for PMIEs that were used in early MI research. However, the review of the literature suggested that assessing PMIE exposure alone does not determine if MI

is present and is an outcome measure (Griffin et al., 2019; Koenig et al., 2018b; Nash et al., 2013). This finding that PMIE measurement alone cannot determine MI means that using an assessment for MI, the MISS-HP (Koenig et al., 2020), without an assessment for PMIEs provided the most relevant data for this study.

Critique of Previous Research Methods

The review of the current literature found strengths and weaknesses in the results. The previous literature provided a breadth and depth review of morality, moral development, moral foundation theory (Graham et al., 2011), effects of LOS for military and paramedics, and moral injury. This thorough review allowed a proper synthesis of the information to proceed efficiently and effectively with the current research study. The strengths and critiques for MFT (Haidt & Joseph, 2004) will be presented first, then the strengths and weaknesses of the remaining literature for the variables of MI and LOS will follow.

MFT Literature

Strengths

A strength found in the MFT (Haidt & Joseph, 2004) literature was not only the numerous quantitative studies that explained the progression leading to MFT (Haidt & Joseph, 2004) but also the authors' welcomed critique. For example, Haidt (2021a) is part of the MFT (Haidt & Joseph, 2004) authors' website that calls for critiques, where there is a list of the critiquing literature, and responses countering the claims. This resource is helpful in that not only do the authors of MFT (Haidt & Joseph, 2004) address critics and provide counterarguments (which solidify the theory's claims), but citations to many research studies that used MFT are also provided. Another strength of MFT (Haidt & Joseph, 2004) noticed across the research was the number of diverse populations. Not only was the sample in the Graham et al. (2011) study

cross-culturally representative of North America (USA, Canada, Latin America) but also the UK, Europe (Eastern and Western), Africa, Asia (South, Southeast, East), Middle East, and Australia. Other studies added diverse sampling, such as the Stankov and Lee (2016) study recruited 6938 participants from 33 countries, whereas other distinct populations like New Zealanders were also recruited (Malka et al., 2016).

Criticisms

Haidt (2021a) indicated the critiques of MFT (Haidt & Joseph, 2004) and offered rebuttals to the critiques with scientific merit. Haidt (2021a) suggested that the criticisms for MFT (Haidt & Joseph, 2004) come either as a dispute or challenge to one of the four claims (nativism, cultural learning, intuitionism, pluralism) or how specific subgroups (political affiliations) fall within the foundations and the critics argued against the generalizability of using MFT for explaining the labeling results within MFT for conservatism or liberalism. For example, race identity (black) was argued not to be conservative. However, MFT (Haidt & Joseph, 2004) results indicated a more conservative response for the five moral foundations (Davis et al., 2016). Although, the authors appeared more concerned with the political labels than the underlying theory for exploring how the moral foundations were represented (Davis et al., 2016). Haidt (2021a) also suggested a claim that moral foundations were not heritable (Smith et al., 2016, as cited in Haidt, 2021a) but pointed out that the authors incorrectly modified and shortened the MFT (Haidt & Joseph, 2004) assessment tool which nullified validity of their results. Ori (2020) suggested that moral experiments used by psychological literature could not assess moral pluralism. De Villiers-Botha (2019) addressed that MFT (Haidt & Joseph, 2004) was dependent on all five pillars, viewed as types of *harm* and that the metaphysical assumptions of *harm* assume a Western point of view. Schein and Gray (2015) used this same reduction, that

all pillars of MFT (Haidt & Joseph, 2004) are *harm-based*, and argued that MFT was not able to reflect differences between liberals and conservatives. Haidt (2021a) indicated that the sample in Schein and Gray (2015) had flaws in descriptive categorizations for liberals and conservatives, which led to unreliable data. Landmann and Hess (2018) addressed MFT (Haidt & Joseph, 2004) and offered that morality is built on anger, disgust, and compassion. However, Landmann and Hess (2018) indicated their limitations in their study with too few conservative respondents, something that Graham et al. (2012) suggested was a fundamental limitation of moral psychology before MFT (Haidt & Joseph, 2004). Janoff-Bulman and Carnes (2016) addressed that MFT (Haidt & Joseph, 2004) does not include an in-group foundation for liberal morality and suggests a *social justice* pillar just for liberals.

To summarize, although many criticisms of MFT (Haidt & Joseph, 2004) were found in the literature review (De Villiers-Botha, 2019; Janoff-Bulman & Carnes, 2016; Ori, 2020; Smith et al., 2016, as cited in Haidt, 2021a), and the authors of MFT responded to each criticism on their website (Haidt, 2021a). Haidt (2021a) also presented research studies across various disciplines using MFT (Haidt & Joseph, 2004). This literature review suggested that MFT (Haidt & Joseph, 2004) is a well-used and solid theory, where the authors are still invested in the improvement and defense of MFT.

Literature on MI and LOS

Strengths

The research strengths focused on MI and LOS were methodology and sampling design. Most of the studies used quantitative methods, primarily nonexperimental, which mainly were correlational designs (Becker et al., 2013; Jinkerson & Battles, 2019; Lancaster & Harris, 2018; Papazoglou et al., 2020; Whitehead et al., 2015) or literature reviews (Atuel et al., 2021; Griffin

et al., 2019; Lentz et al., 2021; Levi-Belz & Zerach, 2022; Neria et al., 2019). Many studies also used a purposive sample (Jinkerson & Battles, 2019; Lancaster & Harris, 2018; Papazoglou et al., 2020; Schorr et al., 2018; Whitehead et al., 2015).

Nonexperimental research attempts to measure variables that may have meaningful relationships occurring naturally (Cook & Cook, 2008; Warner, 2013) without manipulating the variables (Reio, 2016). Many studies used correlational research designs to examine potential relationships between variables and allowed prediction within a degree of accuracy due to the predictable manner of variable values (Leedy & Ormrod, 2019). An example of exploring variable relationships without manipulating the outcome variable was a correlational study of 172 military veterans of the Iraq and Afghanistan war campaigns which presented correlations between PMIE exposure and psychological distress (Lancaster & Harris, 2018). Another example was a correlational study of 23,451 EMTs and paramedics, which presented predictors for anxiety, stress, and depression (Bentley et al., 2013). Both examples needed a correlational design as they could not have manipulated variables due to survey questions dealing with past events. A correlational design can assess whether there is a linear relationship between two variables, does not require manipulating any variables, and data can be assessed after the fact (Leedy & Ormrod, 2019).

A literature review could be considered a valid nonexperimental research method if it is highly rigorous and accurate (Snyder, 2019). The amount and quality of literature reviews strengthened the research study's knowledge base, allowing reasonable topic procession for the current study (Atuel et al., 2021; Becker et al., 2013; Griffin et al., 2019; Neria et al., 2019). These literature reviews were used to explore finding a common conceptualization and definition of MI (Atuel et al., 2021; Griffin et al., 2019; Neria et al., 2019), as well as background

knowledge for the study's variables of MI and LOS within the military, health care, and public safety (Becker et al., 2019; Frankfurt & Frazier, 2016; Hodgson & Carey, 2017; Koenig et al., 2020; Lentz et al., 2021). These literature reviews were conducted with great rigor, which allowed for recognition of the research gaps, which increased the quality of this research study by allowing the best research questions and hypotheses (Snyder, 2019). An example would be the literature review that chronologically listed 17 definitions for MI (Hodgson & Carey, 2017). Another example, Lentz et al. (2021) searched the literature for MI by using conceptualizations of MI components (values, ethical decision-making, organizational betrayal, spirituality) within public safety personnel, which returned 771 articles initially, but further review found only 32 articles that were included which highlighted the research gaps in MI research concerning public safety personnel.

Another strength within studies found in the review of the literature was the use of purposive sampling. A *purposive sample* is a group with something unique in common that the researchers are interested in with that select group only (Royse et al., 2016). For example, a correlational study exploring MI and PTSD among police officers recruited 370 police officers, specifically from Finnish national police forces, to ensure all participants would have the experiences expected for the study (Papazoglou et al., 2020). Although purposive sampling ensures the sample will include those significant to the research question, it also has a limitation of weak external validity as it cannot be generalized to other populations (Cozby & Bates, 2018; Palinkas et al., 2015). The qualitative studies of this literature review used purposive sampling by inherent research design, which contributed to the knowledge of MI and LOS for their respective samples to explain an experience from an individual's subjective perspective (Patton, 1999). For example, a grounded theory study of veterans used purposive sampling to recruit

participants from PTSD psychotherapy groups at VA medical centers to focus on respondents with the highest possibility for insight into MI concerns (Schorr et al., 2018). Another example was a thematic analysis of 35 ambulance personnel of the same ambulance service, which suggested that LOS contributed to psychological unwellness (Roy et al., 2020). Roy and colleagues used convenience sampling (which was also purposive sampling) by posting an open invitation at the ambulance service for all ambulance personnel, which were all licensed paramedics. Although the qualitative findings from the Roy et al. (2020) study help understand a small homogeneous group's experiences from purposive sampling, the relatively small sample would not be considered to have sufficient statistical power for inferences in this study's quantitative analysis with six predictor variables and university guidelines for power analysis which are detailed in Chapter 3 (Faul et al., 2007; Warner, 2013).

Limitations

There were limitations in some of the studies, most notably the lack of a census for a definition of the MI construct (Atuel et al., 2020; Griffin et al., 2019; Levi-Belz & Zerach, 2022; Lindert, 2021; Neria et al., 2019; Williamson et al., 2018a; Yeterian et al., 2019). Other limitations were several research design flaws (Mausz et al., 2022; Schorr et al., 2018) and terminology errors (Lentz et al., 2021; Williams et al., 2021). Each of these limitations is discussed below.

To date, there is neither a consensus on the definition of the MI construct nor diagnostic criteria (Levi-Belz & Zerach, 2022; Roth et al., 2023). The first psychological study for a MI construct was just over 10 years ago (Litz et al., 2009), but even with the recent literature presenting this lack of consensus, a definition and approach to identification remains unresolved (Levi-Belz & Zerach, 2022; Lindert, 2021; Roth et al., 2023). Although not centralized, the most

common explanation in the literature for MI encapsulated the theme of acts of omission, commission, or witnessing transgressions of deeply held beliefs and experiencing a betrayal of a trusted authority through PMIES (Levi-Belz & Zerach, 2022; Litz et al., 2009; Watson et al., 2021). However, alternate conceptualizations, such as MI resulting from a moral failure, threaten one's character and identity (Atuel et al., 2021). Alternatively, a syndromal approach defines MI as a syndrome that involves four core symptoms – guilt, shame, loss, and existential conflict which then cause secondary emotional and behavioral symptoms such as anger, depression, anxiety, self-harm, and social isolation (Jinkerson, 2016; Roth et al., 2023). What was surprising was mental health professionals' lack of knowledge of MI (Levi-Belz & Zerach, 2022). A quasi-experimental study of 846 mental health care professionals indicated that 46.9% reported no knowledge of MI, and the respondents with low familiarity with MI identified MI as PTSD (Levi-Belz & Zerach, 2022). For this study, a synthesis of definitions served the research questions most effectively, which defined MI as transgressions of deeply held beliefs most likely stemming from PMIE exposures that result in secondary emotional and behavioral symptoms.

Several research design flaws were found that may have biased the results (Mausz et al., 2022; Schorr et al., 2018). The first was a qualitative study that used generic qualitative inquiry to explore role identity, dissonance, and distress among Canadian paramedics (Mausz et al., 2022). It was a purposive sample ($N = 21$) from one EMS agency (Mausz et al., 2022). The authors noted that the principal investigator was in charge of recruitment and was a paramedic at the study's only research site. An increase in ethical risks exists in a qualitative study as the researcher has direct contact with the participant in research interviews (Haverkamp, 2005). Having direct contact with the researcher can impact the participant's sense of self-agency with the hierarchal dynamic, where the participant may feel like they cannot quit as easily as if they

are not engaged with the researcher or feel like they have to give a particular answer (or want to give a specific answer to help the researcher that they may know) or fear being judged (APA, 2017; Haverkamp, 2005). There could also be influence or bias from the participants if they know the researcher either professionally or personally, which may impact the research relationship and cause or appearance of compromised trustworthiness (APA, 2017; Haverkamp, 2005). This type of researcher interaction can also involve third parties' personal information being shared without their knowledge and consent through the participant's answers (Haverkamp, 2005).

Another qualitative study recruited participants from established PTSD groups at VA medical centers for a focus group concerning sources of MI for veterans (Schorr et al., 2018). This design had two flaws. First, the researchers recruited from the PTSD group with only criteria that they had to be enrolled in PTSD treatment. Secondly, the respondents were seated together for group questions and responses. The first is limiting the sample to only veterans identifying with experiencing PTSD, which the literature at the time suggested that MI and PTSD may overlap, but MI was not dependent on a PTSD diagnosis (Farnsworth et al., 2017; Jinkerson, 2016; Litz et al., 2009; Shay, 2014). The second is the researcher allowing the possibility of response bias by conducting the research within a PTSD group that may know each other and did not allow for anonymity. The authors did acknowledge the imbalance of the older veterans seemingly more open to talking about MI exposures and violent acts and attributed it to being more comfortable in a group setting to speak about it due to more time has passed from the events (which would allow the benefits of longer treatment and personal growth). However, the authors also suggested an unknown influence of the group setting in shaping the responses of other group members (Schorr et al., 2018). The researchers should have planned their research

design to mitigate these potential areas of bias and lack of confidentiality, especially with the obligation to act as the respondent's fiduciary to promote the welfare of the participant, which may not have occurred in a focus-group response setting with other participants they may know even if they consented (APA, 2017; Haverkamp, 2005).

Several studies had terminology errors in the definition of a *paramedic*. This confusion may be caused by colloquial European usage of the term *medic*, referring to physicians (Williams et al., 2021), or the misrepresentation of the actual composition of research samples (Lentz et al., 2021). Both errors might spread to citations of other research studies (if not properly vetted), leading to invalid research results and findings. For example, a reference from Williamson et al. (2021b) of another study (Miles, 2019), indicated that the sample was composed of a *civilian medic sample*. However, further investigation found that Miles' (2019) study was about physicians, not paramedics, as defined in this study. This use of *medic* may be a regional term and not meant to be misleading. However, it allows for credibility to be questioned for the entire study and perpetual misreporting in literature reviews and citations (Leedy & Ormrod, 2019). What may need to be clarified is when the term *paramedic* is used incorrectly and not just as regional slang as in the study by Williamson et al. (2021b). In the literature review by Lentz et al. (2021), the study's title indicated that the article was a scoping review of MI among firefighters, paramedics, and police officers. This study found 777 articles, of which only 32 met the authors' inclusion criteria (i.e., abstracts and titles matching four subject areas of values, ethical decision-making, organizational betrayal, and spirituality), and of those, only seven mentioned paramedics. Furthermore, of those seven, the definition of *paramedics* was misrepresented. Lentz et al. (2021) indicated that seven studies included paramedic populations (Francis et al., 2018; Jafari et al., 2019; Jonsson & Segesten, 2004; Nelson et al., 2020; Ozcan et

al., 1999; Qashu Lim, 2017; Torabi et al., 2018) when only five were (by this study's definition) of paramedics (Francis et al., 2018; Jonsson & Segesten, 2004; Nelson et al., 2020; Ozcan et al., 1999; Qashu Lim, 2017). Of the two that were not paramedics and were Iranian-based studies, Lentz et al. (2021) indicated they were paramedic samples (Jafari et al., 2019; Torabi et al., 2018). However, a review of both studies (Jafari et al., 2019; Torabi et al., 2018) revealed that Iranian EMS systems did not have paramedics. Torabi et al. (2018) indicated that Iranian EMS was staffed mostly by nurses and some EMTs but also utilized other hospital-based personnel such as anesthesia technicians and operating room personnel. Lentz et al. (2021) provided a result regarding paramedics' moral distress in decision-making and provided evidence with the Jafari et al. (2019) study. However, the Jafari et al. (2019) study was a qualitative study of 14 Iranian EMS personnel (six nurses and eight EMTs) that did not contain a paramedic.

Nevertheless, after further research of those five studies (Francis et al., 2018; Jonsson & Segesten, 2004; Nelson et al., 2020; Ozcan et al., 1999; Qashu Lim, 2017), only three studies contained actual paramedics samples: Jonsson and Segesten (2004), Nelson et al. (2020), and Ozcan et al. (1999). The Qashu Lim (2017) study was a dissertation on emergency room staff and tangentially discusses paramedics. Francis et al. (2018) presented 20 paramedics in their research sample, but those 20 paramedics were in their first year of university training to become paramedics. The Francis et al. (2018) research study was a U.K.-based study examining moral decision-making through a virtual experience. College of Paramedics (2019) addressed that becoming a paramedic in the U.K. is generally a 2-4 year process. It is unknown if a first-year paramedic student in the U.K. can hold the title of a paramedic, nor is it addressed by the authors in the study by Francis et al. (2018). However, the research validity of the results reported by Francis et al. (2018) may lack strength in its claims of merit with their paramedic population

compared to the experiences, training, and demands of an emergency paramedic defined in this study. Therefore, although it was reported that the seven studies presented by Lentz et al. (2021) contained paramedic samples (Francis et al., 2018; Jafari et al., 2019; Jonsson & Segesten, 2004; Nelson et al., 2020; Ozcan et al., 1999; Qashu Lim, 2017; Torabi et al., 2018), only three contained a paramedic as defined by this study (Jonsson & Segesten, 2004; Nelson et al., 2020; Ozcan et al., 1999). This misrepresentation error diminishes the validity of findings and conclusions made by the study by Lentz et al. (2021) concerning paramedics, as defined in this study.

How terminology is significant for research in this field of MI research (especially for paramedics) is that a standard definition and job role clarity are needed for rigorous findings. For example, they were loosely attaching similar types of emergency workers, and referring to them as medics would be similar to researching MI within a hospital and referring to all the different roles of *hospital workers*. Data would be richer if the researchers identified roles (nurses, physicians, aides, non-clinical staff) and specialties (emergency, pediatric, critical care, radiology) rather than generalizing and misrepresenting these diverse positions, responsibilities, and certification, and education for licensure, various patient exposures, and urgencies. An agreement and standardization of what constitutes a *medic* and *paramedic* in health care literature must occur. However, until then, more vigilance is needed regarding sample reporting. The same specificity should permeate public safety professions: paramedics, EMTs, firefighters, police, dispatchers, and emergency management personnel need to stop being lumped together as *emergency workers* or *public safety personnel* when further delineation of each specialty and their unique sets of training, experiences, and roles would be scientifically advantageous.

