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EXPLORING CASE VARIABLES PREDICTIVE OF HISTORIES OF MENTAL ILLNESS IN INCIDENTS OF POLICE-INVOLVED FIREARM FATALITIES IN CANADA

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EXPLORING CASE VARIABLES PREDICTIVE OF HISTORIES OF MENTAL ILLNESS IN INCIDENTS OF POLICE-INVOLVED FIREARM FATALITIES IN CANADA

By

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Abstract

The tragedy of police-involved fatalities resulting in the death of individuals with serious mental illness has been brought to the forefront by recent high-profile incidents that have galvanized public concern and criticism that law enforcement organizations must improve their response to people in psychiatric crisis. This thesis employed descriptive and hierarchical logistic regression analyses to understand cases of police-involved shooting fatalities in Canada between 2006 and 2015. More precisely, this research focused on determining whether particular variables predicted group membership between victims with and without a history of mental illness. The General Aggression Model (GAM; Allen, Anderson, & Bushman, 2018) was used as a framework to understand how the presence of mental illness could impact police officers' use of firearms in the course of their duties. Descriptive analyses revealed that police-involved firearms fatalities were on the rise in Canada and have increased faster over time for people with mental illness (PMI) compared to those without a history of mental illness. Hierarchical logistic regression analysis revealed that weapon type, ethnicity, and suicide-related behaviors were significant predictors of PMI being fatality shot by police officers as compared to victims without mental illness (correct classification 74.1%). Implications of the rising number of PMI involved in fatal shooting encounters with police and the unique predictors that underlie these lethal encounters are discussed considering the Behavioral Influence Stairway Model (Vecchi, Van Hasselt & Romano, 2005).

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Chapter 1: Introduction

Fatalities resulting in the death of individuals with serious mental illness (PMI) stemming from police-involved shootings has been brought to the forefront by recent high-profile incidents and have raised public concern and criticism over police response to these individuals. A recent case involved Andrew Loku, a 45-year old black immigrant from South Sudan, who was shot twice in the chest on July 5th, 2015 by a police officer in Toronto, Ontario (Marcoux & Nicholson, 2018). This tragic event unfolded within seconds upon police arrival around midnight at an apartment complex where Loku, armed with a hammer, was in mental health crisis. Loku made death threats towards two responding officers. One of whom was a "coach officer" and the other, a new recruit who had only been on the job for a month. When the police officers approached, Loku advanced towards them with his hammer raised in hand, leading one of the officers to discharge his firearm. A subsequent SIU investigation concluded that both officers responded within their legal bounds (Gennaro, 2016). This case and many others have a profound impact on families of the deceased, the police officers and services involved and the broader public. As such, it is crucial that research be conducted to better understand these events to determine how they can be prevented and to improve more positive outcomes for citizens in mental health crisis who encounter police.

To date, there has been a lack of extensive studies on the incidence of police-involved fatalities in Canada, likely owing to the absence of government mandates requiring the gathering of official data of provincial/territorial police-involved fatalities. Moreover, Canadian police services are not required to release official statistics on fatalities related to police actions (Marcoux, 2018). One empirical study that provided an estimate of the prevalence of police use of deadly force found that between January 1st, 1999 and December 31st, 2009 there was an

average of 12 fatal police shootings per year in Canada (Parent, 2011). By comparison, the US Federal Bureau of Investigation estimated that law enforcement in America was responsible for 400 fatal police shootings per year (Parent, 2011). In Australia, 76 fatal police shootings occurred between 1990 and 2004, an average of about 6 per year (Kesic, Thomas & Ogloff, 2012). Population size should be considered when comparing rates across countries. In 2004, the population in Canada was 31.94 million people, 292.8 million in the US, and 20.13 million in Australia (World Bank, 2004). Thus, corresponding rates of police-involved fatal shootings was .38 per million population Canada, 1.36 per million population in the United States, and .29 per million population in Australia.

In the absence of official data reporting police involved fatalities, numerous investigations were undertaken by several prominent newspapers in North America to provide an estimate of the prevalence of police-involved deaths based on archival research to increase awareness of these incidents. For example, in the United States, both *The Guardian* and *The Washington Post* have gathered data about police-involved death from 2015-2018 and released their datasets to the public. *The Guardian* is an online paper that covers both American and international news and is based in New York City, *The Washington Post* is a daily newspaper based in the U.S. and their data was gathered using news reports, public records, internet databases and original reporting. *The Washington Post* identified 995 fatal police shootings in 2015, 963 in 2016, and 987 in 2017 across the United States (Kindy & Elliot, 2015, 2016, 2017). In this report, Kindy and Elliot conducted a 12-month investigation in 2015 of police-involved deaths and drew several key findings. First, mental illness appeared to play a role in 25% of the incidents. Second, in 25% of the cases the victim was a fleeing suspect. Third, charges laid related to these events tripled in 2015 for police officers compared to the previous years. Between 2004 and 2014 charges laid

against police offices involved in fatalities were about five per year; however, by 2015, charges laid rose to 18. Notably, in 75% of the cases, police were either under attack or defending others. Finally, one in 10 fatal shootings involved an unarmed suspect (Kindy & Elliot, 2015).

The Canadian Broadcasting Corporation (CBC) followed in the footsteps of these two US news outlets and gathered cases of police-involved deaths, from 2000-2017 in Canada, (Marcoux & Nicholson, 2018) finding that there were 461 fatal police encounters during this time period and that most were killed by police firearms (71.4%) compared to restraint (15.6%), physical force (1.3%), intermediate weapon (e.g., conducted energy weapon, 1.1%) and other (10.6%). Preliminary analysis indicated that over 70% of the deceased had a mental illness or a form of substance use disorder; however, additional research is required to gain further insight into Canadian fatal police encounters.

The present study built on these Canadian findings by examining police-involved shooting fatalities in Canada over a 10-year period from 2006 and 2015, with a special focus on cases that involved individuals living with mental illness. This study used an archival design to gather information about police shootings from existing major media sources, including the CBC dataset, (Marcoux & Nicholson, 2018) as well as coroner reports, and Special Investigation Unit (SIU) reports. The aim of this study was to provide a descriptive analysis to find common patterns of fatal police shootings in Canada over a 10-year period. A hierarchical logistic regression analysis was undertaken to determine whether certain situational or subject variables predicted the presence of a victim with mental illness.

This thesis begins with a review of the policies and laws that attribute power to Canadian police officers. Specifically, the National Use-of-Force model (Allen, Anderson, & Bushman, 2018) used to train police officers to approach and articulate decisions around using lethal force

is discussed. The next section provides an overview of police subculture, particularly its role in contributing to police-involved shootings. Additionally, the General Aggression Model (Allen et al., 2018) provides a theoretical framework for fatal police-involved shootings. A literature review of research exploring police-involved shootings follows to provide a foundation for the present study's research questions and context for its findings.

Laws and Policies on Use of Force in Canada

In Canada, there are a number of pieces of federal legislation that are for police officers to use force to protect themselves, those on scene and the public. Officers are also held accountable for their actions by specific federal legislation and policies. In Canada, the federal government has complete jurisdiction to enact and regulate criminal matters. In contrast, each province and territory in Canada has limited power in controlling and influencing police matters. This limited provincial/territorial influence is used to direct and shape police-related policies and regulations; although each province must be ultimately consistent with federal legislative parameters. For example, each province follows a universal guideline for laws and sentencing; however, each province varies in the level of enforcement on most criminal offences (Parent, 2011). Consequently, provincial/territorial Police Acts and each of the 141 municipal police organizations across Canada (Conor , 2018) have employed a Use of Force (UoF) model that is consistent with the *Criminal Code* requirements (Criminal Code, 1985; Parent, 2011), resulting in a standardized approach to police UoF practices across Canada.

To avoid criminal liability, police officer's use of lethal force in Canada must be consistent with actions authorized under the *Criminal Code*. Sections 25 through 33 of the *Criminal Code* falls under the subheading *Protecting of Persons Administering and Enforcing the Law*. This

section of the *Criminal Code* specifies that police officers acting under the authority of law can be exempt from criminal liability. Specifically, s. 25 (1) states:

> 25(1) Everyone who is required or authorized by law to do anything in the administration or enforcement of the law
> (a) as a private person,
> (b) as a peace officer or public officer,
> (c) in aid of a peace officer or public officer, or
> (d) by virtue of his office,
> is, if he acts on reasonable grounds, justified in doing what he is required or authorized to do and in using as much force as is necessary for that purpose.

Thus, police officers must be acting on reasonable grounds, be justified in doing what is required/authorized, and only use as much force as necessary to affect that cause.

Furthermore, s. 25(4) clarifies when a peace officer is justified to use potentially lethal force:

> 25(4) A peace officer, and every person lawfully assisting the peace officer is justified in using force that is intended or is likely to cause death or grievous bodily harm to a person to be arrested, if
> (a) the peace officer is proceeding lawfully to arrest, with or without warrant, the person to be arrested;
> (b) the offence for which the person is to be arrested is one for which that person may be arrested without warrant;
> (c) the person to be arrested takes flight to avoid arrest;
> (d) the peace officer or other person using the force believes on reasonable grounds that the force is necessary for the purpose of protecting the peace officer, the person lawfully assisting the peace officer or any other person from imminent or future death or grievous bodily harm; and
> (e) the flight cannot be prevented by reasonable means in a less violent manner.

Thus, officers are justified in using lethal force that is intended or is likely to cause death or grievous bodily harm to a person to be arrested if they are proceeding in accordance with the law. Importantly, potentially lethal force can be used by an officer who believes on reasonable grounds that such force is required to protect themselves or another citizen from imminent death or serious bodily harm.

Further, s. 26 of the *Criminal Code* addresses the use of excessive force, stating that: "Everyone who is authorized by law to use force is criminally responsible for any excess thereof

according to the nature and quality of the act that constitutes the excess." Thus, a police officer must act on reasonable grounds and if an excess of force is used, then officers are held responsible for their actions. Section 34 of the *Criminal Code* provides a defence for a police officer who has used reasonable and justified force, s. 34(1) states:

> 34(1) A person is not guilty of an offence if
> (a) they believe on reasonable grounds that force is being used against them or another person or that a threat of force is being made against them or another person;
> (b) the act that constitutes the offence is committed for the purpose of defending or protecting themselves or the other person from that use or threat of force; and
> (c) the act committed is reasonable in the circumstances.

Thus, officers are justified in using potentially lethal force if the officer believes on reasonable grounds that threat of force is being used against them or any other person, and that their UoF was undertaken for self-defence or to protect the public. To assist in determining if an officer has acted on reasonable grounds, the court relies on subsection 34(2) of the *Criminal Code* which outlines the factors that should be taken into consideration.

> (2) In determining whether the act committed is reasonable in the circumstances, the court shall consider the relevant circumstances of the person, the other parties and the act, including, but not limited to, the following factors:
>
> (a) the nature of the force or threat;
> (b) the extent to which the use of force was imminent and whether there were other means available to respond to the potential use of force;
> (c) the person's role in the incident;
> (d) whether any party to the incident used or threatened to use a weapon;
> (e) the size, age, gender and physical capabilities of the parties to the incident;
> (f) the nature, duration, and history of any relationship between the parties to the incident, including any prior use or threat of force and the nature of that force or threat;
> (f.1) any history of interaction or communication between the parties to the incident;
> (g) the nature and proportionality of the person's response to the use or threat of force; and
> (h) whether the act committed was in response to a use or threat of force that the person knew was lawful.

This section indicates that the decision to use force and the nature of that force will vary for every officer and circumstance they face. For example, factors such as the officer's size and

physical abilities, and the nature of the threat have encountered influences what the officer, and the court consider reasonable.

As previously stated, most of the provinces have their own policies and regulations about UoF based on the *Criminal Code.* For example, the *Ontario Police Service Act (1990)* governs the conduct of police officers in Ontario. The Special Investigation Unit (SIU) is an independent agency that investigates the actions of police officers that result in injury or death of a civilian. Regulation 926 of Ontario's *Police Service Act* addresses how the UoF in the police service can be used. Section 9 of regulation 926 of Ontario's *Police Service Act* states: "A member of a police force shall not draw a handgun, point a firearm at a person or discharge a firearm unless he or she believes, on reasonable grounds, that to do so is necessary to protect against loss of life or serious bodily harm" (p. 2), thus, this regulation is clearly consistent with the *Criminal Code.*

Furthermore, province-specific Policing Standard Manuals outlines the policies and legislation that are required by officers. For example, the Ontario Policing Standard Manual (2000) was written to assist in the development of local policy and operating procedures of police services (Ministry of the Solicitor General and Correctional Services, 1992). This manual reiterates statutory policy requirements in both the *Criminal Code* and Ontario's *Police Service Act* and UoF is a key topic covered extensively in this manual (e.g., Chapters 2, 3, 8 and 10). Overall, this manual provides information to officers on the operations, human resources, information management, communication and equipment in policing organizations.

To conclude, the *Criminal Code,* the provincial *Police Services Act* and the Policing Standard Manual outline legal parameters in which officers are expected to perform their duties, including the UoF. National and provincial UoF models used for training officer recruits must operate within these legal specifications.

Use of Force Models

The Canadian Association of Chiefs of Police (2000) defines the National UoF Framework as “a training tool that includes a graphical representation of the various elements involved in the process by which a police officer assesses a situation and acts reasonably to ensure officer and public safety" (p. 3, see Appendix A). The goal of the UoF Framework is to help officers determine if UoF is necessary and to help clarify to the public when and why an officer can use physical force. However, some of the intervention techniques and devices used by police are not well understood by the public in Canada (Butler, 2009). Also, the model does not function as a justification or explanation for officers who use force, but rather, it provides a tool to assist officers to understand when and in what manner force could be applied and to articulate their actions after an event. Thus, the UoF model illustrates police officer’s options of force that could be used in a potentially threatening situation (CACP, 2000).

In Canada, Nova Scotia is believed to be one of the first provinces to utilize the UoF model in the 1980s, followed closely by Quebec in the early 1990s and Ontario in 1994 (Butler, 2009). Finally, in 1999 the Canadian Association of Chiefs of Police (CACP) advocated for the development of a national UoF model, which resulted in the creation of the first official National UoF framework in Canada and became the official framework for training in many police agencies across Canada (Butler, 2009; CACP, 2000).

During the development of the national UoF model, experts agreed on four guiding principles that would serve as a basis for the model. Experts wanted the model to be easily understood, comprehensible to both officers and the public, that it demonstrated a non-linear progression of options, and to use language that is consistent throughout the model and with that used in the *Criminal Code* (Butler, 2009, p. 5). This framework proposed how an officer enters a

dangerous situation then provides guidance on how to assess the situation, how to plan a response to the situation and finally how to act (Butler, 2009).

The National UoF framework provides six basic principles that guide officers through the application of the UoF (CACP, 2000):

1. The primary responsibility of a peace officer is to preserve and protect life.
2. The primary objective of any use of force is to ensure public safety.
3. Police officer safety is essential to public safety.
4. The National Use of Force Framework does not replace or augment the law; the law speaks for itself.
5. The National Use of Force Framework was constructed in consideration of (federal) statute law and current case law.
6. The National Use of Force Framework is not intended to dictate policy to any agency.

These six principles led to the creation of the assessment process, which in itself is divided into three concepts: the situation, the subject's behaviors, and the officer's perception and tactical consideration. Each of the three categories has several possible factors to consider and serve to assist the officer during the evaluation process in interpreting and responding to the situation. The framework further provides the means for an officer to later articulate what happened during an interaction and in the event of an inquiry, to paint a picture of how the event was perceived by the officer, assessed and why a particular response was selected.

The Situation. The first step of the assessment process of the National UoF model is called "the situation." This is when the officer responds to a call and must assess different factors and aspects of the situation once on scene. The police officer must assess the environment (e.g., weather conditions, location), the number of subjects (e.g., number of responding officers versus number of subjects), the perceived ability of the subjects (e.g., intoxication, physical size, emotional state), knowledge of the subject (e.g., criminal history, reputation), time and distance (e.g., act immediately versus delayed response) and finally signs of a potential attack (e.g., ignoring officer, aggressive verbalization, emotional venting). These examples do not include all

the factors that should be considered but simply demonstrate factors that are common to situations officers face (CACP, 2000).

Analyze. The next step is for the police officer to analyze the subject's behavior. This phase comprises five categories that can be combined with the previous section. In this section, the subject can fall into one of five categories based on the officer's perception: co-operative (e.g., responding to officer's direction), resistant-passive (e.g., verbal refusal), resistant-active (e.g., walking away or towards officer), assaultive (e.g., kicking and punching) and grievous bodily harm or death (e.g., assault with knife or firearm). The police officers must assess and classify the subject in one of the categories to decide what further actions should be taken (CACP, 2000).

Perception and Tactical Consideration. The third step is called "perception and tactical consideration." The National UoF framework explains that while interrelated, perception of threat and tactical considerations are two different factors that can influence the overall assessment. This phase explains why two officers can respond differently to the same situation. For example, an officer's physical size will play a role in his subjective perception of threat. Each officers' personal traits, strength and abilities will have a significant impact on how they interpret a situation and react (CACP, 2000). In addition, personal characteristics will play a role in the perception. Some of these factors include strength/overall fitness, personal experience, skill/ability/training, fears, gender, fatigue, injuries, stress symptoms, cultural background, and sight/vision. Additionally, tactical considerations such as the police uniform and equipment may also impact the assessment of the situation, such as whether they are wearing their police uniform and what equipment they have on them at the moment of the event, the number of officers on scene, availability of backup and access to physical barriers and cover (CACP, 2000).

These three steps help train the officers to assess, plan and act; and, based on what the police officer has assessed they must plan what the appropriate response is. The National UoF framework reviews five different types of UoF options that are available to officers, which vary from soft to hard physical control options ranging from simple officer presence, deployment of oleoresin capsicum (OC) spray, use of baton, and use of lethal force. The UoF options can either be used alone or in combination with other UoF options (CACP, 2000). Officers are not obligated to start with less serious UoF options before moving to more serious ones.

Use of Force Options. First, the simple presence of a uniformed officer can affect both the subject and the situation due to authoritative symbols. The next option is communication which is both verbal and non-verbal (e.g., gestures, stance, facial expression). Physical control options can either be soft or hard; soft techniques such as restraining techniques and handcuffs create a lower probability of causing any injuries (e.g., restraining techniques and handcuffs). On the other hand, hard techniques have a higher probability of causing injuries (e.g., punches and kicks) (CACP, 2000). Two options involve the use of weapons: The first one is intermediate weapons which are less lethal weapons and are not intended to cause severe injury or death, such as OC spray, baton and conducted energy weapon. Lethal force involves weapons or techniques that are intended or likely to cause bodily harm or death, such as the use of a firearm (CACP, 2000).

Altogether, the impetus of the National UoF framework is that the police officer will be trained to use force that is personally proportionate to the perceived threat and be able to maintain control of the situation (Butler, 2009). The assessment process of the situation should be viewed as a dynamic and continuously evolving situation until it is brought under control (CACP, 2000). Thus, during any type of encounter with a suspect, this framework can be used as

a tool to articulate why officers used particular UoF options. Police officer's UoF decisions can be better understood in the context of police subculture.

Police Subculture

There is a specific subculture that some police officers try to implement and follow, however, not all officers relate or implement this subculture. However, police subculture also has its own terms of acceptance, and only includes certain officers and these officers are then considered one of them (Rose & Unnithan, 2015). Paloline describes police subculture as: "a set of values, attitudes and norms that are widely shared among officers, who find in the culture a way to cope with the strains of their working environment" (Rose & Unnithan, 2015, p.279). Westley also explained that some characteristics of this subculture include loyalty and secrecy among other officers, authoritarian personality, distrust and suspicion (Rose & Unnithan, 2015). Some other characteristics that have been associated with the police subculture are: monolithic, homogeneous, macho and socially isolated (Workman-Stark, 2017). Thus, this subculture instils officers with the norms and expectations about their job. The transmission this subculture is carried out through formal and informal ways with the help of other veteran officers (Marenin, 2016). Police subculture can be further divided into two categories: street cop and management cop (Workman-Stark, 2017). The street cop is typically a lower ranking officer and includes frontline work patrolling the streets, while the management cop is typically higher ranking and committed more to the rules and regulations (Workman-Stark, 2017). The management cop is bureaucratically associated to the street cop and is believed to be positively oriented towards public administration and running the department. The "management cop" is mostly associated with social networks and politics (Newburn, 2005).

Most police institutions in Canada follow the nineteenth century designed military authoritarian organizational model (Hodgson, 2001). However, the utility of this model has changed due to the changing role of the police officer in our society (Hodgson, 2001). One of the most common features of the paramilitary structure of policing is the fact that official rules and regulations govern them. In this case, officers are governed by the rules and legislation in the *Criminal Code, Police Service Act,* and organizational policies. These rules help maintain a division of labour in the police organization and outline the duties that all members hold. Moreover, policing services are organized in a hierarchical structure forming a pyramid, whereby a smaller higher ranking, more qualified groups supervise larger lower ranking groups. This closed system reifies a specific ideology in the police organization, a "them" versus "us" attitude (Hodgson, 2001), whereby anyone who is not part of the police organization is labeled a ‘them". Paoline, Myers and Worden (2000), describe this othering as a form of social isolation and group loyalty. Their work environment forces officers to distance themselves from the public and their unique authority separates them even more from the public and closer to their colleagues leading to the “us” versus “them” mentality. Researchers believe that the dangerousness is what prompts officers to distance themselves and others also believe that the professionalization of the police force is one of the main reasons for isolation and strengthening of the subculture. They believe that taking the politics out of policing, focusing on scientific crime fighting and motorized patrol are the driving force of this movement (Paoline et al., 2000). Thus, creating strong norms of loyalty towards other officers and the we versus they attitude towards citizens.

Recruits become indoctrinated early into the subculture. Indoctrination usually begins once the field training starts and they have graduated from the police academy. Recruits become indoctrinated when they learn to be competent and independent officers (Malmin, 2012). It is

both by bonding with other officers at their specific service and adopting the ideology of the paramilitary organizational structure that they will be accepted by their colleagues (Hodgson, 2001). This ideology can be seen with the language they use in their subculture; police officers will refer to other officers as one of us (Rose & Unnithan, 2015). Thus, values such as loyalty and secrecy amongst officers are what encourages officers to depend on each other and trust in the organization. It is believed that recruits are tested on strong norms of loyalty before being accepted into the group. New recruits are expected to provide mutual support when it comes to hostile citizenry and a punitive bureaucracy (Paoline et al., 2000). During their training only, classmates can aid in struggles and avoid punishment, which, helps promote values such as loyalty and secrecy (Hodgson, 2001). The idea of brotherhood or solidarity between officers gives reassurance that other officers will protect each other in dangerous situations. This assurance of brotherhood is often the foundation for the "blue wall of silence" which is the phenomenon that other officers will maintain silence and secrecy during a formal investigation of their colleagues (Workman-Stark, 2017).