To summarize, reviewing the current literature allowed a gleaning of relevant information on MFT (Haidt & Joseph, 2004), LOS, and MI, which guided the choice of the best research design for this study to address previous limitations in research. The goal of valid research is to account for the weaknesses and limitations in prior research and avoid or mitigate them while also choosing the appropriate research design to fully address the proposed research questions (Braun & Clark, 2006; Caelli et al., 2003; Cooper & Endacott, 2007; Kahlke, 2014; Patton, 1999) - a quantitative, nonexperimental (correlational) research design allowed for pattern-seeking between variables. To this address this study's research questions appropriately and without confusion, a purposive sampling approach of only emergency paramedics was used that also included disqualifying questions to help ensure the respondents met this study's definition of a *paramedic*. This study's design also mitigated ethical concerns that Williamson et al. (2021a) addressed for MI research. Ethical risks are increased with a qualitative design. Risks include disclosures of illegal acts (e.g., assaulting a patient), risk of harm from repeated questioning, violation of a third-party's confidentiality (e.g., the respondent shares information about another that has not consented to be a part of the research study), or disclosure of a specific event that could potentially weaken the respondents' confidentiality (e.g., a mass casualty event which involved only a specific location and set of emergency responders). This study's quantitative design used only closed-ended questions, anonymous responses via Weblink, and participants who had to consent to be in the research study. Also, this research design did not expose the respondent to repeated questioning, did not expose any third parties that did not consent and was not focused on an event that may risk privacy.

Summary

Chapter 2 provided the methods of searching the literature and the theoretical orientation for this research study. In addition, an exhaustive literature review was completed, and a synthesis of the research findings was presented. Finally, a critique of the previous research methods with limitations and weaknesses was discussed.

Although the literature on MI was plentiful, more was needed to quantify how individuals made moral decisions. MFT (Haidt & Joseph, 2004) theory is rich in the literature regarding its validity and is used across many disciplines (Graham et al., 2012; Graham et al., 2011; Haidt, 2013). A large amount of the review of the literature explored conceptualizations and definitions of MI within the military population, which still does not have one accepted definition (Atuel et al., 2020; Griffin et al., 2019; Neria et al., 2019; Williamson et al., 2018). The literature review provided support in finding relationships between PMIE, MI, and a set of adverse psychological outcomes with MI (Currier et al., 2015; Drescher et al., 2011; Jinkerson & Battles, 2019; Litz et al., 2009; MacLeisch, 2018; Michaud et al., 2021; Rehder et al., 2021), which are also factors within the paramedic profession (Bentley et al., 2013; Lentz et al., 2021; Nelson et al., 2020; Roth et al., 2023; Roy et al., 2020; Whitehead et al., 2015). The literature presented several assessment tools for PMIE and MI (Currier et al., 2015; Koenig et al., 2018; Nash et al., 2013; Mantri et al., 2020). The literature review found no MI studies within the paramedic community.

MFT (Haidt & Joseph, 2004) was the best effort to find patterns in how paramedics use moral foundations in decision-making. Using MFT (Haidt & Joseph, 2004), addressing the LOS, and using an MI measurement may be the best effort to predict MI in this study and future MI research. Based on the reviewed literature, the MISS-HP (Koenig et al., 2020) was deemed the most appropriate assessment tool for MI in paramedics and, consequently, was chosen for the

current study. The MISS-HP (Koenig et al., 2020) is a valid and reliable assessment tool for MI and did not need to be modified (in wording) for use with paramedics. This study addressed the gap in the literature for MI studies in emergency paramedics while also being the second study (the first was a dissertation by Perez, 2020) to address MI along with MFT (Haidt & Joseph, 2004).

In Chapter 3, a detailed description of this study's methodology, research questions, hypotheses, and research design will be provided. Next, an overview of the target population and sample of participants, instruments used in data collection, and procedures used in the data analysis will be discussed. Chapter 3 will end with a discussion of ethical considerations for this study.

CHAPTER 3. METHODOLOGY

Chapter 3 will review the methods used for this study. It contains the purpose of the study, the research questions and hypotheses, the research design, the target population and participant selection, the procedures used to conduct the study, the instruments used to collect data and ethical considerations. There will also be a summary of the chapter in the final section.

Purpose of the Study

The study aimed to determine if MI could be predicted with MFT (Haidt & Joseph, 2004) and the LOS in emergency paramedics with at least one year of emergency response experience. A research problem exists: there are no studies for MI solely within emergency paramedics. Prior research has found that MI existed in military veterans (Koenig et al., 2018b; Nash et al., 2013) and police officers (Papazoglou et al., 2020), as well as hospital personnel such as physicians and nurses (Mantri et al., 2020; Murray et al., 2018; Wang et al., 2020). These job roles (military combat, policing, and healthcare of acutely sick and injured) all mimic the job role of the emergency paramedic needing high-stakes thinking and actions. The research on MI has also indicated findings of psychological distress (e.g., PTSD and depression) along with secondary psychological outcome behaviors such as suicide, substance abuse, poor ethical decision-making, burnout, and decreased quality of life associated with increased MI scores of the corresponding assessment tool or higher exposures to PMIEs (Bryan et al., 2015; Forkus et al., 2021; Jinkerson et al., 2016; Litz et al., 2009; Michaud et al., 2021; Vigil et al., 2019). Research has also presented that a higher frequency of exposure to PMIEs and cumulative LOS were associated with secondary psychological negative impacts (Jinkerson & Battles, 2019; Koenig et al., 2018; Nilsson et al., 2015; Roy et al., 2020).

This study was designed to advance the scientific knowledge of MI and emergency paramedics, first by presenting research data that shows MI exists in emergency paramedics (not presented in literature at the time of this study) and by providing evidence that suggests MI can be predicted in emergency paramedics with MFT (Haidt & Joseph, 2004) and LOS. As stated in Chapter 1, the theoretical foundation used for this study is MFT (Haidt & Joseph, 2004), which posits that five moral foundations can be substantive in any combination for individuals who also have group similarities in cultures, ideologies, and social group prejudices (Graham et al., 2012). Understanding how these moral foundations may show patterns with MI in emergency paramedics (the first study of its kind) would allow further study of the established MFT (Haidt & Joseph, 2004) into new domains as well as unknown knowledge not only for paramedics but future studies with other first responders concerning MI and MFT. The predictive ability of MFT (Haidt & Joseph, 2004) and LOS relating to MI in emergency paramedics were examined with the research sub-questions and hypotheses listed below.

Research Questions and Hypotheses

The primary research question asked, “Among emergency paramedics, does a construct for moral foundations along with the LOS time (in years) predict significant variance in moral injury construct scores?”. A quantitative design allows for the appropriate statistical analysis of the variables to address the primary question. Three sub-questions were used to explore the primary research questions sufficiently:

Research Question 1

Do moral foundations and length of service predict moral injury in emergency paramedics?

H_0 : Moral foundations and length of service will not predict moral injury in emergency paramedics.

H_A : Moral foundations and length of service will predict moral injury in emergency paramedics.

Research Question 2

What is the unique ability of moral foundations and length of service to predict moral injury in emergency paramedics?

H_0 : Each of the five moral foundations variables and length of service will not individually predict moral injury in emergency paramedics.

H_A : Each of the five moral foundations variables and length of service will individually predict moral injury in emergency paramedics.

Research Questions 3

Which variable or combination of variables of moral foundations and length of service best predicts moral injury in emergency paramedics?

H_0 : None of the variables of moral foundations and/or length of service, in combination or alone, will predict moral injury in emergency paramedics.

H_A : At least one of the variables of moral foundations and/or length of service will predict moral injury in emergency paramedics.

Research Design

A quantitative methodology with a nonexperimental research design was used for this study. Nonexperimental research attempts to measure variables that may have meaningful relationships (Cook & Cook, 2008; Warner, 2013) that occur naturally without any manipulation of the variables (Reio, 2016). Nonexperimental research is also appropriate when it is not feasible to use other types of quantitative research, such as experimental or quasi-experimental (Johnson, 2001; Reio, 2016). A nonexperimental design cannot be used to make valid claims of causal relationships between the variables and does not consider extraneous variables that may influence the variable relationship or support causal relationships (Grosz et al., 2020; Johnson, 2001; Reio, 2016). However, correlational, nonexperimental research designs can be used to understand the relationships between predictor and outcome variables (Warner, 2013). When completing the electronic questionnaire, this study asked participants questions concerning generalized moral situations and feelings. These responses were formed from events that have occurred naturally over the participants' lives, and the outcome variable of moral injury could not be manipulated. MLR was used because six predictor variables of LOS and the five domains of MFT (Haidt & Joseph, 2004) were being used to predict the outcome variable of MI.

Five of the six predictor variables are the five foundational variables of the MFQ30 (Graham et al., 2011): harm (care/harm domain), fairness (fairness/cheating domain), ingroup (loyalty/betrayal domain), authority (authority/subversion domain), and purity (sanctity/degradation domain); all are ratio scales of measurement (Graham et al., 2008). The sixth predictor variable is the LOS, an interval scale of measurement. The outcome variable, which is the score of the MISS-HP (Koenig et al., 2020), is interval scale of measurement.

The sampling design was a nonprobability design. The data for this study was collected through SurveyMonkey, an online website survey collection company with free and paid tiers. Because this was the first study to address MI in emergency paramedics, purposeful sampling was used to ensure a significant representation of emergency paramedics.

Target Population and Sample

This section describes the target population and sample. The target population's characteristics and the sample's inclusion and exclusion criteria are explained. Lastly, the power analysis for an estimated sample size for this study is discussed.

Population

The targeted population for this study was emergency paramedics, as defined in Chapter 1 (whose primary role was to respond to emergency 911 calls). The United States Bureau of Labor Statistics (BLS) reported in 2020 that there were 262,300 jobs for paramedics (BLS, 2023). This BLS report did not identify how many paramedics hold certifications or work in the emergency first responder role. For example, some paramedics, such as instructor roles, can hold a certification but not work in an ambulance. They can maintain their certification through continuing education but are not involved in any EMS service or related instructional roles. This study had sample participants who worked in an emergency role on ambulances. The demographics (at the time of the study) for the paramedic population in the U.S. were 68.4% of paramedics men, 31.6% women, an average employee age of 34 years old, and ethnicity reported 71.7% White, 14.5% Hispanic or Latino, and 6.9% as Black or African American (Zippia, 2022).

Sample

This study used a nonprobability sampling design. Since the paramedic population is a relatively small and unknown subset that functions primarily in emergency first responder roles,

the purposeful sampling method was used as the sampling tool (Leedy & Ormrod, 2019).

Previous studies for MI claimed to include paramedics but were not paramedics as defined in this study and were other medical personnel such as doctors and nurses (Jafari et al., 2019; Miles, 2019; Torabi et al., 2018; Williams et al., 2021b). The purposeful sample method addressed this gap in MI research on paramedics. Inclusion criteria were that the emergency paramedic operated in a ground ambulance (e.g., not on a helicopter, airplane, or quick response vehicle without transport capabilities) and was the highest trained EMS professional for typical crew configuration (e.g., member of an EMT and paramedic or dual paramedic ground, ambulance crew). Paramedics in this target population and for this sample had to hold a current and valid certification as a paramedic at the state or national (NREMT) level. The only exclusion criterion was not serving as an emergency paramedic for at least one year.

Power Analysis

A statistical power analysis was conducted using the G*Power Program version 3.1.9.6 (Faul et al., 2020) and following the steps listed in Faul et al. (2007) to determine the sample size for this study. The study contained six predictor variables and one outcome variable. The multiple linear regression statistical test was chosen to evaluate the strength of effect that a predictor variable has on the outcome variable, as well as the significant predictor variables for the outcome variable when other predictors are controlled (Statistical Solutions, 2022; Warner, 2013). An a priori power analysis was used to compute the required sample size for the given alpha value and effect size. Using the analysis inputs of Capella University's recommended effect size of medium (.25), alpha value of .05, and power of .80, along with the number of predictor variables of 6, a minimum sample size of 62 was needed (Faul et al., 2007). Therefore,

the study aimed to recruit at least 62 emergency first responder paramedics, with at least 15% additional ($N = 71$) for possible data collection errors.

Procedures

This section describes how the methods of the study were conducted. Also, the section will detail the selection of participants and the procedures used to protect them. Lastly, data collection and analysis are discussed.

Participant Selection

This study used a nonprobability sampling design and a non-random, purposive sample. Since this was the first study known at the time to address MI solely in paramedics, I chose a target population that was representative of emergency paramedics. To logically assume the sample would be represented by emergency paramedics, a purposeful sample was used to ensure that it yielded the information needed to address the research topic (Cozby & Bates, 2018; Leedy & Ormrod, 2019). Research sites were chosen, and recruitment materials were sent to the officials of those sites. Once the sites agreed to participate, an email was given to the research site's administrator for distribution to their staff. This email contained the research study information, Capella University's IRB approval, and a weblink to SurveyMonkey, which listed the study's inclusion criteria and consent form and required an electronic signature for participation. The eligible participants were then granted access to the online questionnaires anonymously collected through the SurveyMonkey website.

Protection of Participants

Ethical considerations were used in every stage of the study. Potential participants were informed of the nature of the study, that the risk was minimal for participation (discomfort should not be greater than discomfort experienced in everyday life or during routine tests), the

approximate time range of completing the study, and that they could opt-out of the study at any time without repercussions. Informed consent forms were provided and electronically signed. Participant responses and all demographic information will remain anonymous, and the limit of demographical information should provide an extra level of assurance for confidentiality. Data was collected through internet-based questionnaires hosted by SurveyMonkey, ensuring proper data protection, anonymity, and encryption. To protect their identities, all respondents had an auto-generated, numerical 11-digit identifier attached to their responses by the SurveyMonkey system.

Data Collection

The participants were given a weblink to SurveyMonkey, so it can be assumed they used a computer, mobile phone, or web-connected device for questionnaire access. Potential participants completed a four-item questionnaire to determine inclusion eligibility. Individuals who were currently certified paramedics in their state of operation, primarily functioning on a ground ambulance and having held this role for at least a year, were eligible for inclusion. The eligible participants have presented the informed consent material, including the nature of the study, notice the participation risks were minimal, and an estimated response burden of 9-15 minutes. Once the participants acknowledged reading the informed consent form and electronically signed it, they proceeded to the study's questionnaires.

The first questionnaire was a demographic survey that I created. It contained 11 questions (age, sex, gender, race, ethnicity, religious affiliation, education, LOS, type of EMS service, frequency of calls per shift, military service), one of which was used as a predictor variable (LOS). This survey was created by adhering to the standards of the APA for demographic reporting (APA, 2016). The second questionnaire was the MFQ30 (Graham et al., 2011), which

measured the five predictor variables of MFT (Haidt & Joseph, 2004): care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation over 32 questions. The MFQ30 (Graham et al., 2011) is listed on the website Moralfoundations.org with instructions and scoring keys provided by the instrument's authors (Haidt, 2021b). Although assumed to be fair use by the authors' note of wanting the MFQ30 (Graham et al., 2011) used in more studies, I requested written permission, which was granted. The third survey was the MISS-HP (Koenig et al., 2020) which was used to measure the outcome variable of MI. The MISS-HP (Koenig et al., 2020) is a 10-item survey with a total score (between 10-100) of 36 or higher as an indicator for symptomatic MI. Copyright information for using the MISS-HP (Koenig et al., 2020), was not readily available, so written permission was requested and then granted by the authors. Once the questionnaires were completed, a webpage thanked the participants for their responses and participation in the study.

All the responses were collected and stored anonymously through the SurveyMonkey website. The appropriate data collection package was chosen for the study on the SurveyMonkey website, and a fee was paid. Access to the study was only available to the author and controlled with a dedicated email and password. The study remained open until the calculated sample size of completed surveys was obtained. Data was downloaded to an external thumb drive for this study's use. The dataset was then downloaded into the SPSS program. The dataset will be stored on the thumb drive for seven years and in a locked filing cabinet in the author's office, to which only the author can access to locked storage. The thumb drive will be destroyed after seven years in a manner that data recovery would be impossible.

Data Analysis

The questionnaire responses were collected daily until the calculated sample size was obtained (fully completed responses). The dataset was screened and cleaned during data entry. Descriptive statistics were collected and totaled. Hypothesis testing was completed for the three research sub-questions using multiple linear regression and stepwise regression statistical analyses. Also, the strengths of the linear relationships between the variables were analyzed with Pearson's r correlations.

Data Entry

The dataset was downloaded into IBM SPSS (IBM, 2020) version 27 from the SurveyMonkey platform's SPSS file selection type. The original dataset file was saved, and another file was created where incomplete responses were removed, data were categorized, and variables were labeled within the SPSS file. Data that was not pertinent to this study were removed. Four responses within the 10 for the MISS-HP (Koenig et al., 2020) were reverse coded due to positive wording (responses 5, 6, 7, and 10) per Mantri et al. (2020). The scores of the questionnaires were totaled for each of the participants.

Descriptive Statistics

Descriptive data were collected with an 11-question survey to describe the sample's demographic characteristics. These descriptive statistic variables contained responses for age, sex, gender, race, ethnicity, religious affiliation, education, LOS, type of EMS service, frequency of calls per shift, and military service. One descriptive variable was also used as a predictor variable (LOS). The descriptive statistics will be listed in Chapter 4 and were summarized by

computing the mean and standard deviations of the continuous variables (predictor variables) and frequency and percent for the demographic categorical data such as gender.

Hypothesis Testing

There were three research sub-questions to address in the data analysis. Multiple linear regression and stepwise regression were the statistical methods used for data analysis. Testing the assumptions for these statistical methods ensured that they were appropriate for analyzing the data (Laerd, 2018; Warner, 2013). SPSS (IBM, 2020) version 27 was the software program used to perform all statistical analyses. Post-hoc analysis was not required or conducted.

Each of the three research sub-questions addresses the influence and strength of six predictor variables on one outcome variable and which variable or combination of variables can best predict the outcome variable. Multiple linear regression (MLR) is used to predict a variable's value based on the value of two or more variables (Laerd, 2018). MLR can also determine each predictor variable's overall variance and relative contribution to the total variance (Laerd, 2018).