Importantly, recruits also learn that violence is encouraged under certain situations (Hodgson, 2001) because the paramilitary model uses the law as justification for actions, meaning that officers receive legal validation to invoke violence when such a response is believed to be appropriate given the circumstances. Furthermore, within the police subculture, officers are evaluated by their peers on their ability to use force when it is deemed necessary (Hodgson, 2001). Consequently, police officers who shoot and kill are often viewed with high regards and sometimes receive occupational prestige (Hodgson, 2001). This regard is given to reinforce the subculture ideology of toughness / doing what has to be done and rewards the police officers who have been faithful to its practices and principles. Reinforcing the subculture

assures them that whoever ascends in rank will have been exposed to the street culture of police officers. Hodgson (2001) states; "The recruitment process is therefore set up to select individuals who will pay allegiance to maintaining and regenerating the existence of the paramilitary ideology and practice" (p. 538), thereby allowing the subculture to perpetuate.

Due to the nature of their job, police officers are often exposed to more danger than the general public and using force helps them quickly control the situation (Marenin, 2016). Sometimes police actions are understandable to the public; however, sometimes they are only understood by fellow officers. For example, media coverage often shows video segments of officers physically controlling a suspect even when the situation is seemingly under control, which could be seen as street justice by fellow officers but not by the general public. Sykes defines street justice as "the reaction of the police to a suspect who has caused them problems, made them work harder, may even have caused them to run after the fleeing person, and who resist their control commands and efforts (Marenin, 2016, p. 471)." In other words, it is believed that some physical aggression is tolerated in certain circumstances. Street justice is understood by officers, and the department will rarely give harsh punishments for engaging in it (Marenin, 2016). It is believed that if the officer acted in self-defence and demonstrated that the actions taken were justifiable, the court will not punish the officer (Marenin, 2016). Thus, if officers demonstrate that they were fearful for their or someone else's life, the court will be more likely rule in their favor (Marenin, 2016). Notably, of 461 cases of police-involved death in Canada, as few as 18 officers were criminally charged and only two were convicted (Nicholson, 2018). In other words, officers may respond with more force in certain situations to enforce culturally condoned street justice, and because such UoF falls within the legal authority of their police work.

Moreover, research found that police subculture is based on hegemonic masculinity, which can contribute to more aggressive behaviours (Carmichael & Kent, 2014). In Bikos (2016), Connell described hegemonic masculinity as a "configuration of gender practice which embodies the currently accepted answer to the problem of legitimacy in patriarchy, which guarantees the dominant position of men and the subordinate position of women" (p. 2). The masculinity ideology encourages officer to be warriors and demonstrate that they are brave, strong and that they can handle adversity thrown at them (Malmin, 2012). These attitudes and values are created by their job context, which is full of uncertainty, danger and coercive authority (Paoline, Myers & Worden, 2000). In addition, these values can create a hard-nosed and aggressive approach to policing, and promote physical UoF (Paoline et al., 2000). In fact, not displaying these traits can lead to rejection by colleagues and alienate an officer (Workman-Stark, 2015). Moreover, police departments have evolved over the years and include increasing numbers of women and racial minorities (Paoline et al., 2000). For example, in the mid 1960s, in the US, only 3.6% of sworn officers were black and only 2% in cities of 50,000 or more were women. However, diversified representation began to increase by 1993, when 19% were members of minorities and 8.8% were women (Paoline et al., 2000). Today, women make up a little more than 20% of the workforce in policing in Canada (Carmichael & Kent, 2014). Carmichael and Kent (2014) found that modern Canadian police departments varied from 3% to 30% of female police officers across these departments. Recent reports have shown that female officers are two to three times less likely to receive complaints and ten times less likely to have an allegation of excessive force made against them compared to male officers (Carmichael & Kent, 2014). This study also found that female officers are more likely to have their gun holstered longer and use their weapons less often. Carmichael and Kent (2014) found that cities with more female officers have significantly less

police-involved deaths compared to ones that have fewer women officers. While women make up only a small fraction of the police service, they could be poised to change the ideology and practice of the police service when represented in higher numbers (Carmichael & Kent, 2014). This assertion, however, is based on critical mass theory which explains that to change the subculture, the prevalence of female police officers needs to surpass the 15% threshold of institutional makeup to garner some influence over the culture (Carmichael & Kent, 2014). In addition, Paoline et al. (2000) advanced that these changes could lead to a further fragmentation of police culture and create more of a heterogeneous culture. This is believed because women have been more socialized to being caregivers and might be more concerned with other peoples needs and also had been rejected from police culture in the past making them less likely to internalize police subculture values (Paoline et al., 2000). Similarly, minorities also have been excluded, thus, members might be more likely to reject police subculture values (Paoline, et al., 2000). In any event, there remains a hyper-masculine culture in policing that engenders expectations of aggression and could be a factor in fatal police shootings.

General Aggression Model

The general aggression model (GAM) is a framework which aims to understand aggression by considering the role of social, cognitive, personality, developmental and biological factors (Allen, Anderson, & Bushman, 2018). GAM can be useful in explaining why fatal police shootings occur because it considers both the knowledge, as well as the meaning that humans attach to aggression based on beliefs and attitudes (e.g., believing aggression to be normative, evaluating aggression positively). It can also be based on how the situation is perceived whereby if one is expecting to encounter aggression, it can lead to being proactively aggressive (Allen et al., 2018).

GAM is separated into two different processes, the proximate process and the distal process. The proximate process involves three stages. The first stage is the input stage, which looks at how personal and situational factors can increase or decrease aggression (Allen et al., 2018). Personal factors are any type of individual difference that can influence a situation (e.g., mental or behavioural disturbance, personality, intelligence) while situational factors are aspects that can influence aggression during the situation (e.g., social stress, provocation, presence of a weapon and threatening or fear inducing stimuli, Allen et al., 2018). Both personal and situational factors can work together or by themselves to affect physiological arousal and increase the likelihood of aggression during an event. For example, if police encounter a PMI holding a club, this may present a threat to the police officer, signalling them to unholster their weapon and yell to drop the weapon, which creates an escalating cycle whereby the PMI is now perceiving threat cues of a weapon, shouting, and aggressive posturing from the officer. In addition, personal factors contributed by all individuals within a situation will play a major role in their interaction. These factors are stable for people over time as long as they use the same knowledge structure. Thus, a more aggressive knowledge structure makes aggression itself more likely to happen. An officer using an overly authoritarian approach, as opposed to de-escalating tactics (e.g., utilizing time, distance and barriers as necessary) and communication (e.g., calm, but firm tone and active listening) could escalate a situation in the officer's attempts to control it, resulting in fatalities. If the suspect's knowledge structure is more aggressive or even if the officer's knowledge structure is aggressive, then the suspect will react in an aggressive way leading the officer to use force to control the situation.

The next stage in GAM, routes, considers the pathways that personal and situational factors can take to influence the decision process (e.g., affect, cognition and arousal, Allen et al.,

2018). The first factor that can influence the decision process is called affect. In this process the input variables can influence mood and emotions, within which personal factors play a big role, for example, a high trait in hostility or even temperature can lead to more aggression (Allen et al., 2018). Cognition can also be influenced, and when influenced this can increase aggressive thoughts. For example, officers have been trained for hostile and dangerous situations. When receiving information from dispatch that contains details indicative of danger, the officer cognitively prepares themselves and begins to formulate a plan on route to the scene. This approach predisposes officers to aggressive thoughts and primes them for aggression going into an unknown or potentially dangerous situation. Finally, arousal is also influenced by personal and situational variables and can contribute to aggressive behavior. Physiological arousal can be caused by independent sources that are not directly related to the situation and be understood as anger (e.g., arousal caused by exercise and alcohol). If the source of arousal is misattributed or experience of arousal is misinterpreted, aggression is more likely (Allen et al., 2018).

The final stage is called label outcome, which focuses on the decision-making process and addresses how the individual will respond based on the previous steps of the model. This makes the response either aggressive or nonaggressive and once the action is carried out by the individual this impacts the rest of the social encounter, which can alter the personal and situational variables. This then can lead to the start of the cycle all over again (Allen et. al, 2018). Thus, if the suspect is holding something in their hands an officer can interpret that object has a weapon even if the suspect does not. The officer decides then to unholster his firearm and creating a more hostile environment because the suspect does not interpret the object has a weapon like the officer, thus, leading to aggression because both individuals are not interpreting the situation in the same way. In addition, if the object is a weapon then the officer will already

by alert and then the same situation can occur. In addition, the personal factors can also have a major impact; thus, if the citizen is experiencing a mental health crisis, the officer may misread the person's response as hostile or non-compliant (see Appendix C).

The second process in GAM is called the distal process and is believed to operate in the background of the proximate process. The distal process considers the role of biological and environmental factors and how they work together to influence personality (Allen et al., 2018). An example of a biological modifier that can increase aggressiveness is impaired executive function. Thus, anything that can influence biological characteristics will fall under this category. On the other hand, an example for environmental modifiers could be difficult life conditions and violent neighbourhoods (Allen et al., 2018). For example, victims that come from a violent neighbourhood might be more prone to show more aggressiveness and officers could feel more threatened when going into certain neighbourhoods.

To conclude, GAM could help explain the nature and the rate of police-involved firearm fatalities in Canada. GAM helps explain how officers and suspects react in certain situations and what specific factors lead to aggression and violence. GAM considers factors that can increase the odds of an aggressive outcome by either the officer or the suspect. Contact with a PMI can increase arousal if the officer has stigmatizing views of mental illness, resulting in a misattribution of dangerousness or devaluing of the person, increasing the odds of a fatal reaction. Racialized ethnicity, weapon presence and younger age represent other factors that lead a police officer to interpret the situation as threatening. Thus, according to GAM theory, the outcome depends on how officers' access and react to numerous variables and this reaction can vary from one officer to another. If the reaction is using lethal force, then studying the factors that lead to this outcome could help understand police-involved firearm fatalities.

Chapter 2: Nature and Rate of Police-Involved Fatalities

As mentioned previously, journalists in Canada have undertaken research about police-involved fatalities through extensive archival research of newspaper articles and coroner's reports. This has been done because there is no official accumulation of data regarding police-involved shootings available in Canada since documents pertaining to the incidents are only required to be released if a conviction occurs (Nicholson, 2018). The CBC dataset marked the first country-wide database to exhaustively collect cases on police-involved deaths. The report examined specific subject and situational variables in relation to the deaths, including ethnicity, presence of weapons, location, and mental health status of the deceased. Key findings were that among the 461 cases of police-involved deaths between 2000 and 2017, 71.4% involved police shootings, and over 70% of the victims had histories of mental illness or substance abuse (Marcoux & Nicholson, 2018). The report further noted that black and Indigenous persons were over-represented in police-involved fatalities in Canada. Moreover, the Marcoux and Nicholson (2018) dataset raised many questions about the nature and rate of police-involved firearm fatalities in Canada.

Police Interactions with PMI

Compared to the general population, a person living with mental illness is 3.1 times more likely to interact with police officers and are twice as likely to be re-involved with police services (79.9% vs. 38.3%; Cotton & Coleman, 2010). A Canadian survey found that 26% of officers on average interacted with a PMI at least once per week (Schulenberg, 2015). Livingston, Desmarais, Verdun-Jones, Parent, Michalak and Brink (2014) reported a positive picture concerning the interaction between PMI and police officers in the Vancouver area. They reported that three-quarters of participants with mental illness were generally satisfied with how

officers handled the interaction, 51% had a positive interaction and 32% had a negative interaction with police officers (Livingston et al., 2014).

The interaction between PMI and police officer is complex and requires further exploration. Explanatory variables for these rising interactions center on lack of access to treatment, substance use, treatment non-adherence, homelessness, poverty and deinstitutionalization (Livingston et al., 2014). One major influence in PMI and police interaction is deinstitutionalization, "the large-scale transfer of psychiatric patients out of dedicated hospital facilities and into the community-based settings" (Lamb, cited in Lyon & Welsh, 2017, p.212), in which many patients placed in the community became homeless and had difficulty accessing mental health services. Before the 1960s interactions between police officers and PMI was not as frequent; however, contact with PMI is now part of the police routine due in part because of deinstitutionalization (Engel & Silver, 2001). Today, contact between PMI and police officers is a growing phenomenon because of how our health system changed. The health care system and policing models have made it so that this contact cannot be avoided (Livingston, 2016). Some of the duties that have developed over time for police officers are attending to mental health crises, searching for those who have absconded from inpatient and residential care, and identifying people who have mental health needs and connecting them to services (Livingston, 2016).

Livingston (2016) conducted a meta-analysis to determine if police-PMI encounters are truly a growing phenomenon as suggested by the media or whether it is only a perception. The meta-analysis found that one in four people with mental disorders have histories of police arrest, which shows that it is not only a perception created by the media (Livingston, 2016). Additionally, one in ten individuals encountered police in their pathway to mental health care (Livingston, 2016). Finally, the study also found that one in 100 police dispatches and encounters involved PMI

(Livingston, 2016), thus knowing that there are frequent interactions between PMI and police officers one must then look at how the interactions are resolved.

The Criminalization hypothesis is based on the idea that to resolve encounters, police officers will inappropriately arrest PMI (Engel & Silver, 2001). According to Lyon and Welsh (2017), "the criminalization of mental disorder refers to the idea that people with mental disorder who engage in nuisance or disruptive behaviors are processed as offenders through the criminal justice system instead of treated as patients in the mental health system" (p. 211). This hypothesis explains that PMI are not more likely to offend; rather, they are more likely to be arrested, convicted and imprisoned when committing the same acts as others (Lyon & Welsh, 2017).

It is believed that in the past 25 years the street conditions in both the United States and Canada have increased the potential for violence between officers and PMI. Stemming from deinstitutionalization of PMI and high rates of comorbid substance abuse, there has been an increase of interactions between people in crisis and the police leading to an increase in risk of police use of lethal force (Parent, 2011). Parent (2004) found that out of 850 officers involved shootings in both the United States and Canada, one-third (n=273) of them included a person who had a mental illness, emotional disturbance, or substance abuse.

Moreover, when an encounter occurs the decision to take any further action is at the discretion of the police officer. Police discretion is defined as "the decision to use informal social control (e.g., verbal warning) even when the circumstances legally allow for an arrest, issuing a citation, or laying a criminal charge (Schulenberg, 2015, p. 461)." However, there is concern that police officers are more likely to arrest a PMI who is committing a minor crime compared to someone that does not have a mental illness (Lyon & Welsh, 2017). In other words, compared to

the general population, PMI are at higher risk of police contact, arrest, and criminal charges when it comes to minor offenses due to police discretion (Schulenberg, 2015).

Godfredson, Ogloff, Thomas and Luebbers (2010) argued that previous research has uncovered three main factors associated with police discretion including 1) situational barriers to care, 2) the type of encounter and 3) the training and resources available to the officer. Other factors such as officer's experience, knowledge and education about mental illness are important in understanding the interaction between police and PMI (Godfredson et al., 2010). In a more recent study, Parent (2011), found that between January 1, 2000 and December 31, 2009, a quarter of the 30 documented incidents of discharged firearms in British Columbia involved a person who had a history of mental illness or suicidal behaviors. Individuals who are in mental health crisis, are cognitively and emotionally disordered, often have difficulty understanding police commands, and may act in irrational and violent ways prompting police to consider the use of lethal force.

Programs to create a more cooperative response between police officers and PMI were developed after 1988 following the fatal shooting of Lester Donaldson, in Toronto, Ontario. Mr. Donaldson lived with paranoid schizophrenia and had a history of being non-compliant with treatment. His death led to the Coroner's inquest to push for new legislative review and new program developments to improve interactions between police officers and PMI (Cotton & Coleman, 2010). Since the 1980s, police in Canada have had to adapt their resources and modify their interactions with persons with mental health problems because of the new legislative push (Cotton & Coleman, 2010). Police services have in recent years been dedicated to improving interactions with people with mental illness including improving training of frontline officers to recognize and respond to symptoms of severe mental illness, and the launch of mobile crisis

teams which pair a duly appointed police officer with a mental health expert to co-respond to persons in mental health crisis (Cotton & Coleman, 2013).

There is a paucity of research investigating the relationship between police UoF and people with a mental illness; however, most report that officers are no more likely to use force against these citizens (Bolger, 2015). For example, PMI might be more likely to be armed or they might be more likely not to listen to police directions. In addition, “Project Beacon”, a study conducted in Australia, was created by the Victoria police to reduce the number of police-involved fatal shootings. This was done by reforming policies and practice of UoF. However, even when police organizations found a successful reduction of about half of fatal police shootings, there was no related reduction in fatally wounded PMI. In fact, they found an increase in PMI deaths (Kesic, Thomas, & Ogloff, 2010).

Ethnicity. Research has found that visible minorities are far more likely to be stopped, searched and arrested than non-minorities and are also at higher rates of having physical force used on them by officers (Carmichael & Kent, 2014; Correll, Wittenbrink, Park, Judd, Sadler, & Keesee, 2007). Jacobs and O'Brien (1998) found that even when controlling for level of violent crimes, African Americans were more likely to be killed by police relative to Caucasians in the US. Similarly, Correll and colleagues (2007) found that African American suspects were five times more likely to die at the hands of an officer when compared to a white suspect.

In a research study conducted in the United States by Correll Park, Judd, and Wittenbrink (2002), it was found that in a video game simulation, participants were more likely to shoot unarmed black targets compared to unarmed white targets. In addition, participants were less likely to shoot an armed white target compared to an armed black target. Researchers have suggested that this phenomenon might be explained by “shooter bias” (Correll et al., 2002; Kahn

& McMahon, 2015), which occurs when racial stereotypes influence decisions made by the police officer in certain situations. Kahn and McMahon (2015) define “shooter bias” as: “a racially disparate decision pattern in the shooting context” (p. 313). Correll and colleagues explain that the cause of “shooter bias” is not related to levels of explicit prejudice, but instead to the accessibility and particularity of a stereotype. For example, the stereotype of criminality is a key factor for the “shooters bias” for African Americans. However, research examining this phenomenon showed mixed results and lacks ecological validity in the policing field in that most studies have been conducted only with college student samples. The "shooter bias" theory have been tested with non-police samples specifically examining decision to shoot. Controlled processing is slower than automatic processing, making it harder to control biased errors under time pressure (Correll et al., 2002). Correll et al. (2002) explained that “automatic processing relies on a reduction of stimulus information to its perceptual and motor feature” (p. 1008). On the other hand, controlled processing “extracts more meaningful information” (p. 1008). In the same study, participants correctly identified a weapon carried by black targets compared to white targets and had a harder time differentiating when a weapon was present or absent with a black target (Correll et al., 2002).

While, "shooter bias" has been identified in the nonpolice community, this phenomenon has mixed support in the policing field. A study conducted in the United States by Plant and Peruche (2005) found that officers were more likely to shoot unarmed black targets in a simulation compared to unarmed white targets. More precisely, they found those police officers who held negative beliefs about the criminality of black people were more likely to shoot an unarmed black suspect compared to officers who possessed more positive views. Interestingly, it was found that police officers were able to eliminate negative bias if they had positive contact with

black people in their personal lives (Plant & Peruche, 2005). However, other studies found that police officers do not demonstrate "shooter bias." Another study was conducted by Correll et al. (2007) in which police officers were compared to members of the community on reaction time and accuracy concerning their decision to shoot a target in a simulation. Results showed that police officers had a faster and more accurate reaction time, could differentiate whether the suspect was carrying a weapon or not, and correctly identified if black targets had a weapon and made less mistakes shootings the black targets that did not have a weapon. While both groups in the study showed racial bias in response speed, the “shooter bias” did not show in error rates. Thus, this study indicates that participants took more time to react to black targets; however, no bias was found in shooting black or white targets.

Research in the United States robustly shows that visible minorities are at higher risk of police-involved death than non-minorities. More research is needed to consistently explain why ethnicity plays a role in police-involved death. The effect of suspect ethnicity may be contingent on the presence of other variables when physical UoF is used by officers (Bolger, 2015). Notably, there is a lack of research on the effect of ethnicity in police decision-making regarding UoF in the Canadian context. It is unknown whether American research on ethnicity, or policing in general, can be extrapolated to the Canadian context given potential differences in race relations between the countries as well as differential laws in the ability to carry concealed weapons.

In addition, in Ontario, it was found that according to SIU data, Indigenous residents were also over-represented in police shootings, however, not to the same extent as black citizens. Indigenous peoples represented 7% of all SIU investigations, but only 2% of the provincial population. In addition, they were found to be 6 times more likely to be involved in SIU

investigations of UoF compared to Caucasians (Beattie, Boudreau & Raguparan, 2013). Moreover, Indigenous people of Canada experience significantly poorer health relative to their non-Indigenous counterparts, it was found that mental and substance use disorders make a major contribution to these health problems (Leske, Harris, Charlson, Farrari, Baxter, Logan, Toombs & Whiteford, 2016).

Statistics Canada found that in 2012, the Indigenous population was at great risk of substance use disorder. It was found that the overall rate of mental or substance use disorder among self-identified Indigenous versus people who identified as non-Indigenous was 15.2% versus 11.2% (Boyce, Rotenberg & Karam, 2015). More precisely, it was found that for substance abuse Indigenous were significantly higher (6.3% vs. 3.9%) and for mental health Indigenous were slightly higher (7.1% versus 5.9%; Boyce et al., 2015) compared to non-Indigenous people.

Suicide by Cop. Another phenomenon in the field that is relevant to police-involved death is “suicide by cop.” Suicide by cop refers to "when a subject engages in behavior which poses an apparent risk of serious injury or death, with the intent to precipitate the use of deadly force by law enforcement against the subject” (Mohandie, Meloy & Collins, 2009, p.1). McKenzie (2006), believed that in cases following a police-involved shooting, 10% - 25% of the victims could have provoked the officers to shoot. Kennedy, Homant and Hupp (1998) found that 97% of the suspects who died by suicide by cop in his research were males and 68% of them were between the ages of 16 and 35. It was also found that 5% of the deceased were homeless or had a mental illness. These findings are consistent with Hudson (1998), who found that the vast majority of suicide by cop cases involve a young male suspect.