Eight assumptions exist for using the MLR statistical method (Laerd, 2018). The first assumption is that the outcome variable is considered a continuous scale of measurement, e.g., interval or ratio (Laerd, 2018). The outcome variable for this study, MI, is an interval measurement scale. The second assumption is that the predictor variables are either continuous or categorical in their scale of measurement (Laerd, 2018). Five of the six predictor variables come from the MFQ30 (Graham et al., 2011) and are ratio measurement scales, and the sixth variable, LOS, is an interval scale of measurement. The third assumption is that observations should be independent, i.e., all participants in the sample are only counted once. The Durbin-Watson test tested the third assumption within the SPSS program (Laerd, 2018). The fourth

assumption is that there should be a linear relationship between the outcome variable and each predictor variable, and linear relations between the outcome variable and all the predictor variables collectively (Laerd, 2018). This assumption was tested for linearity by visually inspecting scatterplots and partial regression plots from SPSS. The fifth assumption is that the data will show homoscedasticity, i.e., equal error variances for the predicted outcome variable (Laerd, 2018). This assumption was tested by visual inspection of the scatterplot from SPSS. The sixth assumption is no multicollinearity between the predictor variables (Laerd, 2018). SPSS was used to test this assumption and generated a tolerance value within collinearity statistics. The seventh assumption is that significant outliers should not exist (Laerd, 2018). This assumption was tested by visual inspection of a scatterplot and the Cook's Distance statistic calculated by the SPSS program. Lastly, the eighth assumption for multiple linear regression is that the residuals are approximately normally distributed (Laerd, 2018). This assumption was tested by visualization of the histogram and the P-P Plot.

The dataset was analyzed by using MLR. MLR predicts a continuous outcome variable based on multiple predictor variables and determines the model's overall fit and relative contribution of each predictor variable with the outcome variable (Laerd, 2018; Warner, 2013). Within the SPSS program, MLR can be performed by entering (standard), forward, backward, or stepwise options (IBM, 2020). The stepwise method combines forward and backward methods; the MLR models will run by adding one predictor variable at a time, testing significance (forward), and run by adding all of the predictor variables first and removing predictor variables by significance values (George & Mallery, 2019; Warner, 2013).

The first research sub-question asked if the variables of MFT (Haidt & Joseph, 2004) and LOS predicted MI. Standard MLR tested this question. The second research question asked what

the unique ability of each variable of MFT (Haidt & Joseph, 2004) was and the LOS on MI, which was tested with a standard MLR. The third sub-question asked what combination of predictor variables best predicted MI and stepwise regression was used for the statistical test.

Instruments

There were two questionnaire-based instruments for this study. Five of the six predictor variables were measured with the MFQ30 (Graham et al., 2011). The sixth predictor variable was the LOS, which was collected during the demographic survey. The outcome variable of MI was measured with the MISS-HP (Koenig et al., 2020). Both instruments will be discussed below.

MFQ30

To quantify the constructs of what would become MFT (Haidt & Joseph, 2004), the same authors developed the MFQ30 (Graham et al., 2011). The constructs of individual morality for harm and fairness and group morality of ingroup, authority, and purity are measured with this instrument. The questionnaire is delivered in two equal-numbered sections, each using a 0-5 Likert scale score. The first 16 questions have the respondent answer the questions with this rating statement, “When do you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?” and the responses are from 0 (*not at all relevant*) to 5 (*extremely relevant*). A few examples of the first 16 questions are: “Whether or not someone suffered emotionally,” “Whether or not someone acted unfairly,” and “Whether or not someone acted in a way that God would approve of” (MFQ30, Graham et al., 2011). The second set of 16 questions has the respondent answer with a rating system of 0 (*strongly disagree*) to 5 (*strongly agree*). A few examples from this section are: “I am proud of my country’s history,” “It is better to do good than harm,” and “It can never be right to kill a human being” (MFQ30,

Graham et al., 2011). The scores, which for each foundation which gives a final score. The five foundations use different questions in their calculations: care/harm (1, 7, 12, 17, 23, 28), fairness/cheating (2, 8, 13, 18, 24, 29), loyalty/betrayal (3, 9, 14, 19, 25, 30), authority/subversion (4, 10, 15, 20, 26, 31), and sanctity/degradation (5, 11, 16, 21, 27, 32), with questions 6 and 22 not scored as authors placed them to catch people not paying attention in answering (MFQ30, Graham et al., 2011). The MFQ30 (Graham et al., 2011) was normed over a sample of 34,476 adults.

Validity

Validity for an assessment tool is the ability to measure the construct or variable it intends to measure accurately. It and can be determined by including correlations with existing tools with similar outcomes (Cozby & Bates, 2018; Sullivan, 2011). The validity of a new assessment tool can be strengthened when compared to other assessment tools, either considered the *gold standard* of measurement or comparable assessments that reasonably would have similar results (Sullivan, 2011). For these comparisons, external scales were grouped into five criterion scale sets to correspond to each of the five moral foundations (Graham et al., 2011). All of the following foundational scale sets and their respective tests used for validity were reported by Graham et al. (2011). The care/harm scale set included the Empathy subscale of the IRI (Davis, 1983, as cited in Graham et al., 2011; $n = 134$), the Psychopathy scale (Levenson et al., 1995, as cited in Graham et al., 2011; $n = 166$), Benevolence subscale (Schwartz, 1992, as cited in Graham et al., 2011; $n = 4,228$). The fairness/cheating scale set included the Social Dominance Orientation (Pratto et al., 1994, as cited in Graham et al., 2011; $n = 1,215$), the Good-Self scale (Barriga et al., 2001, as cited in Graham et al., 2011), and the Schwartz Values Scale (Schwartz, 1992, as cited in Graham et al., 2011). The loyalty/betrayal scale set included the

Good-Self scale (Barriga et al., 2001, as cited in Graham et al., 2011) and the Schwartz Values Scale (Schwartz, 1992, cited in Graham et al., 2011). The authority/subversion scale set included the Right-Wing Authoritarianism scale (Zakrisson, 2005, as cited in Graham et al., 2011; $n = 1,093$), the Progressive and Traditional Justice scale (Haidt et al., 2009, as cited in Graham et al., 2011; $n = 1,384$), and the Schwartz Values Scale (Schwartz, 1992, as cited in Graham et al., 2011). Furthermore, the sanctity/degradation scale set included the Disgust Scale-Revised (Haidt et al., 1994, as cited in Graham et al., 2011); modified by Olatunji et al., 2008, as cited by Graham et al., 2011; $n = 1,681$), self-reported religious attendance ($n = 32,607$), and the Schwartz Values Scale (Schwartz, 1992). Graham et al. (2011) reported that each foundation and external scale set were summed and averaged. Strong correlations existed between each foundation and its conceptually related group of external scale sets with an overall average Pearson's value, $r = .51$ (Graham et al., 2011). Pearson's r value provides the strength of the relationship between variables and can range from 0.00 to + or -1 (Cozby & Bates, 2018). Pearson's r coefficient's absolute value indicates the relationship's strength; .10 to less than .30 have a small correlation, .30 to less than .50 have a moderate correlation, and values greater than .50 have a strong correlation (Laerd, 2013).

Reliability

Reliability refers to the consistency in measurement to produce the same responses (Cozby & Bates, 2018; Leedy & Ormrod, 2019; Warner, 2013). Test-retest reliability was tested with a group of 123 college students over 34 days and with randomized question orders. The test-retest Pearson correlations values all showed strong correlations for each foundation: care/harm, $r = .71, p = .001$, fairness/cheating, $r = .68, p = .001$, loyalty/betrayal, $r = .69, p = .001$, authority/subversion, $r = .71, p = .001$, and sanctity/degradation, $r = .82, p = .001$ (Graham

et al., 2011). Graham et al. (2011) also reported good to better Cronbach's alpha values for internal consistencies for each foundation: care/harm, $\alpha = .69$; fairness/cheating, $\alpha = .65$; loyalty/betrayal, $\alpha = .71$, authority/subversion, $\alpha = .74$, and sanctity/degradation, $\alpha = .84$. Cronbach's alpha measures the internal consistency and can range from 0.00 to 1.00, with negative values being possible but indicate an error in coding (Laerd, 2018). Cronbach's alpha values above .70 are good, .80 and above are better, and .90 and above are best (Statistical Solutions, 2022). The Cronbach's alpha values were similar in magnitude to the respective test-retest Pearson's r values for each foundation, which suggest item response stability over time (Graham et al., 2011).

MISS-HP

The outcome variable, MI, was operationally defined by scores on the MISS-HP (Koenig et al., 2020). There are 10 items on the MISS-HP (Koenig et al., 2020) scale, with each response worth 10 points and a total possible score from 10 to 100. The authors found a final score of 36 or higher indicated clinically significant MI symptoms associated with significant psychological functional impairment (Mantri et al., 2020). Some of the items on this scale were: "I feel betrayed by other health professionals whom I once trusted," "I am troubled by having acted in ways that violated my morals or values," and "I sometimes feel God is punishing me for what I've done or not done while caring for patients" (MISS-HP, Koenig et al., 2020).

Validity

The MISS-HP (Koenig et al., 2020) was adapted from the author's short form of their moral injury symptom scale for the military (MISS-M-SF; Koenig et al., 2018b). This was done by changing the language of each item to specifically address health care workers working in medical settings (Mantri et al., 2020). The MISS-M-SF (Koenig et al., 2018b) was created by MI

experts and based on 10 theoretically grounded dimensions of MI: betrayal, guilt, shame, moral concerns, loss of trust, loss of meaning, difficulty forgiving, self-condemnation, religious struggle, and loss of religious faith (Mantri et al., 2020). The original authors abbreviated the MISS-M-SF (Koenig et al., 2018b) to allow a shorter assessment tool that comprehensively addressed the MI construct (Koenig et al., 2018b; Mantri et al., 2020). The MISS-M is a 45-question assessment tool for MI in military personnel that was reported to be valid and reliable for assessing clinically significant MI symptoms (Koenig et al., 2018a). Building upon the established validity of the MISS-M (Koenig et al., 2018a) and MISS-M-SF (Koenig et al., 2018b), the MISS-HP (Koenig et al., 2020) was given to a sample of 181 healthcare professionals along with established assessment tools for religiosity (Belief into Action scale, Koenig et al., 2014, as cited in Koenig et al., 2020), depression (Patient Health Questionnaire-9, Spitzer et al., 1999, as cited in Koenig et al., 2020), and anxiety (Generalized Anxiety Disorder-7, Spitzer et al., 2006, as cited in Koenig et al., 2020). The total score of the MISS-HP (Koenig et al., 2020) was shown to have small, negative correlations with religiosity, $r = -.25$, moderate correlations with depression symptoms, $r = .35$, and moderate correlations with anxiety symptoms, $r = .37$, (Mantri et al., 2020). The authors noted that the associations were all in their expected directions (Mantri et al., 2020).

Reliability

Mantri et al. (2020) reported a good level of internal consistency, as reported by a Cronbach's alpha value of .75. A similar MI study in the same year used the MISS-HP (Koenig et al., 2020) and was given to Chinese health care professionals, $n = 3,006$, which also reported a good level of internal consistency, as reported by the Cronbach's alpha value .70 (Mantri et al., 2020; Wang et al., 2020). Test-retest reliability was tested with a group of 73 physicians over

two weeks who completed the full survey twice. The test-retest Pearson correlation value reported a strong correlation of total scores, $r = .77$ (Mantri et al., 2020; Wang et al., 2020).

Ethical Considerations

Research studies must address ethical considerations and adhere to the basic principles of respect for persons, beneficence, and justice (APA, 2017; OHRP, 1979). Ethical principles are not mandated but are meant to guide psychologists to adhere to the highest regard for research participants and humanity (APA, 2017). This research study was designed to mitigate risks and harm while respecting these ethical principles for psychological research.

Respect for persons acknowledges that humans are autonomous agents of themselves and have the right to make informed decisions regarding research (OHRP, 1979). Respect for persons also includes protecting those vulnerable in their autonomy, such as those mentally challenged, ill, or lack of personal freedom to invoke their rights. Participants can consent to research and stop participation at any time (APA, 2017; OHRP, 1979). This research study did not include a vulnerable group. In addition, it included Capella University IRB-reviewed. It approved consent forms informing the possible participants of the study's nature, time burden, ability to stop without obstruction or judgment, and protection of respondent anonymity. Anonymous responses strengthened the respondent's anonymity through web-based data collection with no personally identifying information. This study used a nonexperimental research design with closed-question, web-based questionnaires without researcher interaction and dynamic conversations, reducing the risk of biases and distress to the participant during MI research, which was identified in the study by Williamson et al. (2021a), further detailed below.

The ethical principles of beneficence and nonmaleficence must be paramount and can be understood as two core tenets: do no harm and minimize the possible risks while maximizing the

potential benefits (APA, 2017; OHRP, 1979). As stated above, the risk was considered minimal by use of the nonexperimental research design described, and the potential benefits were explained to the participants in the consent form, which stated that the respondent would not receive benefit from this research but that they contributed to the research that may be beneficial to others in the future. The researcher must protect the participants' anonymity and information during collection, reporting, and afterward (APA, 2017). Participant data is stored in encrypted files online at SurveyMonkey and held per APA (2017) guidelines in a secured location (dedicated thumbnail drive in a locked office) for the LOS required, then will be destroyed appropriately according to Capella University standards.

The ethical principle of justice recognizes that all humans are equal and should be treated without bias or prejudice (APA, 2017; OHRP, 1979). Participants should have equal representation when possible, and the researcher should strive to be as inclusive as the research questions will allow (APA, 2017; OHRP, 1979). This research study used a purposeful sample to ensure the representation of emergency paramedics, a relatively small and unique group compared to the U.S. population. The target population was anyone in those research sites who met the criterion of paramedic inclusion, and no limitations were made for any demographics such as age, gender, race, and religious beliefs. The only exclusion was having less than one year of experience in the current job role as an emergency paramedic. The research site coordinators sent email web links to all of the EMS service personnel. To the author's knowledge, everyone at the research sites had an equal opportunity for participation. Assuming this equal opportunity is partly because of the author's expert knowledge of the research sites and that all EMS personnel were required to maintain consistent electronic communication with their sites for operational purposes through provided institutional email systems. Moreover, although the author chose the

nonexperimental research design with anonymous web-based data collection to reduce potential researcher and response bias, a conflict of interest section is included at the end of this chapter.

Ethical Concerns with Moral Injury Research

Williamson et al. (2021a) suggested the rarity of adverse effects while conducting MI research (that has been documented) but also suggested that there have yet to be studies researching the possible adverse effects of such a research topic. Williamson et al. (2021a) suggested that when participants answer questions about potential moral transgressions and events, it can increase the risk (from minimal) for the respondent, especially in cases that involve or that the participant perceives as illegal and immoral (Williamson et al., 2021a). A researcher has the legal obligation to report certain crimes, behaviors, and actions but also has an ethical obligation to abide by the participant's privacy and act as the respondent's fiduciary not to do harm for their participation nor take the right of autonomy away from the participant by making choices for them that would impact their lives (APA, 2017; Haverkamp, 2005; Williamson et al., 2021a). For example, the participant may divulge information about a crime committed against them (e.g., a police officer threatening a paramedic with violence and false legal charges if the paramedic reported their immoral actions). However, by reporting such crimes, the researcher would remove the participant's autonomy and cause harm. There could be privacy concerns with smaller or specific MI research, as reporting the results/findings could breach privacy protections and may also risk third parties that did not consent for research to be identified (APA, 2017; Haverkamp, 2005; Williamson et al., 2021a). The authors of Williamson et al. (2021a) also caution that longitudinal studies may re-expose participants to pMIEs and increase the risk of harm to the participant's well-being. All of these ethical concerns for MI research presented by the authors in the Williamson et al. (2021a) study have been addressed by using a web-based

correlational study with objective survey questions that did not allow subjective responses, not have the researcher and participant engage in research interviews, and maintained distance between those participants and researcher even if casual awareness by the participant of the researcher due to having to disclose researcher name in the recruitment material. The participants remained anonymous throughout the study and could quit without threat or pressure of researcher/participant engagement. The nonexperimental design eliminated any ethical threats and distress of long and detailed exposure to MI or PMIE investigation, interviewer interaction, or third-party inclusion of those who did not consent to research.

Conflict of Interest

A potential conflict of interest existed: I have been a certified EMS professional for 30 years, an instructor in various EMS certifications and disciplines, including NREMT exam proctor, and a state EMS certification evaluator. This professional presence may have influenced response bias from a small percentage of the participants. To mitigate the possible influence, I used anonymous web-based questionnaires and did not discuss the research study with anyone within the EMS field (not including the research site contacts). The only acknowledgment of my name was in the required Capella University IRB research recruitment material for the research sites. Also, specific details concerning my EMS certifications and history were withheld from this study's publication to maintain the highest research participant anonymity.

Summary

Chapter 3 provided the purpose of the study, predicting MI in emergency paramedics with MFT (Haidt & Joseph, 2004), LOS, and how it would be best addressed by a nonexperimental research design. The research questions and hypotheses were stated, along with a description of the population from which the sample was chosen by purposeful sampling.

SurveyMonkey, an anonymous, web-based collection service, was used for data collection.

Three questionnaires were used to collect the data: a characteristics questionnaire of the participant and two psychological assessment tools. Five of the six predictor variables (the sixth was the LOS from the descriptive survey) were measured by the MFQ30 (Graham et al., 2011) that operationalized the five constructs of MFT (Haidt & Joseph, 2004). The outcome variable (MI) was measured with the MISS-HP (Koenig et al., 2020). The validity and reliability of each assessment tool was discussed. The data analysis plan and descriptive statistics were discussed as well. Lastly, the ethical considerations for this research were addressed, and a possible conflict of interest was acknowledged.

Chapter 4 will discuss the analysis of data. This chapter will include a summary of the primary results, a description of the sample, and a description of the hypotheses testing. Chapter 4 will conclude with a summary of the answers to the original research question regarding of the hypotheses.

CHAPTER 4. RESULTS

This study aimed to determine if MFT (Haidt & Joseph, 2004) and LOS predict MI in a sample of emergency paramedics. A quantitative nonexperimental research design with two multiple regression analyses was used to evaluate the strength of the relationship between MFT (Haidt & Joseph, 2004) and LOS for MI in emergency paramedics. Chapter 4 begins with a brief background of the study. Next, a description of the sample and steps taken to get the final sample are provided. Then, testing the assumptions of MLR are listed along with the regression procedures. Also, descriptive statistics for the predictor and the outcome variables are provided. The regressions' results are discussed in relationship to the research questions and hypotheses. Lastly, a summary of the chapter is provided.

Background

The three research questions guided the data analysis to determine if MFT (Haidt & Joseph, 2004), the LOS, or some combination of these variables predicted MI in emergency paramedics. It was hypothesized that these predictor variables would collectively or in some combination predict MI. The IBM SPSS (IBM, 2020) version 27 software was used to make these statistical assessments by performing multiple linear and stepwise regressions.