Mohandie, Meloy and Collins (2009) investigated the frequencies and characteristics of suicide by cop cases in a North American sample (*n*=707). They found that 36% of all cases

could fall under the category of suicide by cop. Mohandie et al. (2009), also found that weapons played an important role in suicide by cop. In all suicide by cop cases, 80% of the suspects were armed, and 19% pretended or simulated having a weapon. In addition, it was also found that in most cases, suicide by cop was spontaneous and unplanned (81%); however, victims showed clear and verbal behavioral indicators of suicidal thoughts during the event (87%, Mohandie et al., 2009). Mohandie and colleagues (2009) also investigated the behaviours of the subjects and found that in 95% of all suicide by cop cases the subject was noncompliant with police officers and that 90% of them were aggressive towards the police. In half of the cases, the suspect harmed or attempted to harm a civilian.

Overall, suicide by cop situations tend to escalate rapidly, are tense, and are rarely planned. The suspects are usually armed, tried to resist arrest, and threatened the police officers, or tried to harm a civilian all of which increases the likelihood of UoF on the part of officers (Kesic, Thomas & Ogloff, 2012). These findings suggest that police officers should undergo specialized training to help them deal with effects of suicide by cop situations, which includes training that can help them identify cues and help them safely de-escalate the situation (Parent & Verdun-Jones, 1999).

Victim Demographic Variables

There are a number of demographic characteristics among suspects that have been found to be important in understanding police-involved shootings. Parent et al. (1999) found that alcohol and drugs were present in more than half of cases of police-involved shootings. Bolger (2015) also found that suspects who appeared to be intoxicated were 1.3 times more likely to receive forceful treatment from police officers. Also, several studies found that citizens of lower socio-economic status were more likely to interact with police officers. Moreover, gender shows mixed

results when it comes to police UoF, in which some research has shown that females receive less forceful police treatment and that males are more likely to have force used against them (Garner, Maxwell & Heraux, 2002); yet other studies have found no suspect gender effects (Bolger, 2015). A suspect's age may also play a role in the outcome of the event, for example, Sherman's (1980) archival study, found that most of the suspects who were shot or killed by police were under the age of 30.

Situational Characteristics

Studies have also investigated how variables related to the immediate situation could impact the decision to use force by the police. Bolger's (2015) meta-analyses of 19 articles concluded that five situational variables have been shown to increase the likelihood to use physical force: evidence of criminal behavior, when a suspect possesses a weapon, resisting arrest, conflict between citizens on-scene, and during the process of arrest.

Other situational variables are still under debate regarding whether they elevate the risk of UoF. One of these variables is whether the presence of additional officers increases the likelihood of UoF. Bolger's (2015) meta-analysis explains that some studies found that officers are less likely to use force when more officers are present due to feelings of added security created by the presence of other officers. On the other hand, officers may be more likely to use coercion due to the pressure created in performing their job in front of their colleagues. Lastly, some studies found that there was no relationship between the presence of other officers and the UoF by the police officer. This could be due to the idea that when there are multiple officers the nature of the call warrants more officers to be present based on the seriousness and higher risk of violence. In addition, aspects that increase the potential for harm to officers or bystanders increase the likelihood that an officer will use force to control the situation (Bolger, 2015). Some

situational variables have been found to have no influence on the officer's decision to use physical force. For example, event location did not impact use of physical force in that officers made similar decisions regardless of whether the event occurred in a private or public location (Bolger, 2015).

Moreover, in a study conducted in England it was found that police discharges are linked more strongly to the policing methods employed than to either the characteristics of the suspects or the risk to the public in the incidents (Best & Quigley, 2010). For example, Best and Quigley argue that police discharge might be based on the perception model, which more specifically looks at how officers perceive danger for themselves but also the public. Thus, this could help explain why PMI that are perceived as more dangerous and unpredictable would be more injured in police encounters.

To conclude, most of the research that has been conducted on police-involved shootings has taken place in North America and more precisely in the United States. Studies have shown that some variables can increase the likelihood of a police officer using physical force more than others. Research found that PMI and racial minorities are more likely to interact with officers and that suspects are more likely to be intoxicated. Moreover, variables such as age, gender and event location are either mixed or have no impact on the use of force. In addition, there is a paucity of research that simultaneously examines how combinations of these variables can impact the outcome of a police interaction. Further research is required to understand these events.

Chapter 3: Research Gap

While fatal police shootings have seen an increase in research attention, most of the research has been conducted in the United States, and very few studies have examined these events in Canada (Carmichael & Kent, 2014). In addition, few studies have examined characteristics associated with fatal police shootings, but rather studies have focused attention more on police UoF. Parent (2011) is one of the few studies that explored lethal UoF by police in Canada and this research was limited to examining a single province, British Columbia. The 2018 publication of the CBC dataset (Marcoux & Nicholson, 2018) on police-involved death created a unique opportunity to further explore and model police lethal UoF in Canada.

Research Purpose/Question

Two main theories were applied to assist in explaining patterns of lethal police force. First, police subculture which looks at norms and values that create toxic masculinity. In addition, police subculture can encourage officers to demonstrate masculinity/toughness and engage in aggression as part of the job, especially in the context of street justice dealing with a non-compliant person. Stigmatized attitudes towards PMI may leave officers perceiving them as dangerous, threatening, and unstable suspects. Officers can also arrive into a situation already primed for an aggressive response based on dispatch descriptions of the suspect and event. Thus, tying in with the second theory, which is called GAM. By combining police subculture and stigma directed towards PMI with GAM theory, it can be understood that the beliefs and values an officer imported to the scene can influence the outcome of the event. GAM may help explain how officers react to perceived threats or dangerous situations. GAM suggests that human aggression is based on beliefs and attitudes, as well as how the situation is perceived. If one is expecting aggression, aggressive behaviour is likely to follow creating a cycle of escalating

threat cues for both the suspect and officer (Allen, Anderson, & Bushman, 2018). For, example, officers who perceive PMI or the situation they are in as unpredictable, dangerous and uncontrollable they may be more likely to use their firearm, which then creates a cycle of arousal from both the suspect and the officer because of the biological, personal and situational factors that can then increase arousal even more and lead to aggressive reactions. In addition, if the weapon being used is not concealed, officers may be more likely to use force from the moment of dispatch because they know the suspect is armed before entering the scene. Thus, bringing together GAM theory with police subculture and stigma towards PMI may illuminate fatal interactions between police and PMI.

Study Purpose. The purpose of the present study was to identify different patterns of victim and situational variables associated with police use of lethal firearm force in Canada. The study focused on police-involved shootings was because death by police firearms are more prevalent than deaths resulting from police use of restraints, intermediate weapons and physical force. Further it was theorized that the circumstances and decision-making around using lethal firearm force is substantively different than other forms of force, and thus the examination was restricted to firearm fatalities. To this end, a subset of the CBC database (Marcoux & Nicholson, 2018) was used as a guide to gather, recode and add variables between January 1st, 2006 and December 31st, 2015. The goal of the study was to describe common victim and situational variables that occur in lethal police involved shootings, as well as identify victim and situational variables that predict group membership of victims with or without a history of mental illness and see if there was any differences between the groups.

Hypotheses. Based on theory and reviewed literature it was believed that certain victim demographic and situational variables would be more common in police involved firearm

fatalities. Specifically, it was hypothesized that a history of mental illness, male gender, racial minority status and presence of non-firearm weapons would feature prominently in police involved firearm fatalities across the nation. A key hypothesis was that PMI would be overrepresented in the sample due to effects of prejudice and officers' perceptions of threat and dangerousness attributed to this population. Given that the study focused on victims with mental illness, it was further hypothesized that variables predicting group membership would be identified for victims with a history of mental illness relative to those without a history of mental illness. In particular, it was believed that PMI would be found to possess less lethal weapons in their interaction with officers compared to non-PMI, again owing to officers' negative perceptions of PMI as threatening, dangerous and uncontrollable. It was believed that the reason of dispatch for PMI or non-PMI would differ between groups whereby PMI would be identified prior to police arrival. It was also believed that PMI would be more likely to give a verbal request to be killed by police or demonstrate suicide-related behaviours during the encounter compared to non-PMI.

Moreover, it was believed that positive toxicology reports would be significantly more present for PMI given demonstrated prevalence of comorbid substance abuse. Situational variables such as presence of bystanders, injured officer, other victims, use of other physical force by police, confined spaces and location type would not differ between groups due to the hypothesis that these safety factors independently increase the likelihood that officers might elect to use lethal force to protect themselves and the public from imminent risk of harm. All of these variables can theoretically increase arousal during a situation and contribute to more aggressive responses. Thus, some of these hypotheses could be explained by prejudicial perceptions and lack of training police officers have with PMI, leading police officers to feel in more danger than

with non-PMI. Indeed, variables such as weapon type, ethnicity, intoxication, more serious incident type and suicide-related behaviours might be perceived as more threatening and more dangerous by officers when occurring with a PMI. These variables taken together with a subject with a mental illness may account for an increase of arousal and the aggressive action by officers taken to control the situation including, ultimately, the use of lethal force.

Chapter 4: Methods

Cases

This study analyzed police-involved shootings in Canada between January 1st, 2006 and December 31st, 2015. In this study, cases were drawn from Marcoux and Nicholson (2018) news report data. Of the 461 cases available in Marcoux and Nicholson (2018) news report data, 200 were identified as police-involved firearm fatalities and were included in the analysis. Cases were cross-referenced with coroner's reports, SIU reports, independent investigator reports and other media sources in each province and territory to increase the reliability of the sample. Among the 200 cases of police-involved shootings identified, one case was excluded because the police bullet ricocheted off an object and struck a bystander. Moreover, the province of New Brunswick (3) did not provide requested SIU/Coroner reports to allow validation of the Marcoux and Nicholson (2018) data. Thus, incidents in New Brunswick had more missing variables and could not be validated. In addition, supplementary information about 14 coroners' reports were not accessible due to different reasons. For example, some cases were still under investigation and were not yet made public, including 6 cases from Saskatchewan, 3 from British Columbia, 2 from Alberta, 1 from Nova Scotia, 1 from Nunavut and 1 from Ontario. All 199 cases that were included in the study were taken from Marcoux and Nicholson (2018) dataset.

Coding

23 variables were gathered, verified and recoded using the Marcoux and Nicholson (2018) dataset, SIU reports, coroner reports, independent investigator reports and other media sources (see Appendix B for full descriptions of all variables).

Shooting Victim Characteristics. Five variables were considered as victim characteristics including ethnicity, gender, age, history of mental health problems, and history of substance abuse.

Situational Characteristics. Eighteen variables that explained the development of the event were considered during this analysis: incident type at dispatch, presence and type of weapon, police deployment of other physical UoF options, presence of other officers, presence of bystanders, presence of other victims, province, city/town, location of event (e.g., public, residence, vehicle, other), event took place in a confined space, presence of injured officer, year of death, day of the week of incident, distance from officer at the time of the shooting, victim's verbal request to be killed, verbal threat towards officer, positive toxicology for substances including alcohol, and suicide-related behaviors during the encounter.