Description of the Sample

The sample was drawn from physical research sites that I chose to ensure purposeful sampling. Responses were collected online through the survey design and collection website SurveyMonkey.com. Data was collected over February and March of 2022. The survey included researcher-designed screening and demographic questions, the MFQ30 (Graham et al., 2011), and the MISS-HP (Koenig et al., 2020). Based on the G*Power Program analysis (version 3.1.9.6; Faul et al., 2020) discussed in Chapter 3, a minimum sample size of 62 participants was

required to achieve a statistical power of .80 with the Capella University's recommended effect size of medium (.25), with an alpha value of .05. I added 15% of the minimum sample size required for the possibility of data collection errors for a final total of 71 participants. I closed access to the study when 71 participants were exceeded. There were 94 original responses, of which five were excluded due to disqualifying screening responses, and 13 were excluded due to non-completion of the entire survey. Therefore, the final sample that was used for analysis was 76 participant responses, which exceeded the G*Power calculated minimum sample size ($N = 62$).

The demographic survey questions asked about age, biological sex, gender, race, religious identification, educational level, descriptive geographic area of EMS service, and military experience, all to be used in a more comprehensive study in the near future. Therefore, this demographic information will not be covered at this time. The demographic survey also asked respondents about their LOS, used as one of the six predictor variables. LOS was collected in five-year ranges up to the upper response limit of 40 years. These 5-year blocks do not have zero value equal intervals and possess ordered rankings. Thus, the LOS variable was used as an interval scale of measurement variable.

Length of Service

The LOS variable was collected in 5-year increments from 1 to 40 years of service in EMS (i.e., 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, 36-40, 41-45, and 45 and over). No respondents answered either of the highest ranges, 41-45 and 46 and over. The most likely reason for this will be discussed in Chapter 5. The frequency and percent for each ordered range are listed in Table 5.

Table 1*Frequencies and Percentages of LOS*

Years of Service	Frequency	Percent	Cumulative Percent
1-5	9.00	11.80	11.80
6-10	18.00	23.70	35.50
11-15	12.00	15.80	51.30
16-20	10.00	13.20	64.50
21-25	3.00	3.90	68.40
26-30	12.00	15.80	84.20
31-35	10.00	13.20	97.40
36-40	2.00	2.60	100.00
Total	76.00	100.00	100.00

Note. N=76.

Hypothesis Testing

The hypothesis testing process included screening the data, computing descriptive statistics for each variable, running the regression analyses, and answering the research question hypotheses. First, the data were tested for the assumptions of MLR. Next, descriptive statistics for each variable were computed. Then, two regression analyses were run, and the results are discussed below. Finally, the hypotheses of the research questions are answered based on the results of the MLR analyses.

Screening Data for Assumptions

Eight assumptions exist for using the MLR statistical method (Laerd, 2018). The first two assumptions include that the outcome variable is considered a continuous scale of measurement, and the predictor variables are either continuous or categorical in their scale of measurements

(Laerd, 2018). The remaining assumptions include the independence of observations that the outcome and predictor variables are linearly related to the homoscedasticity of residuals, no multicollinearity between the predictor variables, no significant unusual points, and the residuals are normally distributed (Laerd, 2018). The study design and measurements addressed the first two assumptions, and the remaining six assumptions were tested using SPSS.

Outcome and Predictor Variable Measurements Scales

The first two assumptions using the MLR model were tested by the study design and variable scales of measurement (Laerd, 2018). The first assumption is that the outcome variable MI, from the MISS-HP (Koenig et al., 2020) score, is a continuous scale of measurement. The MISS-HP (Koenig et al., 2020) score is a value between 10-100, a ratio scale of measurement; therefore, the first assumption was met. The second assumption is that the predictor variables are either continuous or categorical scales of measurement (Laerd, 2018). The predictor variables comprised the five foundational scores of the MFQ30 (Graham et al., 2011) and the LOS (in years). The MFQ30 (Graham et al., 2011) gave an individual score for each of the five associated moral foundation variables (i.e., harm, fairness, ingroup, authority, and purity) between 0 and 30 (Graham et al., 2011), which is a ratio scale of measurement and thus satisfied the second assumption. The original authors give the variable names and respectfully coincide with the foundation names of care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation. The LOS variable was an interval scale of measurement with responses grouped in eight nominal categories, satisfying the second assumption.

Independence of Observations

The third assumption for MLR is the independence of observations, which means that observations were not adjacently related (Laerd, 2018). This study's design negated observations

being related or influenced by another response as the study was an anonymous, individual, web-based survey that was open for response until closed when a significant number of responses were received. Laerd (2018) suggested that no statistical test for this assumption was needed due to the study's design mitigation. However, testing for this assumption is included within the SPSS MLR procedure by choosing a checkbox. I wanted to interpret the statistics to evaluate the possibility and magnitude of the Durbin-Watson value. The Durbin-Watson statistic for this analysis was 1.960. Statology (2021) indicated a Durbin-Watson value generally between 1.50 to 2.50 is acceptable for the independence of observations and offered a table with an adjusted lower range of 1.46 and upper range of 1.80 when considering six predictor variables, a sample size of 75, and a study alpha of .05 (Statology, 2021). The third assumption was met.

Linearity of Outcome and Predictor Variables

The fourth assumption of an MLR is the linearity of outcome and predictor variables collectively and with each predictor variable with the outcome variable (Laerd, 2018). This assumption was tested by visual interpretation of the scatterplot of standardized residuals against unstandardized predicted values and the partial regression scatterplots between the outcome and predictor variables (Laerd, 2018). A visual inspection of partial regression scatterplots for predictor variables of the five foundational variable components (harm, fairness, ingroup, authority, and purity) of the MFQ30 (Graham et al., 2011) and LOS are linearly related to the outcome variable of MI. Figure 1 shows the linearity between the predictors and outcome variables by the residuals forming a horizontal band without curvature (Laerd, 2018). The partial regression plots for each predictor variable with the outcome variable (Figures 2-7) were visually inspected to show a sloping linearity within each graph (Laerd, 2018). Visual interpretation of the scatterplots all met the assumption of linearity (see Figures 1-7).

Figure 1

Scatter Plot of Studentized Residual by Unstandardized Predicted Value

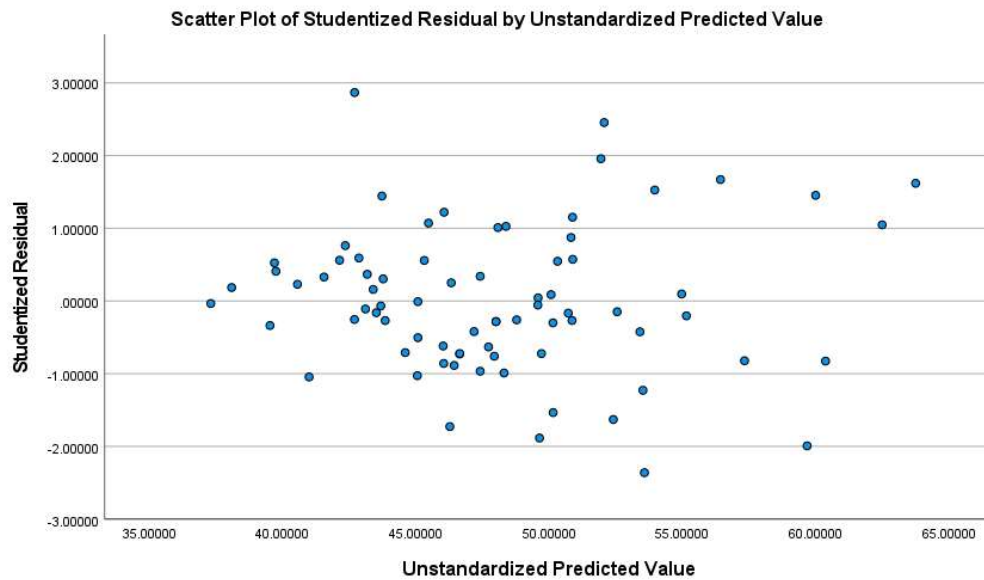


Figure 2

Partial Regression Plot of Harm and MI

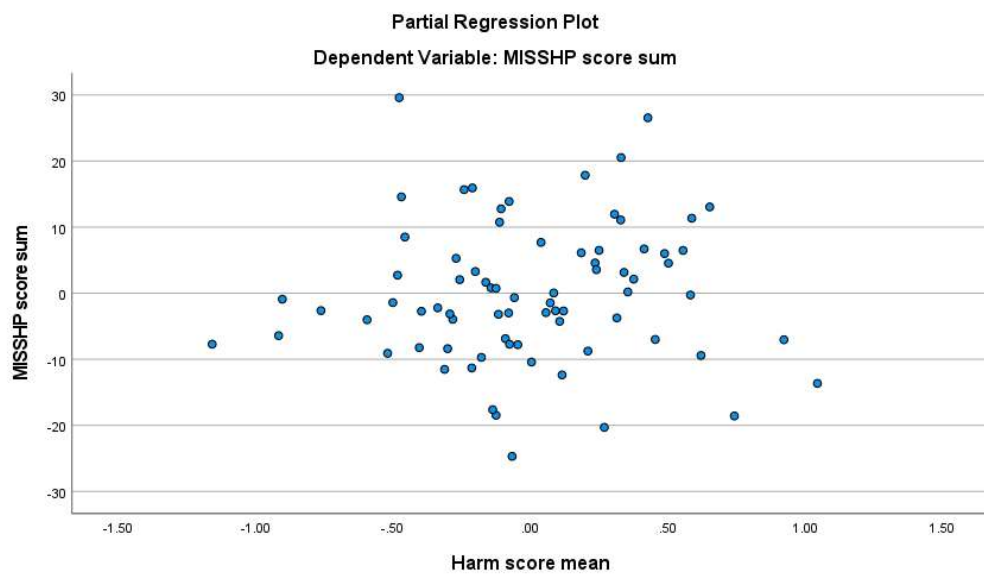


Figure 3

Partial Regression Plot of Fairness and MI

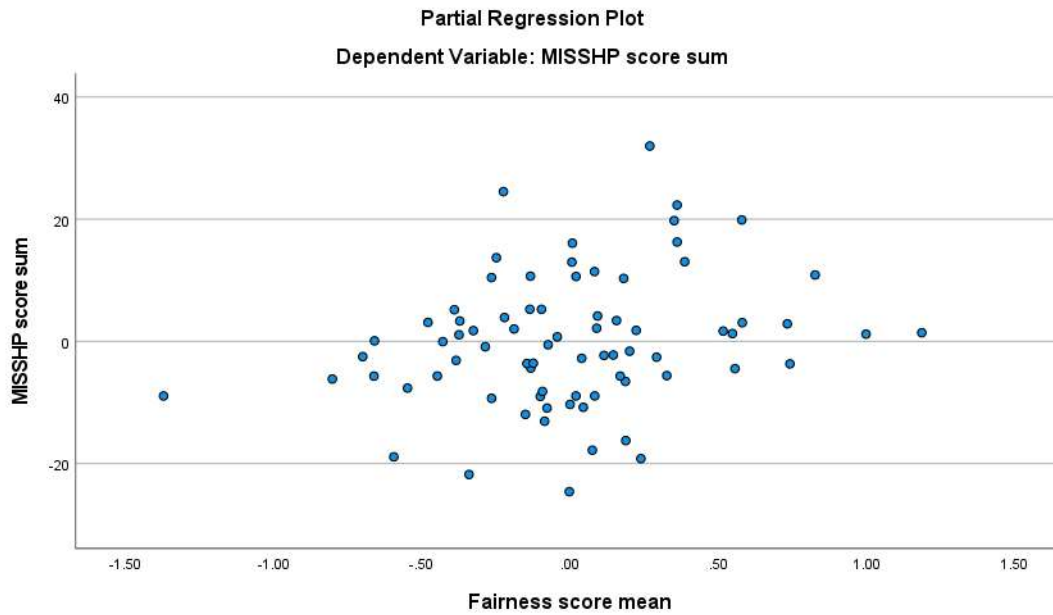


Figure 4

Partial Regression Plot of Authority and MI

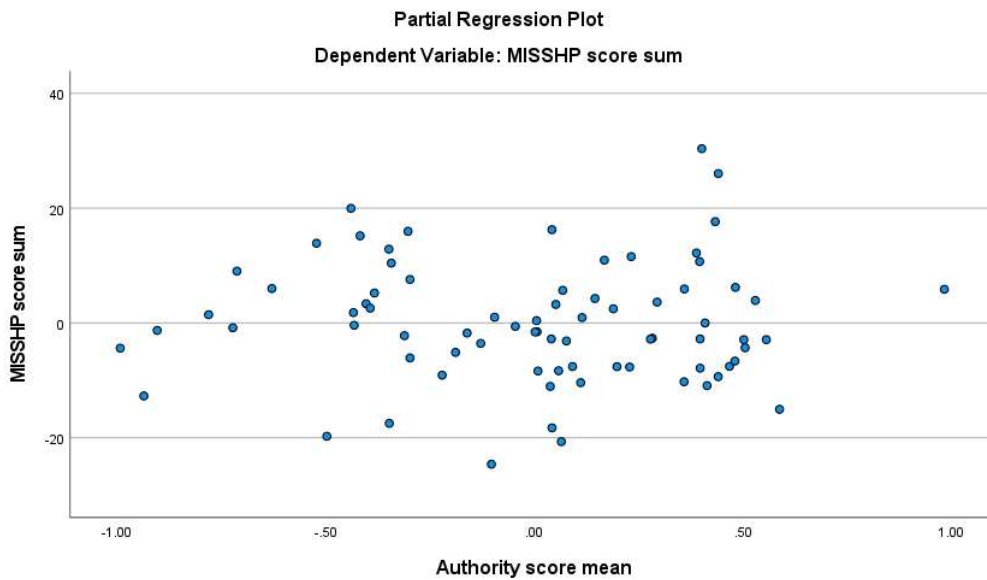


Figure 5

Partial Regression Plot of Ingroup and MI

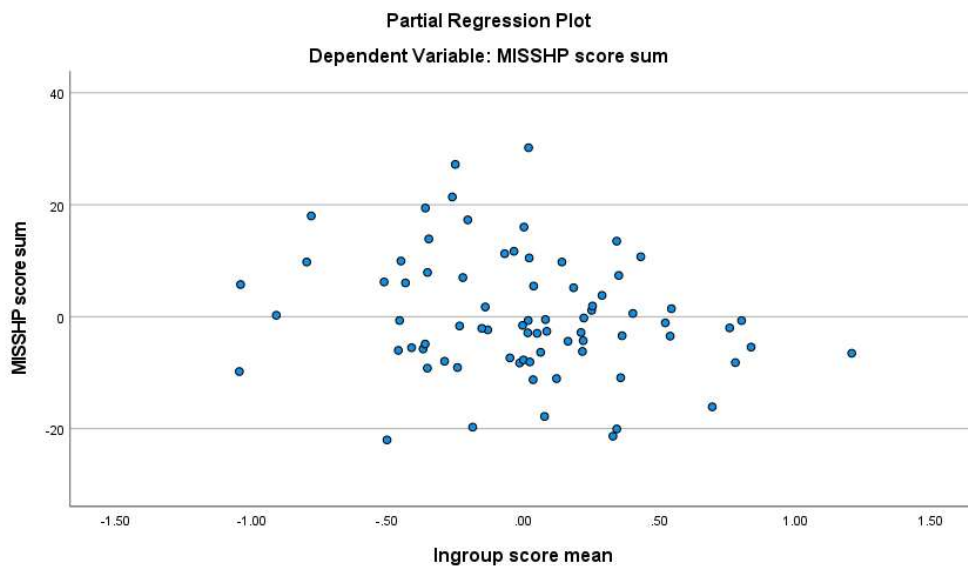


Figure 6

Partial Regression Plot of Purity and MI

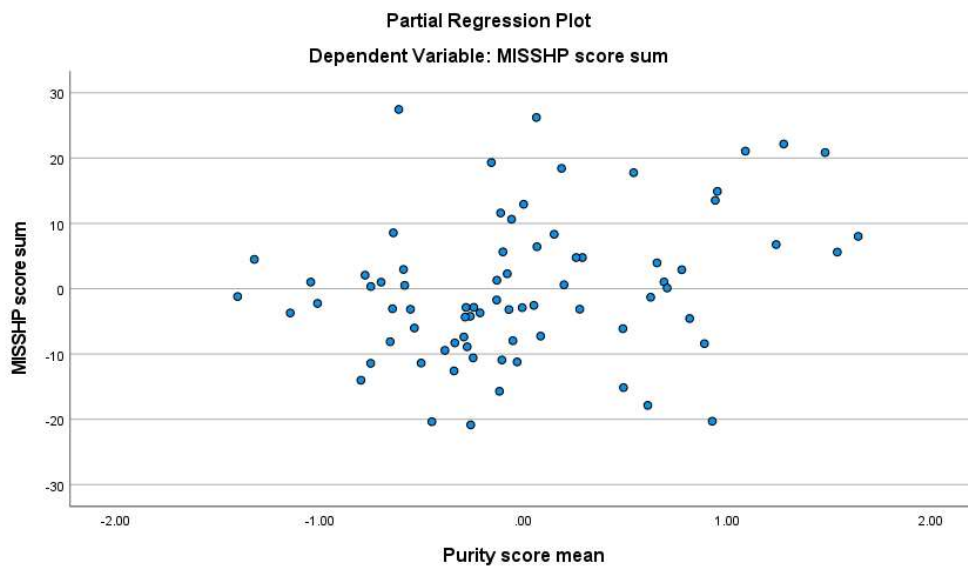
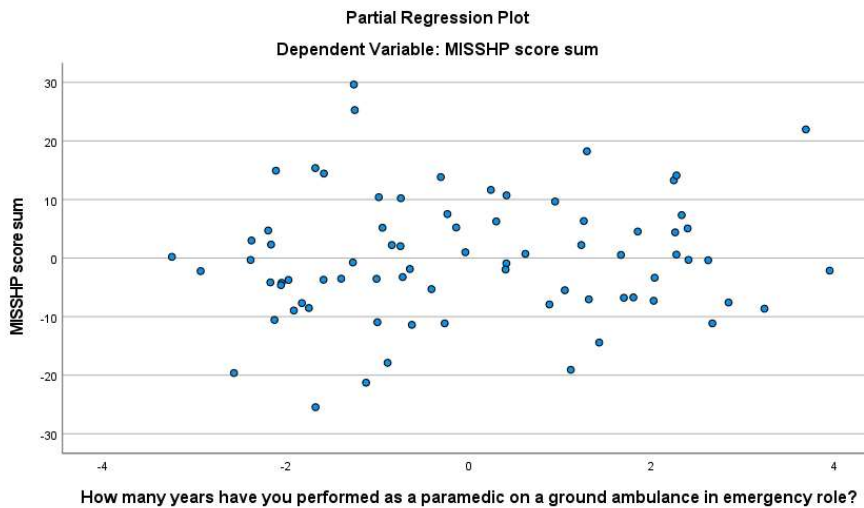


Figure 7

Partial Regression Plot of LOS and MI



Homoscedasticity of Residuals

The fifth assumption for the MLR model is that the variance is equal for all values of the predicted outcome variable (Laerd, 2018). For homoscedasticity, there will not be a pattern in the spread of the residuals on the scatterplot of studentized residuals against the unstandardized predicted values (see Figure 1). The visual interpretation of Figure 1 showed homoscedasticity, and the fifth assumption of MLR was met.