Procedure

Identified cases were gathered and sorted according to year of death and data provided by the CBC was entered into a spread sheet. Coroners reports, SIU reports, independent investigator reports, and other media sources were accessed, reviewed to cross-reference each variable, and to gather additional variable information for each of the 199 cases. A comprehensive search of Coroners reports, and SIU reports revealed no additional cases involving police-involved firearm fatalities not already identified in the CBC dataset. For each province that did not have direct online access to their reports, that province's coroners division was emailed to inquire if they would send the required documents For example, Ontario, Alberta, Manitoba, Nunavut, Newfoundland, British Columbia, Saskatchewan and Northwest Territories provided most of their reports online while Quebec, New Brunswick and Nova Scotia requested that I email the

coroner's office and indicate which cases were needed so that they could be sent directly through email.

Analytic Plan

Once all variables were gathered for each case, a descriptive analysis was conducted. The analyses revealed the frequency of particular victim and event characteristics and distinguished which variables were most common in a police-involved shooting in Canada. Next, a series of chi-square analyses were conducted. This analysis examined the relationship between selected independent variables and victim's mental illness status to gain insight into potential group differences.

Finally, a logistic regression analysis was used to estimate predictors of fatal police-involved shootings involving victims with and without a mental illness. A logistic regression: "allows one to predict a discrete outcome such as group membership from a set of variables that may be continuous, discrete, dichotomous or a mix" (Tabachnick & Fidell, 2007, p. 437). Thus, the logistic regression analysis addresses a key research question by predicting group membership based on the variables modeled. Specifically, logistic regression analysis estimates whether there are different predictor variables among lethal police shootings that involve a person with a history of mental illness relative to a subject without such a history.

Chapter 5: Results

Descriptive Analysis

Shooting Victim Characteristics. The variables included in the descriptive analysis for shooting victim characteristics were gender, age, ethnicity and history of substance abuse (see Table 1). The sample consisted of N =199 cases and of these 50.75% (n = 101) had a history of mental illness and 49.25% (n = 98) did not have evidence of mental illness. The vast majority of victims were male (n = 194, 97.5%). The average age was 37.26 years (SD = 12.05). For both age (t = -1.126, p = .262) and gender (t = -0.417, p = .677) there was no significant differences between non-PMI and PMI. It appeared that PMI were overrepresented in police-involved shootings between 2006 and 2015 in Canada. In 2012, a total of 2.8 million (10.1%) Canadians aged 15 and older reported symptoms of one or more of the following mental or substance use disorders: major depressive episode, bipolar disorder, generalized anxiety disorder, and substance dependence (Pearson, Janz & Ali, 2013). In addition, it was found that 1 in 3 Canadians suffer from a mental illness in their lifetime (Pearson et al., 2013). However, PMI compromise victims of half of the police-involved shootings in Canada between 2006 and 2015. Moreover, PMI make up just 5% of police calls for service (Livingston, 2016). The descriptive analysis also showed that racial minorities were overrepresented in police-involved shootings in Canada and that Caucasians made up 50.8% (n = 101) of victims and racial minorities made up the other 49.2% (n = 98) of cases. While racialized minorities compromised half of the sample of police-involved fatal shootings in Canada between 2006-2015, only 19.1 % of the total Canadian population identified as a visible minority in 2011 (Statistics Canada, 2011).

Table 1

Victim Characteristics

Characteristics	*n*	%
Gender		
Male	194	97.5
Female	5	2.5
Ethnicity		
Arab	2	1.0
Black	24	12.1
Caucasian	101	50.8
Indigenous	29	14.6
Latin American	1	0.5
South Asian	5	2.5
Other	8	4.0
Missing	29	14.6
Age		
0-19	11	5.5
20-29	51	25.6
30-39	50	25.1
40-49	57	28.6
50-59	24	12.1
60+	6	3.0
History of Mental Illness		
Yes	101	50.8
No	98	49.3
History of Substance Abuse		
Yes	78	39.2
No	121	60.8

Situational Characteristics. The variables in the descriptive analysis for event characteristics included year and day of death, province, incident type, use of other physical force by police, other victims, confined space, injured officer, weapon type, location, distance from officer at the time of shooting, presence of bystanders, intoxication, verbal threat to the officer, verbal request to be killed and suicidal behaviours.

It was found that most incidents occurred in 2015 with 14.1% (*n* = 28) of police-involved shootings and the lowest number of incidents was in 2006 with 6% (*n* = 12) of police-involved shootings and that on average 19.9 fatal police shootings occurred per year in Canada. The descriptive analysis revealed that there was an increase in fatal police shootings in Canada over the years. In order to determine if the increase could be accounted for by population growth, a ratio was calculated between the number of actual criminal incidents per year (per 100,000 population) in Canada and the number of police-involved shootings per year. This baseline data of national criminal incidents was obtained from Statistics Canada (2019). The number of police-involved fatal shootings in Canada per year was divided by the number of criminal incidents per year (per 100,000 population). Incidents per year looked at how many incidents were reported across Canada per 100,000 population. An examination of the line graph showed an increase of police-involved shootings per year (see Figure 1). In addition, Figure 1 also shows police-involved firearm fatalities over time for victims without mental illness (see Table 2). It can be observed that there is an increase in these incidents overall, as well as among both groups. However, it can be seen that in 2006 have fewer incidents relative to the non-PMI group, but in 2015 both PMI and non-PMI are at their peak, and both groups are similar in rates of incidence. Between 2011 and 2013, there also appears to be a drastic decrease in incidents for non-PMI victims, followed by an increase in incidents from 2013 to 2015. This pattern of growth is different for PMI, who steadily increased in involvement in fatal police shootings over this period of time.

Graph 1: Fatal Police-Involved Shootings per Year in Canada Accounting for Population Growth

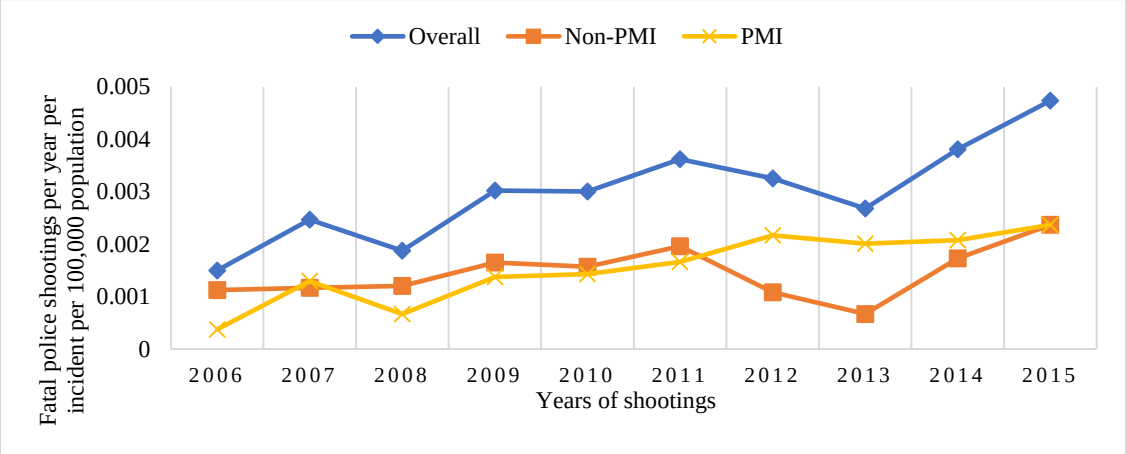

Table 2

Fatal Police Shootings per Year and Incident Rate per Year per 100,000 Population in Canada

Year	PMI	Non-PMI	Total	Police Incidents in Canada (per 100,000 population)
2006	3	9	12	8,003.83
2007	10	9	19	7,707.17
2008	5	9	14	7,474.76
2009	10	12	22	7,281.47
2010	10	11	21	6,996.36
2011	11	13	24	6,627.06
2012	14	7	21	6,458.77
2013	12	4	16	5,970.51
2014	12	10	22	5,777.13
2015	14	14	28	5,912.73

The overall descriptive analysis for situational characteristics showed that the highest incidence of fatal police shootings occurred on Saturday (19.1%, *n* = 38) and the lowest was on Tuesday (7.5%, *n* = 15). Among the provinces, it was also found that most of the fatal shootings occurred in Ontario (34.2%, *n* = 68), followed by Quebec (19.1%, *n* = 38) and British Columbia

(18.6%, *n* = 37). The most common incident type at dispatch was suspicious/wanted person (39.2%, *n* = 78) and in most cases the officer did not report using any other type of physical force (70.9%, *n* = 141). During the incident with respect to weapons, it was found that most victims were armed (89%, *n* = 199). Sharp weapons were used most frequently by victims (43.2%, *n* = 86), and firearms/replicas were the second most common (33.2%, *n* = 66). The main locations of these events were in private residences (39.2%, *n* = 78) and outdoor public spaces (35.2%, *n* =70; see Table 3).

Additional situational characteristics were explored. The main findings were that in 80.4% (*n* = 160) of cases no other victim was involved in the encounter; very few incidents occurred in confined spaces (82.9%, *n* = 165 not confined), officers were not injured in the vast majority of cases (82.5%, *n* = 165), bystanders were present in one third of cases (37.2%, *n* =74) and that a quarter (25.1%, *n* = 50) of the shootings occurred at close proximity (i.e., 0-3 meters). In half of the cases (51.8%, *n* = 103) the suspect was intoxicated and, in most cases, (83.9%, *n* = 167) the victim did not make a verbal threat towards the officers. Finally, in the vast majority of cases (81.4% (*n* = 162) there was no verbal request to be killed, and suicide-related behaviors occurred in 19.6% (*n* = 39) of the cases.

Table 3

Situational Characteristics

Characteristics	*n*	%
Year of Death		
2006	12	6
2007	19	9.5
2009	22	11.1
2010	21	10.6
2011	24	12.1
2012	21	10.6
2013	16	8
2014	22	11.1
2015	28	14.1
Day of the Week		
Monday	29	14.6
Tuesday	15	7.5
Wednesday	36	18.1
Thursday	20	10.1
Friday	36	18.1
Saturday	38	19.1
Sunday	25	12.6
Province		
Alberta	33	16.6
New Brunswick	3	1.5
Nova Scotia	1	0.5
North West Territory	1	0.5
Saskatchewan	7	3.5
British Columbia	37	18.6
Manitoba	9	4.5
Newfoundland	1	0.5
Nunavut	1	0.5
Ontario	68	34.2
Quebec	38	19.1
Weapon Type		
None/Unreported	21	10.6
Firearms/Replicas	66	33.2
Sharp Weapons	86	43.2
Vehicle	14	7
Other	12	6

Characteristics	*n*	%
Location of Event		
Outdoor Public	70	35.2
Residence	78	39.2
Vehicle	31	15.6
Other	9	4.5
Missing	11	5.5
Incident Type at Dispatch		
Disturbance/Distressed Person	39	19.6
Domestic	39	19.6
Other	6	3
Suspicious/Wanted Person	78	39.2
Theft/Property Crime	15	7.5
Traffic Stop	22	11.1
Other Physical Force Used		
None	141	70.9
Baton	2	1
OC Spray	6	3
CEW	12	6
Other	19	9.5
Missing	19	9.5
Other Victims		
Yes	26	13.1
No	160	80.4
Missing	13	6.5
Confined Space		
Yes	12	6
No	165	82.9
Missing	22	11.1
Injured Officer		
Yes	22	11.1
No	165	82.5
Missing	12	6
Presence of Bystanders		
Yes	74	37.2
No	109	54.8
Missing	16	8
Distance from Officer		
0- 3M	50	25.1
4-7 M	13	6.5
8-15M	11	5.5

Characteristics	*n*	%
15 or greater	5	2.5
Missing	120	60.4
Positive Toxicology		
Yes	68	34.2
No	103	51.8
Missing	28	14.1
Verbal Threat Against Officer		
Yes	15	7.5
No	165	82.9
Missing	19	9.5
Verbal Request to be Killed		
Yes	20	10.1
No	161	80.9
Missing	18	9
Suicide-Related Behaviors		
Yes	39	19.6
No	142	71.4
Missing	18	9

Differences between Suspects With and Without Mental Illness: Chi-Square Analysis

A series of Chi-square analyses were conducted to examine group differences based on the mental health status of the suspect with respect to suspect and situational characteristics related to their fatal shooting by police. A chi-square analysis was conducted for weapon type, number of officers present, distance from officer, other use of physical force by the officers, ethnicity, location of the event, incident type, suicide-related behaviors, presence of bystanders, other victims, confined space, injured officer, verbal request to be killed, verbal threat, intoxication, history of substance abuse, gender, province and day of the week (see Table 4).