Multicollinearity Between Predictor Variables

The sixth assumption of MLR is that there is no multicollinearity between the predictor variables, i.e., that no predictor variables are highly correlated (Laerd, 2018). This assumption was checked by inspecting the Pearson correlation coefficients and the Tolerance values (Laerd, 2018). Table 2 was used to verify that no predictor variable correlated greater than 0.90 (Warner, 2018). Table 3 was used to verify that no predictor variable had a Tolerance value less than 0.10

(Laerd, 2018). Inspecting each above condition in Tables 2 and 3 showed no multicollinearity, which met the sixth assumption of MLR.

Table 2

Pearson Correlation Coefficients Across all Combinations of Predictor Variables

Variable	Harm	Fairness	Authority	Ingroup	Purity	LOS
Harm	1.000	.662	.138	.357	.443	-.403
Fairness	.662	1.000	.191	.442	.380	-.267
Authority	.138	.191	1.000	.747	.555	-.268
Ingroup	.357	.442	.747	1.000	.557	.127
Purity	.443	.380	.555	.557	1.000	.006
LOS	-.403	-.247	-.268	.127	.006	1.000

Note. LOS = Length of service.

Table 3

Tolerance Values for Predictor Variables

Variable	Tolerance
Harm	.44
Fairness	.50
Ingroup	.36
Authority	.34
Purity	.55
LOS	.72

Note. LOS = Length of Service

Significant Outliers, High Leverage Points, and Highly Influential Points

The seventh assumption for MLR is that there are no unusual data points (Laerd, 2018). Laerd (2018) addressed these potentially detrimental unusual data points as significant outliers, high leverage, and highly influential points. Each of these three listed concerns for unusual data points was checked with the output from the MLR. First, the MLR did not produce a *Casewise Diagnostics* table, meaning that none of the standardized residuals had a greater absolute value than 3.00, a commonly used criterion for residuals that might be an outlier (Laerd, 2018). Also, the dataset was viewed in the SPSS program, and the studentized deleted residuals variable (SDR) did contain one case with an absolute value greater equal to or greater than 3.00 (3.03), which Laerd (2018) stated should be investigated for removal (case 13387447169). This case did not contain conceptual irregularities on visual inspection of the data, and the value barely exceeded 3.00; therefore, I decided to leave the case in for the regression.

To check for high leverage points, Laerd (2018) suggests visually checking the values of the variable, a variable named “leverage value” (LEV), which is created within SPSS during the MLR analysis. LEV values less than .20 are safe, .20 to less than .50 are risky, and values equal to and above .50 are considered dangerous (Huber 1981, as cited in Laerd, 2018). There were no dangerous cases and four cases with values between .21 and .27 (see Table 4). These cases did not contain conceptual irregularities on visual inspection of the data. The values barely exceeded 2.00 and were significantly lower than the risky upper threshold of $> .50$; therefore, I decided to leave the cases in for the regression.

Table 4*Risky Leverage Data Points*

Case number	Leverage value
13352833963	0.27
13385432578	0.26
13384466158	0.23
13373954663	0.21

Note. $N = 76$

Lastly, checking for influential points was performed using the Cook's Distance variable (COO) created within SPSS during the MLR (Laerd, 2018). Cook's Distance values over 1.00 are considered influential (Cook & Weisberg, 1982, as cited in Laerd, 2018). Visual inspection of the dataset for COO did not find any cases with a value equal to or greater than 1.00. The seventh assumption of MLR was met.

Normal Distribution of Residuals

The eighth assumption of the MLR is a normal distribution of residuals (Laerd, 2018). This assumption was tested with visual inspections of standardized residuals' histogram and P-P Plot (Laerd, 2018). The histogram appeared normally distributed (see Figure 8). Also, the P-P Plot appeared normally distributed as the data points (see Figure 9) are closely aligned with the diagonal line (Laerd, 2018). Thus, the eighth assumption for the MLR model was met.

Figure 8

Histogram of the Standard Residuals

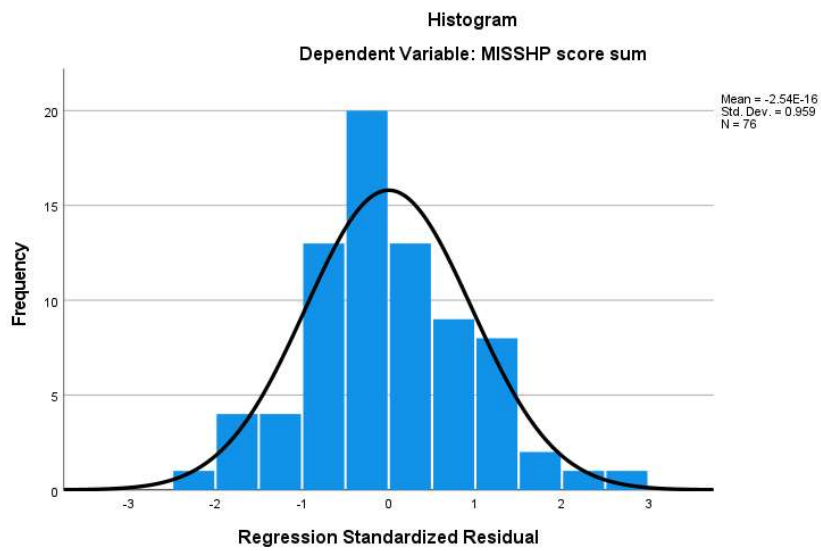
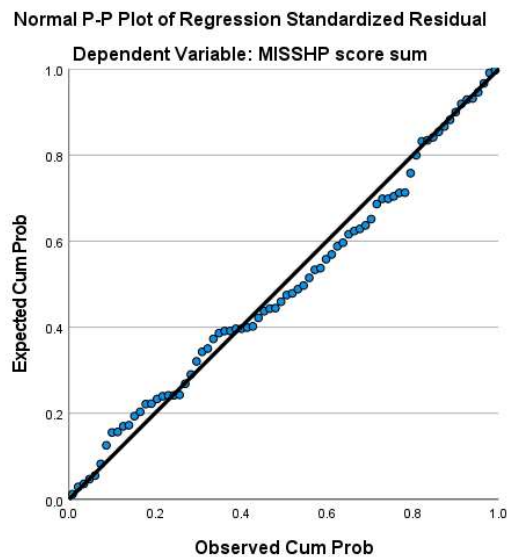


Figure 9

Normal P-P Plot of Regression Standardized Residuals



Descriptive Statistics for Each Variable

Descriptive statistics were obtained for the five continuous predictor variables and the one continuous outcome variable, which includes the mean, standard deviation, range, and variance for each variable. Frequencies for the predictor variable LOS are in Table 1. The descriptive statistics included the five predictor variables from the MFT (Haidt & Joseph, 2004) assessment (harm, fairness, ingroup, authority, and purity) and the outcome variable of MI from the MISS-HP (Koenig et al., 2020) assessment. Prior to obtaining the descriptive statistics, reverse-coded questions on the MISS-HP (Koenig et al., 2020) were recorded for the analysis. Also, the authors of MFQ (Graham et al., 2011) included a scoring key to load the responses with the corresponding five variables.

MFQ30

The MFQ30 (Graham et al., 2011) consists of 32 questions, which contain two questions that are meant to be an attention check and not factored into the scoring. The five variable groupings (harm, fairness, ingroup, authority, and purity) of the remaining 30 questions (provided in Chapter 3) gave scores between 0 and 30. Each question had scores on a 6-point Likert scale, ranging from 0.00 to 5.00, with 2.50 as the midpoint. The authors of the MFQ30 (Graham et al., 2011) instructed researchers to use the mean of each of the five variables when presenting the final score for interpretation (Haidt, 2021). For the entire sample ($N = 76$), the mean and standard deviations for the variables for the MFQ30 (Graham et al., 2011) are shown in Table 5: harm ($M = 3.68$, $SD = .63$), fairness ($M = 3.91$, $SD = .60$), ingroup ($M = 4.12$, $SD = .74$), authority ($M = 4.50$, $SD = .69$), and purity ($M = 3.30$, $SD = .91$). This shows for the sample ($N = 76$), participants scored the highest for the authority foundation ($M = 4.50$). The

significance of this finding is discussed in more detail in Chapter 5.

Table 5

Descriptive Statistics for MFQ Variables

Variable	Mean	Median	Standard Deviation	Range	Minimum	Maximum
Harm	3.68	3.67	.63	3.67	1.83	5.50
Fairness	3.91	4.00	.60	2.67	2.67	5.33
Ingroup	4.19	4.17	.74	4.00	1.83	5.83
Authority	4.50	4.67	.69	3.17	2.67	5.83
Purity	3.30	3.17	.91	4.67	1.00	5.67

Note. $N = 76$

Moral Injury

The outcome variable of MI was derived from the cumulative score of the MISS-HP (Koenig et al., 2020). The range of the total score is 10-100. Mantri et al. (2020) reported that a total score of 36 or higher is clinically significant for the presence of MI. Descriptive statistics of the mean, median, standard deviation, range, minimum, and maximum scores are reported in Table 6. The sample experienced clinical MI ($M = 48.08$, $SD = 11.88$). Using the reported significance value of 36 in Mantri et al. (2020), 92.1% of the sample (69 of 76) met or exceeded this value for clinical MI. Of the seven under 36, two scored 35, and one scored 34. The significance of these findings are discussed in Chapter 5.

Table 6*Descriptive Statistics of MI Variable*

Statistic	
Mean	48.08
Median	45.50
Standard deviation	11.88
Range	52.00
Minimum	28.00
Maximum	80.00

Note. $N = 76$

Regression Results

Two regression analyses were performed to determine whether MI was predictable from MFT (Haidt & Joseph, 2004) and LOS. A simultaneous MLR was performed using the *entry* method within the SPSS program to determine if the five foundations of MFT (Haidt & Joseph, 2004) and LOS predicted MI individually and collectively. Stepwise regression was performed by selecting the *stepwise* method within the SPSS program to determine which variable or combination of variables predicted the most variance in MI.

Simultaneous Multiple Regression Analysis

A simultaneous multiple regression analysis was performed to determine the individual and collective predictive ability of the five foundations of MFT (Haidt & Joseph, 2004) and LOS on MI in emergency paramedics (research questions 1 and 2). The *entry* method forces all variables into the regression at one time regardless of significance values (George & Mallery, 2019). The model summary is provided in Table 7, and the results are provided in Table 8.

Table 7*Entry Method Model Summary*

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin- Watson
Entry	.473	.224	.156	10.91	1.96

Note. $N = 76$. Predictors: harm, fairness, authority, ingroup, purity, LOS; Outcome: MI.

Table 8*Entry Method Results*

Model		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Entry	Regression	2369.34	6	394.89	3.318	.006*
	Residual	8212.18	69	119.02		
	Total	10581.53	75			

Note: $N = 76$. Outcome variable: MI. Predictor variables: harm, fairness, authority, ingroup, purity, LOS.

* $p > .05$.

The multiple regression model showed statistical significance for the predictor variables to MI, $F(6, 69) = 3.318$, $p = .006$, $R^2 = .224$, $R^2_{adj} = .156$. The R^2 value of .224 indicates that 22.4% of the variance in MI can be explained by harm, fairness, authority, ingroup, purity, and LOS (Laerd, 2018). The R^2 (22.4%) represents a small effect size (Laerd, 2018). Regression coefficients, standard errors, significance values, t -test results, and 95% confidence intervals are listed in Table 9.

Table 9*Entry Method Regression Coefficients*

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	<i>t</i>	Sig.	95.0 % C.I. for <i>B</i>	
		<i>B</i>		β			LL	UL
Entry	(constant)	21.086	12.30		1.715	.091	-3.448	45.619
	Harm	1.451	3.00	.077	.483	.630	-4.535	7.437
	Fairness	6.288	2.98	.317	2.111	.038*	.347	12.229
	Authority	.200	3.04	.012	.066	.948	-5.867	6.266
	Ingroup	-5.140	2.92	-.322	-1.760	.083	-10.966	.685
	Purity	4.636	1.87	.355	2.478	.016*	.904	8.367
	LOS	.520	.70	.093	.743	.460	-.876	1.917

Note: *N* = 76. LL = lower limit; UL = upper limit; C.I. = confidence interval; Outcome variable: MI.

**p* < .05.

The *B* values determined the relationship between MI and each predictor variable while holding the impact of the other predictor variables constant. The regression equation is that the predicted outcome variable equals the sum of the slope-intercept and the slope coefficients of each predictor (Laerd, 2018). For this model, it can be written as $MI = b_0 (\text{constant}) + b_1 (\text{harm}) + b_2 (\text{fairness}) + b_3 (\text{authority}) + b_4 (\text{ingroup}) + b_5 (\text{purity}) + b_6 (\text{LOS})$ or, $MI = 21.086 + 1.451 (\text{harm}) + 6.288 (\text{fairness}) + .200 (\text{authority}) + (-5.140) (\text{ingroup}) + 4.636 (\text{purity}) + .520 (\text{LOS})$. The value of b_0 (outcome variable) is the slope/intercept - when all predictor variables are zero (Laerd, 2018). The remaining *b* values represent a change in the outcome variable for a one-unit change in the predictor variable (Laerd, 2018; Warner, 2013). A positive value indicates that an increase in the predictor value is associated with an increase in the outcome variable. A negative value indicates a decrease in the outcome variable when all other variables are constant (Laerd,

2018). The regression equation (from entry model) showed that the predictor variables of fairness and purity were statistically significant in predicting MI ($p < .05$). At the same time, harm, authority, ingroup, and LOS were not statistically significant. The regression results showed that fairness and purity positively related to MI. For this regression equation, MI is increased by 6.288 when fairness is increased by one unit. Also, MI is increased by 4.436 when purity is increased by one unit.

There is a link between the 95% confidence interval for B and the significance level (Sig.) in that if the confidence levels do not cross zero (between lower and upper bounds), there is a statistically significant slope coefficient when $p < .05$ (Laerd, 2018). This link is true for the predictor variables of fairness (.347 to 12.229) and purity (.904 to 8.367), which do not cross zero and thus have statistically significant slope coefficients. The predictor variables of harm (-4.535 to 7.437), authority (-5.867 to 6.266), ingroup (-10.966 to .685), and LOS (-.876 to 1.917) do cross zero and do not have statistically significant slope coefficients ($p < .05$).

Correlation coefficients were also included in the regression coefficient output (see Table 10). Zero-order correlations are Pearson's correlations and represent the correlations between each predictor variable and the outcome variable without controlling for the influence of any other variables (Statistical Solutions, 2022). The partial correlation values are the correlation values between the predictor and the outcome variable after controlling for the influence of the other variables (Statistical Solutions, 2022). The squared partial correlation is the proportion of variance in the outcome variable associated with that predictor variable and not associated with the other predictor (Williams, n.d.). Partial correlations yield the shared variance of the predictor variables on the outcome variable (Williams, n.d.). The part (or semi-partial) correlation values represent the correlations between the predictor and outcome variables when all influence of

confounding variables are controlled on the predictor variable but not the outcome variable (Statistical Solutions, 2022). The squared part correlation is the proportion of variance that belongs to that predictor variable, which is removed from the other predictor variables but not the outcome variable (Williams, n.d.). Part correlations yield the unique contribution of variance of the predictor variable on the outcome variable (Williams, n.d.).

Table 10

Entry Method Correlation Coefficients of Zero-order, Partial, and Part Between Each Predictor Variable with the Outcome Variable

Predictor Variable	Zero-order	Partial	Part
Harm	.293	.058	.051
Fairness	.338	.246	.224
Authority	.064	.008	.007
Ingroup	.064	-.207	-.187
Purity	.337	.286	.263
LOS	-.058	.089	.079

Note. $N = 76$. Outcome variable: MI. LOS = length of service.

Laerd (2018) reported effect sizes as small ($.10 < .30$), medium ($.30 < .50$), and large ($\geq .50$) concerning Pearson correlations. The only two predictor variables that were found to be statistically significant were fairness and purity. The zero-order correlations suggested that fairness ($r = .338$) and purity ($r = .337$) have medium, positive correlations with MI. Therefore, MI increased when one reported a higher fairness and purity score.

The first research question had the null hypothesis (H_0): The MFQ30 (Graham et al., 2011) and LOS will not predict moral injury in emergency paramedics. This null hypothesis was

rejected. The second research question had the null hypothesis (H_0): Each of the five moral foundations variables of MFQ30 (Graham et al., 2011) and LOS will not individually predict moral injury in emergency paramedics. This null hypothesis was rejected.

Stepwise Multiple Regression Analysis

A stepwise multiple regression was performed using the SPSS program for this version of SPSS; the stepwise method combined forward and backward regression methods (George & Mallery, 2019). The forward method enters variables one at a time based on the significance values and stops when no other variables explain a significant portion of additional variance (George & Mallery, 2019). The backward method enters all predictor variables at one time, then removes variables one at a time based on the selected significance value (preset in SPSS as $p \geq .10$), and stops when there are no more variables for removal (George & Mallery, 2019). The stepwise method removes any variable that loses predictive validity when other variables are entered into the model, generating the variable or combination of variables that predicts the most variance on the outcome variable (George & Mallery, 2019).

A stepwise multiple regression analysis was performed to determine which variable, or combination of variables, predicted the most variance in MI in emergency paramedics (research question 3). The model summary is provided in Table 11, and the results are provided in Table 12. Warner (2013) stated that using the coefficient beta weights, the strength of predictor variable influence can be made without considering the units of measurement. Warner (2013) also stated that using the coefficient b (slope) values to compare the relative strength of predictor variables due to the five MFQ (Graham et al., 2011) variables being on the same measurement scales and that LOS was not proven significant by the stepwise method and did not need to also be on the same measurement scale as the other predictor variables.