In this analysis, five variables were found to have significant differences between groups, whereas the remainder were found to be similar for both PMI and non-PMI. Type of weapon was found to have significant difference between both groups [χ^2 (3, n = 199) = 22.543, p = .001]. indicating that people with mental illness tended to possess and use different types of weapons

resulting in a fatal police-involved shooting compared to people without mental illness. Frequency analysis indicated that PMI were more likely to use sharp weapons whereas victims without a history of mental disorder used firearms. Significant group differences were also found for incident type at dispatch [χ^2 (3, n = 199) = 16.30, p = .001], indicating that information officers received from dispatch regarding the type of incident they were responding to differed markedly for people with mental illness compared to those without a disorder. Specifically, PMI calls were more likely to be dispatched as disturbance and distressed person, whereas calls involving a non-PMI were dispatched as suspicious and wanted person. Ethnicity was also found to be significantly different across groups [χ^2 (3, n = 199) = 6.175, p =.013], suggesting that each group was compromised of differing ethnic backgrounds. Frequency analysis revealed that victims with histories of mental illness were more likely Caucasians, in contrast, those without a disorder where more commonly a racial minority. Both the presence of suicide-related behaviours [χ^2 (1, n = 188) = 13.961, p =.001] and verbal request to be killed (χ^2 (1, n = 182) = 6.961, p =.008) were significantly different across groups such that PMI were more likely to show suicidal related behaviours and more likely to make a verbal request to be killed and non PMI were less likely to do both. In addition, each of the five variables met the criteria for the Bonferroni family wise test. For the subject variables the adjusted p-value for the Bonferroni family wise test was .017 (.05/3; ethnicity) and for the situational variables the adjusted p-value was .0033 (.05/15; weapon type, incident type, SRB, verbal request to be killed). Finally, incidence of fatal police-involved shootings was found to differ across provinces: (χ^2 (1, n = 199) = 18.866 p =.042), whereby these incidents were more common in Ontario, however, when correcting with a Bonferroni family wise-error test province did not meet the criteria (0.05/15 = .0033).

Table 4

Differences between Suspects With and Without Mental Illness: Chi-Square Analysis

Characteristics	*n*	X^2 value	*df*	*p*
Gender	199	0.175	1	0.68
Ethnicity	170	6.175	1	0.01*
Substance abuse	199	0.982	1	0.32
Weapon Type	199	22.543	3	0.001*
Incident type at dispatch	199	16.300	3	0.001*
Number of officers	142	2.248	2	0.33
Distance from officers	80	0.161	1	0.69
Other physical UoF	181	5.285	4	0.26
Location of event	188	0.030	1	0.86
Suicidal related behaviours	181	13.961	1	0.001*
Presence of bystanders	184	1.303	1	0.25
Other victim	187	0.112	1	0.74
Confined space	178	0.041	1	0.84
Verbal request to be killed	182	6.961	1	0.008*
Verbal threat	181	0.222	1	0.64
Intoxication	172	0.519	1	0.47
Province	199	18.866	10	0.04
Day	199	1.794	6	0.94

Hierarchical Logistic Regression

The final analysis that was conducted was a hierarchical logistic regression. This analysis was conducted to determine if group membership could be predicted based on specific victim characteristics and situational case variables. This analysis is powerful because it considers the effect of multiple explanatory variables at the same time. The first step in running a hierarchical logistic regression is confirming that the sample met all three assumptions. These assumptions were linearity of logistic, independence of error and multicollinearity. First, linearity of logistic looks at the relationship between all pairs of predictors within each group and each must be linear (Mertler & Vannatta, 2005). The first assumption is met because a logistic regression transforms categorical variables so there can be linearity. The assumption of, independence of

error is concerned with whether any of the cases or variables are related. This assumption was achieved by confirming that all of the cases occurred separately from one another and were not directly related, other then the same police service. Finally, multicollinearity addresses whether there are any variables that are highly correlated with one another. This assumption must be met because logistic regression is sensitive to high correlations among predictor variables (Mertler & Vannatta, 2005). Multicollinearity was not indicated given that all calculated variance inflation factors (VIF; 1.009- 1.200) were below the recommended cut off of 3. VIF is used to see if multicollinearity exist and is important to check because logistic regressions are sensitive to high correlations among predicting variables (Mertler & Vannatta, 2005). Because all three assumptions were met, the hierarchical logistic regression was conducted.

A combination of theory and data driven findings were used to select predictor variables for inclusion in the hierarchical logistic regression model. Many of the variables supported by significant group differences in the chi-square analysis were included in the model: specifically weapon severity, incident type at dispatch, ethnicity, and suicide- related behaviors. All of these factors can arguably increase an officer's physiological arousal during the encounter due to beliefs or provocation, subsequently elevating the likelihood of an aggressive response according to GAM theory. Notably, verbal request to be killed were not included in this model. While significant in the chi square analyses verbal request to be killed was not entered because of its similarity to suicide- related behaviors. For this analysis, ethnicity was recoded from six groups to two groups (e.g., Caucasian, racial minority) and weapon type was recoded from five groups to four groups (e.g., weapon of opportunity, firearms/replicas, vehicle and no weapons). Thus, other and sharp weapons were recoded into weapon of opportunity. Intoxication was also

included in the model due to its high association with crime/violence and known comorbidity between mental illness and substance use issues (Bolger, 2015).

Two blocks were entered into the model of estimation. The first block consisted of victim characteristics (ethnicity). Block two comprised situation characteristics (suicide-related behaviours, weapon type, intoxication, and incident type at dispatch). Out of the 199 cases, 100 (80 PMI, 60 non-PMI) were included in this analysis due to listwise missing data. In the initial model 58% of the membership was predicted. Block 1 was found to be significant (χ^2 (1, n = 100) = 6.008 p =.014) and the model fit was acceptable (-2-log likelihood = 188.516, Nagelkerke R^2 at .055). This result indicated that ethnicity reliably distinguished between PMI and non-PMI in fatal police shootings in Canada. With the inclusion of Block 1, correct classification of group membership rose 3.5% (61.5% correct classification)

An examination of Block two revealed statistically significant model (χ^2 (8, n = 100) = 33.273, p =.001), suggesting that the predictors, as a set, reliably distinguished between PMI and non-PMI in fatal police shootings in Canada. With the inclusion of Block 2, the model correctly classified 74.1% of group membership between non-PMI and PMI in fatal police shootings in Canada, an increase of 12.6% from Block 1. Fit indices improved with the second block (-2 Log likelihood decreased to 155.244, and Nagelkerke R^2 increased to .323) suggesting a statistically significant improvement in the model with the addition of four variables [suicidal related behaviours, weapon type, intoxication and incident type at dispatch]. Examining individual predictors, ethnicity (OR = 3.335, p = .004), suicide-related behaviours (OR = 3.342, p = .031) and weapon of opportunity (OR = 29.283, p = .004) were found to be significant predictors of a fatal police-involved shooting involving a person with mental illness. In addition, presence of a firearm/replica (OR = 8.686, p = .064) was a marginally significant predictor of an

incident involving a PMI. However, both intoxication (*OR* = .589, *p* = .196) and incident type at dispatch were not significant predictors of a police-involved firearm fatality involving a PMI.

Table 5.

Regression coefficients for HLR: PMI vs. Non-PMI

Variables	*B*	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio Lower	Upper	*p*
Block 1						
Caucasian vs. Racial Minority	0.852	5.909	2.344	1.179	4.657	0.015*
(Constant)	-0.176	0.437	0.839	-	-	0.508
Block 2						
Caucasian vs. Racial Minority	1.205	8.183	3.335	1.461	7.612	0.004*
Not Intoxicated vs. Intoxicated	0.529	1.676	0.589	0.265	1.312	0.196
No Suicidal Related Behaviours vs. SRB	1.207	4.656	3.342	1.117	10.000	0.031*
Incident Type	-	2.617	-	-	-	0.455
Disturbance/Distressed Person vs. Domestic	0.819	1.181	2.268	0.518	9.934	0.277
Disturbance/Distressed Person vs. Wanted Person/Theft	-0.126	0.030	0.881	0.211	3.683	0.863
Disturbance/Distressed vs. Other Crime	-0.005	0.000	0.995	0.285	3.478	0.994
Weapon Type	-	13.579	-	-	-	0.004
Weapon of Opportunity vs. Firearm/Replica	3.377	8.171	29.283	2.891	296.653	0.004*
Weapon of Opportunity vs. Vehicle	2.162	3.423	8.686	0.880	85.756	0.064
Weapon of Opportunity vs. No Weapons	1.910	1.781	6.752	0.409	111.564	0.182
(Constant)	-3.226	5.801	0.400	-	-	0.016

Chapter 6: Discussion

The purpose of this study was to describe common subject and victim variables that occur in lethal police involved shootings, as well as identify victim and situational variables that predict group membership of victims with or without a history of mental illness and see if there are any group differences. Given that this research was one of the first studies to empirically examine police-involved firearm fatalities on a national level, an important contribution of this study is the identification of demographic patterns among these cases. Main findings concerning the pattern of police-involved firearm fatalities in Canada were that victims comprised predominantly Caucasian males in their mid-thirties, with no history of substance use disorders and a likelihood of having a history of mental illness. However, it was found that PMI and minorities were overrepresented. These findings are consistent with Carmichael & Kent (2014) and Correll et. al., (2007) findings which showed that racial minorities were more likely to have force used on them, and the type of force used could be explained by the phenomenon know as "shooter bias" (Correll, Park, Judd, &Wittenbrink, 2002; and Kahn & McMahon, 2015).

In terms of situational patterns, the vast majority of cases involved an armed victim, typically possessing sharp weapons or firearms and found to be in extremely close proximity to the officer who discharged their firearm (0-3 meters). It was also found that most of the incidents occurred in a residence with no bystanders around and no injured officers or other victims. In addition, it was found that most of the victims were not intoxicated, did not show any suicidal related behaviours and did not make any verbal threats. It was also found that officers were not in a confined space and rarely used any other type of UoF. Finally, it was found that most of the fatal police shootings occurred in 2015 and most of them occurred in Ontario and in Quebec.