Table 11*Stepwise Method Model Summary*

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin- Watson
1	.338	.114	.102	11.26	
2	.406	.165	.142	11.00	
3	.466	.217	.184	10.73	.48

Note. $N = 76$. Outcome: MI; Model 1 Predictor: Fairness.; Model 2 Predictors: Fairness, Purity; Model 3 Predictors: Fairness, Purity, Ingroup.

Table 12*Stepwise Method Results*

Model		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
1	Regression	1206.62	1	394.89	9.524	.003 [*]
	Residual	9374.90	74	119.02		
2	Regression	1746.89	2	873.45	7.217	.001 ^{**}
	Residual	8834.63	73	121.02		
3	Regression	2294.07	3	764.69	6.643	.001 ^{**}
	Residual	8287.46	72	115.10		
	Total	10581.53	75			

Note. $N = 76$. Outcome: MI; Model 1 Predictor: Fairness.; Model 2 Predictors: Fairness, Purity; Model 3 Predictors: Fairness, Purity, Ingroup.

* $p > .05$, ** $p = .001$.

Model 1 in the stepwise regression analysis indicated that fairness was statistically significant [$F(1, 74) = 9.524, p = .003, R^2 = .338, R^2_{adj} = .114$]. The R^2 value of .338 indicates that fairness scores explain 33.8% of the variance in MI. The effect size based on R^2_{adj} (.114) was small. Model 2 indicated that fairness and purity; were statistically significant [$F(2, 73) = 7.217,$

$p = .001$, $R^2 = .165$, $R^2_{adj} = .142$]. The R^2 value of .165 indicates the combination of fairness and purity scores can explain 16.5% of the variance in MI. The effect size based on R^2_{adj} (.142) was small. The change in the R^2 value ($.165 - .114 = .051$) of Model 2 indicated that 5.1% of the variance in MI could be explained by purity. Model 3 indicated that fairness, purity, and ingroup were statistically significant [$F(3, 72) = 6.643$, $p = .001$, $R^2 = .217$, $R^2_{adj} = .184$]. The R^2 value of .217 indicates that the combination of fairness, purity, and ingroup scores explained 21.7% of the variance in MI. The effect size based on R^2_{adj} (.184) was small. The change in R^2 value ($.217 - .165 = .052$) of Model 3 indicated that 5.20% of the variance in MI could be explained by ingroup. Beta (β) values indicate the relative influence of the entered variables (George & Mallery, 2019), which showed purity ($\beta = .375$) had the greatest influence on MI, then fairness ($\beta = .322$), and then ingroup ($\beta = -.287$). The influence direction was positive for purity and fairness and negative for ingroup. Regression coefficients and standard errors can be found in Table 13. The beta (β) values for entry into the regression equation, t -test values, significance values, partial correlations, and collinearity statistics for the excluded predictor variables can be found in Table 15.

Table 13*Stepwise Method Regression Coefficients*

		Unstandardized		Standardized		95.0	
		Coefficients		Coefficients		%	for <i>B</i>
						C.I.	
Model		<i>B</i>	Std. Error	β	<i>t</i>	Sig.	LL UL
1	(constant)	21.857	8.594		2.543	.013	4.733 38.981
	Fairness	6.702	2.172	.338	3.086	.003*	2.375 11.030
2	(constant)	18.520	8.5470		2.167	.034	1.486 35.554
	Fairness	4.862	2.295	.245	2.119	.038*	.289 9.435
	Purity	3.189	1.509	.244	2.113	.038*	.181 6.197
3	(constant)	25.767	8.974		2.871	.005	7.878 43.656
	Fairness	6.400	2.346	.322	2.728	.008*	1.722 11.077
	Purity	4.893	1.667	.375	2.936	.004*	1.571 8.216
	Ingroup	-4.588	2.104	-.287	-2.180	.033*	-8.784 -.393

Note. *N* = 76. LL = lower limit; UL = upper limit; C.I. = confidence interval. Outcome variable: MI.

**p* = .05.

Table 14*Stepwise Method Correlation Coefficients of Zero-order, Partial, and Part for Included**Variables with the Outcome Variable*

Model	Predictor Variable	Zero-order	Partial	Part
1	(Constant)			
	Fairness	.338	.338	.338
2	(Constant)			
	Fairness	.338	.241	.227
	Purity	.337	.226	.226
3	(Constant)			
	Fairness	.338	.306	.284
	Purity	.337	.327	.306
	Ingroup	.064	-.249	-.227

Note. $N = 76$. Outcome variable: MI.

Table 15*Stepwise Method Excluded Variables*

Model	Variable	Beta	<i>t</i>	Sig.	Collinearity Statistics			
		In			Partial Correlation	Tolerance	VIF	Minimum Tolerance
1	Harm	.124	.847	.400	.099	.56	1.78	.56
	Authority	.000	-.001	.999	.000	.96	1.04	.96
	Ingroup	-.106	-.865	.390	-.101	.80	1.24	.80
	Purity	.244	2.113	.038*	.240	.86	1.17	.86
	LOS	.034	.299	.766	.035	.93	1.08	.93
2	Harm	.044	.295	.769	.035	.52	1.93	.52
	Authority	-.171	-1.334	.186	-.155	.69	1.45	.61
	Ingroup	-.287	-2.180	.033*	-.249	.63	1.60	.63
	LOS	.006	.053	.958	.006	.92	1.09	.78
3	Harm	.032	.217	.829	.026	.03	1.93	.51
	Authority	.025	.144	.886	.017	.02	2.65	.34
	LOS	.072	.639	.525	.076	.08	1.17	.59

Note. $N = 76$. Outcome variable: MI; a. Predictors: (Constant), Fairness; b. Predictors: (Constant), Fairness, Purity; c. Predictors: (Constant), Fairness, Purity, Ingroup.

* $p = .05$.

Based on the stepwise regression coefficients of Model 3 (the final model of statistical significance) shown in Table 13, it was determined that purity was the strongest predictor variable for MI for emergency paramedics. Purity had the greatest beta weight ($\beta = .375$) of the three variables in Model 3 and the best predictor of MI. The stepwise regression also determined that the best combination of predictor variables was purity, fairness, and ingroup. In Table 14, Model 3 showed that purity had a shared contribution to MI $\{[(r_{\text{partial}} = .327)^2 = .1069] = 10.69\%$ and a unique contribution to MI $\{[(r_{\text{part}} = .306)^2 = .0936] = 9.36\%$, while fairness had a shared contribution to MI $\{[(r_{\text{partial}} = .306)^2 = .1069] = 10.69\%$ and a unique contribution to MI $\{[(r_{\text{part}} = .284)^2 = .0806] = 8.06\%$. Model 3 showed that ingroup had a shared

contribution to MI $\{[(r_{\text{partial}} = -.2.49)^2 = .0620] = 6.20\%\}$ and a unique contribution to MI $\{[(r_{\text{part}} = -.227)^2 = .0515] = 5.156\%\}$. In Table 13, the regression equation for the constant and the coefficients used in Model 3 can be written as $MI = 25.767 + 6.400 (\text{fairness}) + 4.893 (\text{purity}) - 4.588 (\text{ingroup})$. The regression equation indicated that every unit increase in fairness resulted in a 6.400 increase in MI. This regression equation also showed that every unit increase in purity resulted in a 4.893 increase in MI, and every unit increase for ingroup resulted in a 4.588 decrease in MI. No combination of the predictor variables of harm, authority, and LOS significantly contributed to the prediction of MI in emergency paramedics at an alpha level of .05 (Table 14). The third research question's null hypothesis (H_0): none of the variables of the MFQ30 (Graham et al., 2011) and LOS, in combination or alone, will predict moral injury in emergency paramedics was rejected.

Summary of Hypothesis Testing

This study aimed to test if the five foundations of MFT (Haidt & Joseph, 2004) and the LOS for emergency paramedics could predict MI. The study asked three research questions with six hypotheses. Each research hypothesis was tested for significance at an alpha level of .05, statistical power of .80, and a medium effect size of .25 with the sample size ($N = 76$). Below are the research questions, associated hypotheses, and the results of the hypotheses testing.

Research Question 1

Do moral foundations and length of service predict moral injury in emergency paramedics?

H_0 : Moral foundations and length of service will not predict moral injury in emergency paramedics.

H_A : Moral foundations and length of service will predict moral injury in emergency paramedics.

The result of the simultaneous multiple regression analysis showed that when taken collectively, the five foundation variables of MFT (Haidt & Joseph, 2004) and the LOS were significant predictors of MI $F(6, 69) = 3.318, p = .006, R^2 = .224, R^2_{adj} = .156$. Therefore, the null hypothesis was rejected.

Research Question 2

What is the unique ability of moral foundations and length of service to predict moral injury in emergency paramedics?

H_0 : Each of the five moral foundations variables and length of service will not individually predict moral injury in emergency paramedics.

H_A : Each of the five moral foundations variables and length of service will individually predict moral injury in emergency paramedics.

Examining the individual predictor variables in the simultaneous multiple regression analysis indicated that purity ($t = 2.478, p = .016$) and fairness ($t = 2.111, p = .038$) uniquely and significantly predicted MI. None of the other predictor variables significantly predicted MI. Therefore, the null hypothesis was rejected.

Research Question 3

Which variable or combination of variables of moral foundations and length of service best predicts moral injury in emergency paramedics?

H_0 : None of the variables of moral foundations and/or length of service, in combination or alone, will predict moral injury in emergency paramedics.

H_A : At least one of the variables of moral foundations and/or length of service will predict moral injury in emergency paramedics.

The stepwise multiple regression analysis result showed that purity was the strongest variable to predict variance in MI $F(1, 74) = 9.524, p = .003, R^2 = .338, R^2_{adj} = .114$. Also, Model 3 indicated that the combination of purity, fairness, and ingroup were statistically significant $F(3, 72) = 6.643, p = .001, R^2 = .217, R^2_{adj} = .184$. Therefore, the null hypothesis was rejected.

Summary

Two MLR analyses were performed to determine if the five components of MFT (Haidt & Joseph, 2004) and LOS predicted MI. A description of the sample was provided. Descriptive statistics were provided for each variable, demonstrating that the outcome variable was approximately normally distributed and free of outliers. Assumptions for linear regression were tested on the dataset and were determined to have met all the assumptions.

A simultaneous (entry method) MLR was performed to determine if MI was predictable individually and collectively by the five components of MFT (Haidt & Joseph, 2004) and LOS. Also, a stepwise MLR was performed to determine which predictor variable or combination of predictor variables predicted the most variance in MI. The results of both regressions were significant. Regarding collective predictor ability, harm, fairness, authority, ingroup, purity, and LOS were shown to predict MI $F(6, 69) = 3.318, p = .006, R^2 = .224, R^2_{adj} = .156$. Individually, purity ($t = 2.478, p = .016$) and fairness ($t = 2.111, p = .038$) were unique and significant predictors of MI. Fairness was the strongest variable to predict variance in MI $F(1, 74) = 9.524, p = .003, R^2 = .338, R^2_{adj} = .114$. Also, Model 3 indicated that the combination of fairness, purity, and ingroup were statistically significant $F(3, 72) = 6.643, p = .001, R^2 = .217, R^2_{adj} =$

.184. The hypothesis testing rejecting the null hypothesis for the three research questions. The results of these tests will be discussed further in Chapter 5. Also, conclusions that can be drawn from these results will be discussed in Chapter 5. Lastly, the limitations of this study, implications for practice, recommendations for additional research, and overall conclusions will be provided in Chapter 5.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This study aimed to determine if certain aspects of MFT (Haidt & Joseph, 2004) quantified by the MFQ30 (Graham et al., 2011) and LOS could predict MI in emergency paramedics. This chapter analyzes the results of this research through an interpretation of the study's findings. The chapter aims to use the current findings and literature to explore this study's results. This chapter summarizes the current study's results and provides a detailed discussion. Next, conclusions that can be drawn from the results are considered, and the limitations and practical implications are discussed. Lastly, recommendations for future research are discussed, and a conclusion is provided.

Summary of the Results

The purpose of the study was to determine if MI could be predicted with MFT (Haidt & Joseph, 2004) and LOS amongst emergency paramedics who had at least one year of emergency response experience. A review of the current literature elucidated the research problem: after an exhaustive review of the literature, there were no studies for MI solely among emergency paramedics. Prior research had found that MI existed in military veterans (Koenig et al., 2018b; Nash et al., 2013) and police officers (Papazoglou et al., 2020), as well as hospital personnel such as physicians and nurses (Mantri et al., 2020; Murray et al., 2018; Wang et al., 2020). These job roles (military combat, policing, and healthcare of acutely sick and injured) all mimic the emergency paramedic's job role, which demands high-stakes thinking and actions. The research on MI also indicated psychological distress (e.g., PTSD and depression) along with secondary psychological outcome behaviors such as suicide, substance abuse, poor ethical decision-making, burnout, and decreased quality of life (Bryan et al., 2015; Forkus et al., 2021; Jinkerson et al., 2016; Litz et al., 2009; Michaud et al., 2021; Vigil et al., 2019). The research also presented that

a higher frequency of exposure to PMIEs and cumulative LOS were associated with adverse secondary psychological outcomes (Jinkerson & Battles, 2019; Koenig et al., 2018b; Nilsson et al., 2015; Roy et al., 2020).

The methodology used for this study was a quantitative, nonexperimental design that used MLR to analyze the predictive ability of the five foundations of MFT (Haidt & Joseph, 2004) and LOS on MI. Nonexperimental research attempts to measure variables that may have meaningful relationships that occur naturally and does not have any manipulation of the variables (Cook & Cook, 2008; Reio, 2016; Warner, 2013). Correlational, nonexperimental research designs such as MLR can be used to understand the relationships between predictor and outcome variables (Warner, 2013). MLR has eight assumptions to be tested, and once the assumptions were met, entry and stepwise MLR methods were used to answer the three research questions.

This study was designed to advance the scientific knowledge of MI among emergency paramedics. First, MI can be predicted in emergency paramedics with MFT (Haidt & Joseph, 2004) and LOS and provided evidence that showed MI existed in emergency paramedics (not presented in literature at this time). As stated in Chapter 1, the theoretical foundation used for this study was MFT (Haidt & Joseph, 2004). MFT (Haidt & Joseph, 2004) posits five moral foundations that can be substantive in any combination for individuals with group similarities in cultures, ideologies, and social group prejudices (Graham et al., 2012). Understanding patterns in responses to the MFQ30 (Graham et al., 2011) with significant MI scores in emergency paramedics (the first study of its kind) would allow further study of the established MFT (Haidt & Joseph, 2004) into new domains, as well as new knowledge for paramedics regarding MI. The predictive ability of MFT (Haidt & Joseph, 2004) and LOS relating to MI in emergency

paramedics were examined with the research sub-questions and hypotheses listed in Chapter 1. Although there is no consensus on the definition of MI amongst professionals (Roth et al., 2023), literature concerning the quantification of MI for medical-related personnel (Mantri et al., 2020 and Wang et al., 2020) used the MISS-HP (Koenig et al., 2020). I want to acknowledge that the literature review started in 2019 and that a new scale for MI quantification was proposed exclusively for public safety personnel (e.g., police, fire, EMS) in 2022 (Roth et al., 2023) after data were collected for this study. This new MI assessment is discussed in detail in the *Recommendations for Future Research* section. It is also important to note that the results of the current study found that clinically significant MI existed in emergency paramedics, contributing to new knowledge on this topic.

The results of this study supported the three alternative hypotheses that MFT (Haidt & Joseph, 2004) and LOS could predict MI, that the five domains of MFT (Haidt & Joseph, 2004) and LOS had unique abilities in predicting MI, and that there was a variable and combination of variables that best predicted MI. The results of this study also contributed to new knowledge by showing that MI was significantly predictable from harm, fairness, authority, ingroup, purity, and LOS collectively $F(6, 69) = 3.318, p = .006, R^2 = .224$, and the variables collectively accounted for 22.4% of the variance of MI. Two predictor variables, purity ($t = 2.478, p = .016$) and fairness ($t = 2.111, p = .038$), were significantly unique contributors. The results of the stepwise multiple regression indicated that the best combination of predictor variables was purity, fairness, and ingroup. Purity ($p = .004$) had a shared contribution to MI (10.69%) and a unique contribution to MI (9.36%), while fairness ($p = .008$) had a shared contribution to MI (10.69%) and a unique contribution to MI (8.06%), and ingroup ($p = .033$) had a shared contribution to MI (6.20%) and a unique contribution to MI (5.16%). No combination of the

predictor variables of harm, authority, and LOS significantly contributed to the prediction of MI. The three research questions were answered based on these results, and all three null hypotheses were rejected.

Discussion of the Results

The initial hypothesis stated that the five components of MFT (Haidt & Joseph, 2004) and LOS would significantly predict MI in emergency paramedics. The study's results were examined, and the null hypothesis for each of the three research questions was rejected. The alternative hypotheses answered the research questions. The intra-study interpretation of the meaning of the results, what worked in the study, and the implications of the study are discussed.

Although previous research does not offer a unified definition for MI (Levi-Belz & Zerach, 2022; Roth et al., 2023), the core of the MI construct seems to be an individual's appraisal of themselves after committing what they believed to be a moral transgression or being a victim of a moral transgression, which includes witnessing or having knowledge of such a transgression (Griffin et al., 2019; Molendijk et al., 2022). These moral transgressions for individuals exist in their beliefs of right or wrong – their moral compass. MI is always social and contextual because this moral compass varies for individuals and cultures (Molendijk et al., 2022). Using the frame of MI as an individualistic event, previous research in moral foundations was used to find components within the moral framework to quantify MI. The MFQ (Graham et al., 2011) provided evidence that moral foundations are built with the five components of harm, fairness, authority, ingroup, and purity (Graham et al., 2008; Graham et al., 2012; Haidt, 2013). The results of this study indicated that all five foundations of MFT (Haidt & Joseph, 2004), along with LOS, explained 22.4% of the variance in MI in predicting MI ($p = .006$). This finding indicates that the five moral foundations of care/harm, fairness/cheating, loyalty/betrayal,

authority/subversion, and sanctity/degradation are all important in determining internal moral conflict (MI) after the use of moral agency (an ability to make moral choices based on the agent's sense of right or wrong).

Of the five MFT (Haidt & Joseph, 2004) foundations, only fairness and purity had significant unique relationships with MI. Both fairness and purity had medium effect sizes (33.8% and 33.7%, respectively) for the variance in MI. These findings for fairness and purity could be due to the entanglement of the original trigger for fairness and the current trigger for purity from the individual's perception. Ideologies for purity in current triggers may also be viewed with a sense of fairness or cheating. Examples of ideologies would be social justice liberalism, religious beliefs, or personal experiences that have imprinted onto the individual's psyche. Morally ambiguous situations involving someone deemed to be in a sanctified (protected) group *should not* suffer inequities by those representing more power, such as the government or individuals beholden with authority over the sanctified person. Specific examples would be a person of a minority race suffering abuses of power from a police officer or an economically poor person not receiving compassionate and appropriate medical care from a hospital's emergency room personnel after the ambulance crew transfers care. Or, it could be that the paramedic had a history of childhood trauma and encountered a similar event, then transferred that experience onto the patient. Whatever the origin of the ideology, the original trigger of fairness, where we are expecting reciprocation for treating someone fairly, turns to disgust and contempt when we (or something we hold sacred) feel like we are being cheated (Haidt, 2013; Lieberman & Patrick, 2018).

The findings showed the best combination of variables to predict MI were purity, fairness, and ingroup. The analyses indicated that contributions to MI with purity had a shared

contribution of 10.69% and a unique contribution of 9.36%. In comparison, fairness had a shared contribution of 10.69% and a unique contribution of 08.06%, and ingroup had a shared contribution of 6.20% and a unique contribution of 5.156%. The regression equation can be written as $MI = 25.767 (\text{constant}) + 6.400 (\text{fairness}) + 4.893 (\text{purity}) - 4.588 (\text{ingroup})$. This regression equation indicated that every unit increase in fairness resulted in a 6.400 increase in MI, that every unit increase in purity resulted in a 4.893 increase in MI, and that every unit increase for ingroup resulted in a 4.893 decrease in MI. A possible explanation for the decrease in MI with an increase in ingroup could be with a higher psychological ideology with group ties, the less impact a decision may hold morally questionable weight. The original trigger for the loyalty/betrayal domain would be a traitor to the group, as it could jeopardize everyone (Haidt, 2013). So, one who decided to protect the group from the traitor would, in essence, be doing it for moral reasons. The stronger the individual feels to the group, the less likely the decision will be morally ambiguous.

The findings did not show significance with the LOS variable and MI. My initial thoughts trended with prior findings that repeated exposures to PMIEs for military personnel and increased MI (Jinkerson & Battles, 2019; Koenig et al., 2018b; Litz et al., 2009; Nash et al., 2013) would translate to LOS for the emergency paramedic, but now I do not believe these are comparable concepts. None of the military studies included the length or number of deployments (Jinkerson & Battles, 2019; Koenig et al., 2018b; Litz et al., 2009; Nash et al., 2013). Also, the nature of military service during a deployment versus non-deployment time is in stark contrast in PMIEs to the role of an emergency paramedic continually exposed to PMIEs. For example, an emergency paramedic has a higher probability of experiencing a PMIE through the normal course of their job. In contrast, the military member would have periods of deployment (higher

chance of PMIE over 6-12 months) and non-deployment (lower chance of PMIE over 12-18 months or more). Although there have been studies among rescue and EMS personnel concerning LOS that are discussed below in *Comparison of the Findings with the Theoretical Framework and Previous Literature* section (Bentley et al., 2013; Nilsson et al., 2015; Roy et al., 2020), LOS cannot be determined to be important just by this study alone due to the nature of being the first study involved with emergency paramedics and MI with no strong associations found in the prior research literature. Again, this may be a finding just with this sample and should be researched further with more diverse EMS agency sample representations.

Initially, I imagined that emergency paramedics would have statistically significant MI scores due to my personal experiences; however, I was surprised that such a high percentage (92.1%) of the sample met the score for clinical MI per the MISS-HP assessment (Koenig et al., 2020). Since this was new knowledge (based on an extensive review of the literature), this finding is the only that can be used to compare this finding directly. The closest studies that addressed measuring MI with the MISS-HP (Koenig et al., 2020) were research with physician and nurse populations (Mantri et al., 2020; Wang et al., 2020). The results of the two hospital-based MI studies are discussed in detail in the following section. A possible reason for the 92% MI result could be that the sample was homogeneous in service type and location and tenants associated with Dunbar's number of a finite amount of close social connections within a group (McRaney, 2011). Although they were individuals, there was a shared experience of the same EMS system and geographical area. To protect anonymity, I will use a military example: the possibility of conducting this type of survey among a special operations unit might have differing results than with a conventional military unit that may not have the same operational tempo, frequency of exposures, and breadth of specialized training together as the special operations

group. The special operations group has stronger social ties within their shared group versus a much larger and more diverse representation among people with similar responsibilities (general military).

Conclusions Based on the Results

This section is an outward focus on the findings of the study. The section will discuss how the findings fit previous literature and the underlying theoretical framework. Also, a discussion about why the study yielded the findings will be presented.

Comparison of the Findings with the Theoretical Framework and Previous Literature

This study's results are unique as no other studies were found during the literature review that used MFT (Haidt & Joseph, 2004) to predict MI by using the MISS-HP (Koenig et al., 2020) assessment tool for paramedics. The closest use of MFT (Haidt & Joseph, 2004) and the construct of MI was in a dissertation that assessed MI with the EMIS-M (Currier et al., 2018) assessment tool but did not contain a direct comparison of MFQ30 (Graham et al., 2011) foundations and MI scores (Perez, 2020). What can be used for direct comparison are the MFQ30 (Graham et al., 2011) mean values reported for each foundation not only for the Perez (2020) study but also the normed values of the MFQ30 presented in Graham et al.'s (2011) study (Table 16). Some results from this study fit with the previous literature, such as the MFT (Haidt & Joseph, 2004) foundational score findings and findings that were found to not have significance, most likely due to the operational definition of the LOS variable. Also, an unexpected finding in this study was considerably higher MI scores from the MISS-HP (Koenig et al., 2020) assessment tool to previous literature (Mantri et al., 2020; Wang et al., 2020), which demands exploration.

Table 16*MFQ30 Mean Values*

Moral Foundations Theory Domains					
Study Author	Care	Fairness	Ingroup	Authority	Purity
Graham et al.	3.42	3.55	2.26	2.27	1.54
Perez	3.72	3.80	3.08	3.38	2.57
Sabo	3.68	3.91	4.19	4.50	3.30

Note. Values from MFQ30 and range from 1-5 for each domain.

Table 16 shows the mean values for each of the five moral foundations from the studies of Graham et al. (2011), Perez (2020), and this study and referenced by the author's name. Each foundation has a range of whole numbers, 1-5. The values for harm and fairness were consistent across the three samples, although the findings for this study revealed higher values in ingroup, authority, and purity. This study's findings indicated that paramedics hold the moral foundations of ingroup, authority, and purity in higher regard compared to the findings from the general population and military samples. Understanding these increased values in ingroup, authority, and purity could help EMS agencies and paramedics identify and mitigate the distress that leads to MI and associated adverse behaviors.

Attempts to compare this study's MI findings with previous literature were challenging. No studies were found during the literature review that used MFT (Haidt & Joseph, 2004) and the MISS-HP (Koenig et al., 2020) for predicting MI. Only the Perez (2020) dissertation was found at the time that used MFT (Haidt & Joseph, 2004) to evaluate MI but used the EMIS-M (Currier et al., 2018) for MI assessment. I reviewed the EMIS-M (Currier et al., 2018) results presented in the Perez (2020) dissertation. However, the data was presented in a manner

(explained in detail below) that did not allow a way to show any direct correlations between the EMIS-M and the MISS-HP (Koenig et al., 2020).

However, two studies used the MISS-HP (Koenig et al., 2020) with healthcare personnel to explore MI: a study from North Carolina consisting of physicians, nurses, and other non-defined healthcare workers (Mantri et al., 2020) and a study of physicians and nurses from mainland China (Wang et al., 2020). The study by Wang et al. (2020) reported a MI percentage of 20.4% of respondents, while the Mantri et al. (2020) study reported a MI percentage of 7.8% of respondents. The MI findings from the MISS-HP (Koenig et al., 2020) used in this study reported 92%. This 92% of sample scoring for clinical MI is an alarming finding compared to the two hospital-based studies of Mantri et al. (2020) and Wang et al. (2020). It demands to be investigated because it could not only help future paramedics with better detection of MI and possible mitigation of adverse effects but also explore why there is such a disparity in MI results between the populations.

The results of this study also contributed to new knowledge by showing that MI was significantly predictable from harm, fairness, authority, ingroup, purity, and LOS ($p = .006$). The findings of this study are opposite compared to Perez's (2020) dissertation findings, which did not find significance between the MFT (Haidt & Joseph, 2004) foundations and MI. Once again, it is essential to note that the assessment tools used for MI were different in this study, and Perez (2020), as well as Perez et al. (2022), presented findings differently from this study as it did not report overall MI scores and used subcategories of MI scores against the individual MFT (Haidt & Joseph, 2004) foundations. Koenig et al. (2020) did show strong convergent validity in creating the MISS-HP. However, it is noted that the author of the EMIS-M (Currier et al., 2018) changed the wording to tailor it to healthcare professionals for use in the comparison (Mantri et

al., 2020). The MISS-HP (Koenig et al., 2020) indicates a threshold score for clinical MI (36 and higher is considered clinical MI), but the EMIS-M (Currier et al., 2018) does not have a cut-off score and should not be used without a clinical interview (Currier et al., 2020). I have examined the development of the EMIS-M in Currier et al. (2018), the development of the short version of the EMIS-M in Currier et al. (2020), and the use of the EMIS-M in the study by Perez (2020) and there are no overall or final scores listed for MI. Although the literature review was performed before 2021, Perez elaborated in his journal publication that only the MI subset scores were calculated, and the overall MI score was not used or reported (Perez et al., 2022).

Also, the results of this study contributed new knowledge by showing that the two variables, fairness and purity, had a unique ability to predict MI, and the best combination of predictor variables was purity, fairness, and ingroup. The interesting point was that for military members, foundations of fairness, care, loyalty, authority, and purity were reported in order of magnitude change (the overall MI score was not reported but broke into two sub-categories of self-directed and other by the author) from first to last (Perez, 2020). The finding that purity had the least value (Perez, 2020) was the direct opposite of this study, where purity was the strongest predictor. This difference could be due to the nature of the narratives between being in combat with your military unit (against a well-defined common enemy thousands of miles away from home) versus the more individualistic nature of being a civilian paramedic concentrated on serving in your community. The narrative for purity (in the current trigger use of sanctity foundation) includes group ideologies and a more direct link to the original trigger of keeping your tribe's group pure – free of disease and sickness (Haidt, 2013; Lieberman & Patrick, 2018). I hypothesize that the moral demand on the purity foundation to keep the immediate tribal area

clean supersedes the group ideology (e.g., protecting one's home has stronger moral reasoning than a group ideology).

Initially, I hypothesized that LOS would be significant in MI, thinking that increasing PMIEs over a career would affect moral relevance and judgments for the emergency paramedic. After a thorough review of the literature, LOS was not examined in any study for MI. There were military sample studies that examined number of deployments and MI which did not offer comparable circumstances to the civilian paramedics' schedule (Jinkerson & Battles, 2019; Koenig et al., 2018; Litz et al., 2009; Nash et al., 2013), and EMS related studies examining LOS in regards to other psychological constructs such as burn out, PTSD, and stress (Bentley et al., 2013; Francis et al., 2018; Nilsson et al., 2015; Roy et al., 2020).

Interpretation of the Findings

The MFQ30 (Graham et al., 2011) foundational scores for this study aligned with previous research's MFQ30 scores, as shown in Table 16, with increases in ingroup, authority, and purity. From Table 16, the values (reported respectively from the order above) for harm (3.42, 3.72, 3.68) and fairness (3.55, 3.80, 3.91) were consistent across the three samples. However, the findings for this study revealed higher values in ingroup (2.26, 3.08, 4.19), authority (2.27, 3.04, 4.50), and purity (1.54, 2.57, 3.30). The authors of MFT (Haidt & Joseph, 2004) explained that the greatest moral commonality may be found in issues of harm, and the greatest debates occur in narratives of traditions/authorities and physical/spiritual purity. It could be that there is also an ingroup effect that may explain the data. The large ($n = 34,476$) multicultural findings of MFT (Haidt & Joseph, 2004) included all types of people and experiences.

In contrast, the whereas the military ($n = 85$) and paramedic ($n = 76$) studies focus on “smaller” groups of people with a base commonality. The military sample consisted of U.S. military veterans of Operation Iraqi Freedom (Iraq) and Operation Enduring Freedom (Afghanistan), with service from 2001-2014 (Perez, 2020). Patriotism and common goals of the American military in times of war in a set period would gel towards a greater commonality across foundations of ingroup, authority, and purity but still allow for variances within that higher score due to the geographical size of the military recruiting and spanning across several countries of deployment. The probability of near-exact shared experiences or even knowing each other in the Perez (2020) sample is likely low. This study was a single EMS service consisting of approximately 180 employees who worked together at some point in their careers. All the paramedics of this service responded to emergency calls every day. They interacted with not only each other but also the same police and fire department personnel and the same relatively small geographical area (compared with the military sample) where most paramedics, if not all, live and experience off-duty personnel lives. An example would be a U.S. Army soldier from Montana whose military unit is based in N.C., then deployed to Kuwait and Iraq for seven months. In contrast, the whereas the paramedic most likely was born near their service area, received their paramedic education locally, and then was required to live in their service area covered by their EMS agency. The latter would understandably have the highest findings for ingroup, authority, and purity since the paramedics were from and live in their communities compared to the roughly 7 thousand miles between Montana and Iraq.

The outcomes of this study indicated that MI was predictable from the five domains of MFT (Haidt & Joseph, 2004) and LOS (22.4% of the variance can be explained by all six predictor variables). The predictor variables of fairness and purity were found to have unique

predictive abilities for MI, and the best combination of predictor variables was fairness, purity, and ingroup. Exploration into these three variables and why they may have these findings is below.

Of all five moral foundations, sanctity/degradation is one of the strongest predictor variables for MI in emergency paramedics, uniquely and in combination. Sanctity/degradation has evolutionary triggers that protect against individual and group survival and current triggers involving innate emotions, including sacred values and social constructs placed well above reproach (Graham et al., 2011; Graham et al., 2012; Haidt, 2013). Emergency paramedics are exposed to all types of violence, cruelty, and social injustices not only to the public they are called to help but also to the authoritative systems and other personnel employed in these systems to help those who may be doing the opposite. An example would highlight the organizational abuse of those with authority on the public trust, such as the police officer who is verbally and physically abusive to someone but in subtle ways that cannot be easily reportable or the authoritative actor is not held accountable by the system meant to help people. The emotional weight of these situations and decisions also occurs reasonably continuously throughout the paramedic's shift, which may not allow processing of the significance until later (Nelson et al., 2020). The ambiguity of the paramedic's authoritative role may add to this cognitive weight of decisions because the EMS organization has hierarchies and is accountable to multiple agencies, laws, and medical practices yet sent alone (comparatively) out to demanding high-stakes situations where their public safety counterparts usually have more personnel available to assist them.

An example would be minimal staffing requirements for fire department vehicle response: four trained firefighters (Moore-Merrell, 2019), and most actual fire calls receive

multiple fire trucks. Most EMS responses have only one ambulance response. There may be a first responder vehicle sent, which is usually a fire truck, but most of the first responders are not, if any, paramedics. So, paramedics hold the constant accumulation of the cognitive weight of decisions and situations while mostly alone or respectively alone and hold the innate original trigger of the sanctity/degradation foundation for individual and group survival and fear that degradation will cause suffering and death (Graham et al., 2012; Haidt, 2013; Lieberman & Patrick, 2018). The sanctity/degradation foundation current triggers are invoked with social constructs of injustice and at the core of the individual what is considered right or wrong (Graham et al., 2011; Haidt, 2013). The paramedics have much responsibility, primarily independent, surrounded by potentially morally questionable events and actions, suffering and perceived injustice, and isolated in their minds with the cognitive weight of the things they witness and perform trying to lessen suffering in seemingly uncontrollable or unchanging situations.

Along with purity, fairness had a unique ability to predict MI and be in the best combination of predictor variables. The social injustice by authoritative systems could also explain how the fairness/cheating foundation (fairness variable) is activated. Fairness/cheating has original triggers that identify when social exchange relationships are not fair and ensure balance in cooperation (Buss, 2019; Graham et al., 2011). The role of the paramedic is not to judge people or their situations but to render aid to those who need help (Bledsoe et al., 1994). Unfortunately, who that work in direct interactions for public safety professions are exposed to what could be considered unfair situations and those who benefit from society's altruism deceitfully.

An example would be a person who habitually calls the ambulance for a medical complaint from multiple locations around the local area and uses the ambulance for transport to a hospital close to the location they want to travel to for non-medical reasons. That person can be as bold in telling the paramedics' arrival to the emergency room that they now refuse care and walk away or can be seen inside the hospital telling the staff they are leaving. The paramedic not only feels "used," but there could be a person having a legitimate medical emergency that delays care due to this deceitful abuse of the EMS system. These examples of fairness/cheating triggers may explain why the greatest unit change for the best combination of predictor variables (fairness, purity, ingroup) was fairness, which increased the MI score by 6.400 for every unit change.

The ingroup variable represented the loyalty/betrayal foundation, a more expansive domain of fairness (Graham et al., 2011). The original trigger for this foundation is associated with individual or group survival, and evolutionarily, humans look at betrayal so profoundly as it invokes a threat of suffering or death, especially from those within the same ingroup (Buss, 2019; Graham et al., 2011; Haidt, 2013). An example of a current trigger would be a betrayal from another paramedic, such if a paramedic's partner was engaged in behavior in their job performance that directly contradicted expected behavior by a paramedic (e.g., withholding medical treatment for a patient because of bias), but in such a way that may be weakly defensible. An example could be that a patient would benefit from antiemetic medication during transport, and the treating paramedic withholds it because the patient "does not deserve it" in their mind. The offending paramedic might express their feelings to their partner. However, the official medical record explains that IV access was difficult, the patient was uncooperative, or other assessments or interventions prevented it. The prejudice and unprofessionalism are

exposed, but proving it is not easy as the excuses are not out of possibility. Another example of a current trigger may involve witnessed betrayal by other public safety members, such as a police officer ignoring someone being assaulted and declining to intercede with their powers. The paramedic has to be responsible for stopping the assault (not in the paramedic's job expectations), then be responsible for the patient afterward, and the weight of responsibility of "betrayal" of the ingroup member by submitting appropriate paperwork through the system against the police officer. This example is a double betrayal – not only from the officer to the public but also from the ingroup of the public safety team, which now causes an ingroup member to go against another ingroup member. Furthermore, there are many instances where reporting correct behavior is not rewarded with justice but rather an ostracism of the reporter.

After a thorough review of the literature, this could be the first study for specifically emergency paramedics and MI. The 92% finding of MI for the sample may be attributed to how the concept of morality (consciously and unconsciously) is defined and ingrained by the individual and that individuals with similar moral foundation framing tend to group within certain professions, such as police officers may have a stronger desire to be protectors and enforcers of laws (moral foundations of fairness and authority). Whereas, EMS personnel may strongly desire to be caretakers (moral foundations of care and sanctity). The EMS models for emergency paramedics are generally composed of two-member teams in one ambulance. Having both ambulance personnel certified paramedics is not the norm in the U.S. EMS system (Shotwell et al., 2018). There are several esoteric reasons for this composition: the cost-benefit to the ambulance service of having an EMT as one of the responders (lower wage than a paramedic), a larger pool of EMS personnel being EMTs (since EMT is the entry-level certification with less time to completion and less training requirements than paramedics), and all

but two states that have EMS laws that require only one paramedic to complete an ALS ambulance crew (Shotwell et al., 2018). The nature of the work environment requires intelligence and critical thinking skills in rapid high-stakes situations while being the only highest-trained medical personnel on the scene with relatively independent decisions. Although paramedics are considered allied healthcare workers (Brady, 1994), it would be spurious reasoning to directly compare the healthcare workers of the hospital-based studies (Mantri et al., 2020; Wang et al., 2020) and this one with paramedics without understanding the different work environments. If anything, these results show more moral strain on paramedics who are not as formally educated as physicians and nurses and operate independently on the front lines of medical care. Whereas, hospital-based physicians and nurses have access to hundreds of personnel to assist, stable environments, more resources, and fewer environmental distractions (such as bystanders, traffic, weather conditions, lighting, confined spaces, and the knowledge that treatment will have to continue in a moving ambulance that is subject to terrain and other vehicles) than a field paramedic.

Non-significant variables

Also, I was not surprised that care/harm and authority/subversion foundations were not represented within the best combinations of variables. Since this is new knowledge, I assume that care/harm was not a factor due to the inherent nature of being a paramedic caring for others, possibly due to clinical psychological concerns such as an inner psychological need to care for themselves from past childhood traumas. Since this is most likely evident for most paramedics (the conscious or unconscious need to care), the violations of the other moral foundations are more prominent. I suggest the same for the authority/subversion foundation for most paramedics. Paramedics (and their military counterparts) have the primary directive to care for the sick and

injured. There are outlier positions or instances where authority would trump caring for their patient, such as direct combat when the medical personnel had to engage in offense, fire a weapon, or exert force to protect. However, the majority of the responsibility is to help first. Authority/degradation has an original trigger dealing with power, hierarchies, and recognizing dominance, which has current triggers in maintaining organized power systems (Buss, 2019; Graham et al., 2012). As such, it is not the paramedic's responsibility or job requirement to establish and maintain hierarchies with the public (e.g., enforce laws). Although paramedics are sometimes considered paramilitary organizations with hierarchies, they are almost all internal and, if in public, resolved quickly among themselves, such as several paramedics arriving on the scene or affecting a rescue that needs to have established hierarchies to best address the rescue effort.

The LOS predictor variable did not show significance in predicting MI alone or in combination other than for the entry method for MLR that considered all of the predictor variables significant ($p = .006$). The incomparable nature between past military literature and this study's LOS variables may be attributed to how LOS was operationalized within this study (linearly in years of service as a paramedic) versus how other military studies reported their findings. LOS was collected as the number of deployments in military studies (Jinkerson & Battles, 2019; Koenig et al., 2018b; Litz et al., 2009; Nash et al., 2013), which could vary on the set amounts of time deployed depending on the military branch, task and purpose of the unit, operational tempo of the military action, and factors of injuries sustained that may have impacted deployment times. For example, in 2005, the US Marine Corps used (on average) 6-month deployments in combat theater, whereas the Army infantry units had 10-month deployments, and the Air Force used 4-month deployments (National Academies Press, 2013). The majority of the

US military used a 3-phase deployment cycle of pre-deployment (preparation and training), deployment (mission related to conflict), and deployment itself, post-deployment (decompression of conflict stressors, reorganization), which all had various required lengths (Center for Deployment Psychology, n.d.). For example, in December 2004, my Marine Corps infantry reserve unit received notification of deployment beginning in January 2005 and ending in September 2005. Our unit spent January through March actively training for the deployment, April through early September in Iraq, then approximately 18 months in post-deployment which returned to the time commitments of the pre-deployment reserve (one weekend a month and 2-3 weeks a year in-service). Nevertheless, my paramedic position in a civilian EMS agency consisted of 8-hour shifts for six days (not including 3-day weekends every fifth or sixth week or overtime for brevity) with two days off. Each shift would average 4-6 emergency calls and be highly unlikely to receive any calls. In contrast, my military deployment in Iraq had a majority of non-operation days, but the intensity of the operational days when considering PMIEs exceeded the average of EMS life. At this time, there is no literature or a way I would consider allowing an appropriate comparison of LOS between military and EMS.

For the EMS-based studies, LOS was collected in years of experience such as this study, but none of those studies included the construct of MI (Bentley et al., 2013; Nilsson et al., 2015; Roy et al., 2020). Two studies included paramedics, rescue personnel, and healthcare workers examined constructs such as PTSD, depression, and stress (Bentley et al., 2013; Nilsson et al., 2015), and neither found the significance of LOS with the outcomes. Another study found that with increased LOS came a decline in ambulance personnel's well-being, feelings of betrayal (from workplace relationships, such as co-workers, hospital staff, and management), and a distrust in authority (Roy et al., 2020). Although the study had a similar sample (35 respondents

all belonging to the same ambulance service) to this study, it also had limitations as it was a qualitative study, not examining the construct of MI in Great Britain. The findings of the Roy et al. (2022) study indicated that LOS was significant for similar base concepts (to factors contained in MI) of unwellness, feelings of betrayal, and distrust in authority. However, there is no way to reasonably compare the results between my study and the Roy et al. (2022) study regarding MI and LOS.

Limitations

There were several limitations and delimitations in this study. Limitations refer to the potential weaknesses of the study outside the researcher's control, whereas delimitations refer to the researcher's self-imposed limitations (Theofanidis & Fountouki, 2018). The limitations of this study included the lack of an accepted definition for MI and the assessment tool used for MI not explicitly created for paramedics. Several delimitations may include not analyzing all of the collected descriptive data (due to institutional IRB limitations) and the sample only consisting of paramedics from the same EMS agency. The limitations and delimitations are explained in detail below.

Limitations

At the time of the review of the literature, there was no consensus within the research community regarding the definition of MI (Levi-Belz & Zerach, 2022; Roth et al., 2023). Because there is no consensus on the definition of MI, there have been several measurement assessments to measure potentially morally injurious events (PMIEs) or the outcome symptoms of having MI. The lack of an apposite definition for MI limits this study as I chose the direction for the meaning of MI, which may increase the study's subjectiveness. The study's direction

hinges on my experience with defining MI and choosing the most appropriate MI assessment tool rather than from established consensus for each.

Along with definition and assessment concerns, another design concern for this study was finding an assessment for MI that encapsulated what an emergency paramedic may experience. The most relevant instrument found for the population of this study was the MISS-HP (Koenig et al., 2020), which focuses on healthcare providers (albeit more for physicians and nurses in a hospital setting). It is unknown if the MISS-HP (Koenig et al., 2020) assessment adequately represents MI in emergency paramedics, especially since this was the first research study solely for paramedics and MI. However, using my personal experiences as a military combat veteran and a professional emergency paramedic, I felt MI was better measurable for paramedics from the above outcomes rather than specific event exposures due to individual differences in forming moral foundations.

Delimitations

There were two delimitations in this study. One included descriptive data that could have been used as predictor variables that I collected but did not present due to institutional IRB guidelines. It is unknown if the demographic characteristics such as biological sex, educational level, age, and religious affiliation would have provided further knowledge for my research question (this complete survey will be presented later). However, there are several possible good candidates for predictor variables in the non-reported demographic data: the service area's geographical type and prior military service. Maybe there could be patterns found in moral decision-making and MI depending on the type of service areas (rural, suburban, city), which would require larger and more diverse samples, and if the paramedic had military experience which then could offer connections back to the many military studies for MI. Also, this study

was conceived using multiple EMS agencies as a sample. Although initial agreement was reached with a health service with access to approximately 100 EMS agencies, the health service ultimately did not consent to participate. This refusal left this study with one EMS service, although large enough to meet the minimum number of participants. The EMS service that participated consisted of many stations over a large (relative to EMS agencies) geographical and populous area that interacted with the same police and fire departments for most of EMS calls, which could still introduce homogeneity.

Implications for Practice

The results of this study have implications for emergency paramedics, and most likely any certification of EMS provider, because MI might be contributing to adverse behavioral outcomes as seen in previous literature, such as burnout, suicidal ideation and increased suicide risk, substance abuse, sleep disruption, poor ethical decision making, and social isolation risk (Becker et al., 2013; Bryan et al., 2015; Forkus et al., 2021; Frankfurt & Frazier, 2016; Jinkerson, 2016; Lentz et al., 2021; Litz et al., 2009; Mantri et al., 2020; Michaud et al., 2021; Rehder et al., 2021; Roy et al., 2020; Stanley et al., 2016; Vigil et al., 2019; Whitehead et al., 2015). Finding a quantifiable set of predictor variables for MI for paramedics could help identify potential risk factors. It may aid in mitigating possible effects of MI through self-awareness, educational programs by EMS agencies and governing bodies, and specialized clinical care by mental health professionals for MI, which can share symptomology with other psychological syndromes and non-healthy coping mechanisms. Although new knowledge and significance in MI scores were revealed with the predictor variables of LOS and the five domains of MFT (Haidt & Joseph, 2004), the implications of using these six predictor variables and finding a high

percentage of clinical MI in the sample may call for replication and exploring other predictor variables.

Although there were significant variables in predicting MI in this study, the overall implication may be to replicate this study while exploring other predictor variables. LOS did not have a significant influence alone or in the best combination of predictor variables. Although LOS may show significance in other constructs within the healthcare field, such as burnout, the finding from this study indicates that PMIEs may be of more importance to assess than LOS. This insignificance is due to LOS needing more value alone in knowing the types of PMIEs or frequencies, which are important components in MI research. Also, using the five MFT (Haidt & Joseph, 2004) domains as predictor variables could help explain if the EMS community has a greater or lesser problem with MI within public safety and public health professions, which would help in mitigation and proper treatment. The five domain variables could explore cultural differences within the paramedic communities worldwide and give a foundation for comparing such samples.

Of the five MFT (Haidt & Joseph, 2004) foundations, only fairness and purity had significant unique relationships with MI in this study. EMS providers, EMS agencies and governing bodies, and researchers should be concerned with addressing potential MI and secondary negative outcomes of paramedics who have more frequent exposures to events that would cause potential personal moral conflict concerning fairness and purity triggers, both original and current, as explained above. Some examples include interactions with imbalances in socio-economically challenged service areas, service areas that may have frequent violent interactions among the population itself and with the police force, and areas that may have limited health care resources for the service population.

The current study's results supported that most emergency paramedics reported scores for clinical MI (92%). Moreover, according to the studies of Mantri et al. (2020) and Wang et al. (2020), clinical MI is significant for the impairment of family, social, and occupational functions. For example, medical errors and suicidal thoughts were higher in the healthcare providers in the samples above, which also correlated with their MI scores exceeding the clinical MI threshold of 36 (Mantri et al., 2020; Wang et al., 2020). Addressing and identifying this variable of MI could help mitigate adverse behavior outcomes through education and focus not only within psychology but also at the ground level within EMS agencies. It would be beneficial to identify potential symptoms of MI before they develop into a psychological syndrome (such as PTSD, anxiety, or depression) or cause the individual to experience distress (Grimell & Nilsson, 2020). The results of this study could offer a better understanding of the established knowledge that public safety personnel reported higher mental disorder symptoms than the general public (Lentz et al., 2021), and workplace stressors predict depression and PTSD in EMS personnel (Bentley et al., 2015).

Recommendations for Further Research

This study's research design and outcomes offer several opportunities for future research. The opportunity to expand the sample, the possibility of using different or creating specific MI assessment tools for paramedics, PMIE predictor variable use over LOS, and further exploration of using MFT (Haidt & Joseph, 2004) as a foundation to find patterns among EMS in all populations would benefit the research efforts. All will be discussed below in more detail.

Future research studies should involve a broader base of emergency paramedics in sample size and geographic location. Although not used as a variable, geographic location and type of EMS service were collected in this study but needed diversity. A larger, more

representative sample of paramedics and service location types (i.e., rural, suburban, urban) would add to the knowledge and elucidate potential findings not being seen in this study.

After collecting the data for this study, a new MI assessment tool was suggested for public safety personnel, the Moral Injury Assessment for Public Safety Personnel (MIA-PSP; Roth et al., 2023). The MIA-PSP (Roth et al., 2023) was a 17-question assessment for MI that stated three loading factors that deal with betrayal (guilt), perpetration (shame), and emotional sequelae (fear). The MISS-HP (Koenig et al., 2020) showed similar three-factor loading consisting of guilt (shame), spiritual (lack of trust, loss of meaning, inability to forgive), and condemnation (fear, self-condemnation, punishment from a god). The MIA-PSP (Roth et al., 2023) reported that the assessment stability could not be established and suggested that the assessment was at a ground development phase. The wording of questions in the MIA-PSP (Roth et al., 2023) was more specific to paramedics than the MISS-HP (Koenig et al., 2020); however, it is unknown if the MIA-PSP (Roth et al., 2023) would provide more accurate results than the MISS-HP (Koenig et al., 2020), as this area of research and the MIA-PSP (Roth et al., 2023) are novel. Future research for MI in emergency paramedics and public safety should be replicated with the MISS-HP (Koenig, 2020) to help answer this question.

The current study also found that clinically significant MI existed within the sample; 92.1% experienced clinical MI ($M = 48.08$, $SD = 11.88$). Although there are no other known studies for MI in paramedics, two previous studies using the MISS-HP (Koenig et al., 2020) have only shown a MI percentage of 7.8% and 20.4% (respectively) among physicians and nurses (Mantri et al., 2020; Wang et al., 2020). Future research should address replication of this finding among emergency paramedics to see if significant differences exist in other non-field-based medical care and among paramedics.

LOS may not be the operational predictor variable needed in exploring MI in emergency paramedics for future research, although replication of this study with expanded samples may disprove that statement. Future researchers should explore other potential predictor variables that consider exposures to PMIEs rather than just the length of time the paramedic has worked in that position without other descriptor variables being included in the analysis. Using EMS service call volume per shift along with LOS would offer better insight into MI and paramedics.

Lastly, MFT (Haidt & Joseph, 2004) should be used in more studies to help identify MI patterns across emergency paramedics' populations. Although MI still has no unified definition (Roth et al., 2023), it is in the conception of one's moral decisions. A foundation is needed to address an individual's moral compass in a way proven to offer cross-culturally comparable factors (predictor variables). MFT (Haidt & Joseph, 2004) offers that quantifiable method with MFQ30 (Graham et al., 2011) and five domains of harm, betrayal, fairness, ingroup, and purity.

Conclusion

The current study aimed to determine if MFT (Haidt & Joseph, 2004) and LOS predict MI in emergency paramedics. The significance of the study was to address an unrepresented population with a high-stakes decision-making and dynamic work environment that relies not only on the emergency paramedic's knowledge and training but also the consistent exposure to events that most humans are not exposed to, let alone daily or weekly. The relationship between the five variables of MFT (Haidt & Joseph, 2004) of harm, care, authority, loyalty, and purity, along with LOS and MI scores, was analyzed using multiple linear regression. The current study was based on previous literature on MI (Jinkerson, 2016; Litz et al., 2009; Mantri et al., 2020), various adverse behaviors reported in military, health care, and public safety fields, and MFT (Haidt & Joseph, 2004).

A nonexperimental design was used in the study, and the data were analyzed using simultaneous and stepwise multiple linear regression. Two regression analyses were performed to determine whether MI was predictable from MFT (Haidt & Joseph, 2004) and LOS. A simultaneous MLR was performed to determine if the five foundations of MFT (Haidt & Joseph, 2004) and LOS predicted MI individually and collectively (RQ1 and RQ2). Stepwise regression was performed to determine which or a combination of variables predicted the most variance in MI (RQ3). Research Question 1 asked if the five domains of MFT (Haidt & Joseph, 2004) and LOS can predict MI, and these six variables were significant together in predicting 22.6% of the variance of MI ($p = .006$). Research Question 2 asked if the five domains of MFT (Haidt & Joseph, 2004) and LOS offered a unique ability to predict MI. The analyses indicated that purity and fairness were significant unique predictors of MI; MI is increased by 6.288 when fairness is increased by one unit and by 4.436 when purity is increased by one unit. Research Question 3 asked if there was the best combination of predictor variables to predict MI; the analyses indicated the best combination of predictor variables were purity, fairness, and ingroup accounting for 26.25% of the variability; purity had a shared contribution to MI of 10.69% and a unique contribution to MI of 9.36%, while fairness had a shared contribution to MI of 10.69% and a unique contribution of 08.06%, and ingroup had a shared contribution to MI of 6.20% and a unique contribution to MI of 5.156%. Also, an interesting finding was that 92% of the emergency paramedics were found to have clinical MI, which exceeded my expectations since I have experience and knowledge of both military combat as an Infantry medical provider and a three-decade professional career as an emergency paramedic.

This study had several limitations, such as the regional aspect of the sample being limited to a single EMS system. In addition, the construct of MI has yet to have a consensus regarding a

definition or a widely used assessment tool for any population, let alone for paramedics (at the time of the study; Roth et al., 2023). There were also delimitations involving collected data from the study was absent due to institutional guidelines but will be presented in future presentations. The limitations of this study offer opportunities for future researchers to improve the study design, especially with a sample that could include a national or even an international representation. In addition, other researchers should build on the current, significant findings to expand new knowledge for MI in emergency paramedics and other EMS personnel. Finally, the results of this study could be used practically to explore opportunities to address and mitigate the risks of adverse behaviors associated with MI construct in the emergency prehospital medical field.

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