Importantly, it was found that PMI were also overrepresented in interactions with police, and it was found that overall there was an increase in fatal police shootings over the years, however, there was a greater increase over the years of PMI fatal police shootings compared to non-PMI. 50.75 % of the sample had a history of mental illness compared to 5 % of calls for police service involving a PMI (Livingston, 2016). The results from this study show an increase from what Cotton and Coleman (2010) found which was that between 1992 and 2002 only 11 events policed involved death occurred that involved a PMI. This higher prevalence of police-involved fatalities involving PMI needs to be explained through further analysis. Certainly, there have been mixed reports of a higher base rate of police interactions with PMI (Engel & Silver, 2001) due to factors such as a lack of access to treatment, substance use, treatment non-adherence, homelessness, poverty and more precisely deinstitutionalization (Livingston et al., 2014). Yet, research indicates that the presence of serious mental illness only elevates risk of violent behaviour by only a small effect size (Engel & Silver, 2001; Livingston et al., 2014). Some suggest that higher incidence of crime/violence among the PMI population can be explained by other associated factors such as substance use (Parent, 2011). It is possible that factors that are directly or indirectly linked to mental illness contribute to police decisions to fatally shoot an individual, as opposed to the presence of mental illness directly. The present study assisted in disentangling some of these associated factors.

Indeed, this research was dedicated to understanding the role of victim's mental illness status in police-involved firearm fatalities in Canada. Chi-square analysis revealed that type of weapon, incident type at dispatch, ethnicity, suicidal related behaviours and verbal request to be killed differentiated between PMI and non-PMI. Both type of weapon and incident type could relate to GAM and police subculture. GAM can help explain how officers react to the perceived threats or

dangerous situations. GAM suggests that human aggression is based on beliefs and attitudes, as well as how the situation is perceived. Thus, if dispatch relates that the suspect is distressed and unstable this could create a biased belief before even arriving and could increase officer arousal even before they start interacting with the suspect. The negative attitudes that officers may have towards PMI may leave officers perceiving PMI as dangerous, threatening, and unpredictable suspects. Then, if the officer is expecting aggression, aggressive behaviour by the suspect is likely to follow creating a cycle of escalating threat cues for both the suspect and officer (Allen, Anderson, & Bushman, 2018). If the suspect is armed, this represents additional threat cues for the officer. Once the officer unholsters their gun in response, this escalation then can increase arousal for the suspect leading to an even more aggressive situation. For example, officers who perceive PMI or the situation as unpredictable, dangerous or uncontrollable may be more likely to use force, which then creates a cycle of arousal from both the suspect and the officer because of the biological, personal and situational factors that can then increase arousal even more and lead to aggressive reactions. Arousal could be explained by the personal factors, which, could lead to a lethal outcome. In addition, a verbal threat or even specific movements related to suicidal behaviours could be seen as a type of provocation by the officer, which increases the likelihood of an aggressive action in response.

Overall the main hypothesis for the study was that identifiable variables would be associated with group membership for PMI and non-PMI. Based on the hierarchical logistic regression model, it was found that an identifiable constellation of variables predicted group membership (PMI versus non-PMI) at a 74.1% accuracy rate. It was hypothesized that PMI would be more likely to have more arousing/threatening individual and situational factors present in these cases. For example, PMI were more likely to use a weapon of opportunity (e.g., sharp weapons and

swinging objects) at their disposal as opposed to a firearm and were more likely to have been dispatched over the radio as a distressed person. The object being used in these situations can also be perceived as a weapon by the officers because officers are hyper-focused on a subject's hands given their police training. However, the suspect might not understand it as a weapon to be used against an officer. Once the officer's gun is unholstered and pointed at them, the PMI is likely to become threatened and the perception of the object in their hands might change to be used as a weapon. In addition, a difference between PMI and non-PMI could be the lack of concealment of weapons possessed by PMI, which would create more arousal for the officer's priming them for aggression. This relates to Bolger (2015), which found that weapons do increase the likelihood of officers using physical force.

In addition, the hypotheses concerning verbal request to be killed and suicide-related behaviours was found to be a significant, thus supporting the hypotheses that PMI would be more likely to display suicidal related behaviours and make verbal requests to be killed. Suicide-related behaviours was found to be a significant predictor of mental health status in the hierarchical logistic regression analysis. However, while significant in chi-square analysis, the reason of dispatch was not found to be predictive of mental health status when entered into the model. Non-PMI were mostly found to be related to incidents of wanted person and PMI were more likely to be dispatched as a distressed person. This could support the idea that the way the incident is communicated to the officer plays a major role in creating arousal or a bias before arriving on scene. Verbal threat and intoxication were not found to be a significant predictor between groups, which is inconsistent with Bolger (2015) who found that suspects who appeared to be intoxicated were at 1.3 times more likely to receive forceful treatment from police officers. Finally, specific event characteristic variables such as presence of bystanders, injured officer,

other victim, use of other physical force by police, confined spaces and location were not found to be different as hypothesized. This pattern of findings could be due to the reasoning that police officers will protect themselves, their partners and the public no matter the suspect which related to Bolger findings (2015). Bolger (2015) found that aspects that increase the potential for harm to officers or bystanders increase the likelihood that an officer will use force to control the situation. He also found that location would not impact UoF and the increase in number of officers would create more security and not create the need of UoF (Bolger, 2015).

As previously stated, PMI fatal shootings could be due to police subculture and could also be explained by the GAM theory. It can be argued that communication between police and dispatch is one of the most important factors due to the importance of priming in GAM theory. GAM suggested that arousal leading to aggression (e.g., using lethal force) is based on beliefs and attitudes and on how the situation is perceived. If the situation is perceived as dangerous to themselves or the public, officers might elect to use their firearm (Allen, Anderson, & Bushman, 2018). Thus, the way dispatch describes the situation to the officer can lead to important outcomes as the officer plans their approach to the scene and could be the difference between an aggressive interaction or not. In addition, the law allows officers to use force under reasonable grounds. Consequently, once they feel threatened with imminent harm, officers can justify the use of force or lethal force if needed to protect themselves or the public. If the dispatch communication includes threatening cues, it could lead the officers to be biased in their response even before they interact with the suspect. Prejudiced attitudes about mental health could hasten this arousal and prime officers who have adopted beliefs about dangerousness and unpredictability to be more threatened. Officers know this entering the scene because dispatch has told them that they are responding to a distressed person. Once on scene, if the officer

perceives an object as a weapon, arousal will be elevated even more. Then, if the suspect did not perceive the object as a weapon, then the suspect can also be aroused in the event. This can create a cycle of one arousing the other until the situation escalates, and the officer is forced to using lethal force. In addition, police training with PMI is crucial and could help eliminate stigma and reduce aggression based on beliefs and attitudes about PMI. Hegemonic masculinity could also explain some of the beliefs and attitudes held by officers, however, changes could be seen in the police subculture with an increase of female officers and visible minorities in the police force.

Implications: Behavioural Change Stairway Model

Potential methods to approach and manage a situation or to assist in defusing a lethal force situation are de-escalation and communication. The behavioural stairway model was developed by the Federal Bureau of Investigation (FBI) Crisis Negotiation Unit to help negotiate terms in a peaceful way. The goal of the model is to *build a relationship between the negotiator and the subject* (Vecchi, Van Hasselt & Romano, 2005). The behavioural stairway model is divided into five steps: active listening, empathy, rapport, influence and behavioral change. To progress through these stages during a crisis, the officer must follow the stages consecutively for a cumulative effect to gain influence over the subject. For example, to get to step three which is establishing a rapport one must still show active listening and empathy through the development of stage three. The resolution of the crisis can only be reached when every stage is successful and have been maintained throughout the process (Vecchi, Van Hasselt & Romano, 2005).

Stage one is the active listening phase. It is believed that most people in crisis want to be heard and understood and active listening coveys to the individual that they are being listened to. Active listening is critical to developing a relationship between two people. One example of

active listening is called paraphrasing. In this part of active listening the police officer repeats the last few words or the overall idea of what has ben conveyed to show the suspect that the officer is attentive to the situation at hand. Active listening helps create a focus on the suspect's crisis rather then on the police officer. There are numerous techniques of active listening that overlap with counselling and skills in building rapport with clients (Vecchi, Van Hasselt & Romano, 2005).

Once active listening is implemented, the next stage in the behavioural stairway model is empathy. Empathy implies that one is understanding of the other's situation, feelings and motives. In this stage, empathy is used by the negotiator to see through the person's eyes to understand the crisis and actions taken (Vecchi, Van Hasselt & Romano, 2005). When empathy is shown, a key aspect is the communication tone that the negotiator uses. A gentle tone will help the suspect perceive the meaning of what is being said to them and helps build even more on the relationship.

After empathy is introduced the next stage is rapport. Up to this stage the relationship has been based on the person in crisis. Once a rapport has been developed between both individuals, the suspect is more likely to take the time and listen to the negotiator. In the fourth stage, influence, the relationship between the two actors is now built and the person in crisis is more willing to listen and accept the suggestions that are given to them by the negotiator. In this stage they try to find a solution that is nonviolent and realistic for both parties. The last stage is behavioural change, and this can only happen when all four previous stages have been successfully completed. Empathy will most likely occur if the negotiator avoids moving rapidly through stages and omitting stages (Vecchi, Van Hasselt & Romano, 2005). Thus, behavioural change is when the suspect's behaviour has been deescalated and the officer is able to influence

the person to comply with direction to manage and control the crisis (Vecchi, Van Hasselt & Romano, 2005).

To conclude, the behavioural stairway model creates a relationship between the negotiator and the suspect, and this would be highly rewarding for police officers to use. “The Behavioral Change Stairway Model (BCSM), developed by the FBI’s Crisis Negotiation Unit outlines the relationship-building process involving the negotiator and the subject which culminates in a peaceful settlement of the critical incident” (Vecchi et al., 2005, p. 541). If this model is used when interacting with someone in crisis then the priming of cues for aggression could be avoided leading to a non-lethal incident. To accomplish this, a change in training and police practices is needed because in general police officers are taught to act quickly and take control of the situation. However, this model requires that officers slow down and use active listening to build a rapport with the suspect. Vecchi and colleagues state: “[a]ctive listening attends to this need and is critical for developing the relationship that will ultimately lead to behavioral change and crisis resolution” (p. 541). Slowing down the encounter can lead the officers towards a more controllable situation, can avoid escalations that might compel UoF, and allows space for active listening. Notably, this model is limited use if police officers cannot build empathy for PMI. Vecchi and colleagues (2005) suggest that: “[e]mpathy is a natural by-product of effective active listening. It implies an identification with, and understanding of, another’s situation, feelings and motive” (p. 541). If officers cannot relate to PMI or see similarities between themselves and the person in crisis due to the influence of “othering” and stigmatizing attitudes towards mental illness, then they will not be able to create empathy. If officers cannot demonstrate empathy, the suspect will be less likely to de-escalate or engage in communication with the officer to allow rapport to be build. Officers must work to make the suspect feel that they understand and that

they are willing to help. However, stigma and misattributions regarding PMI need to be eliminated for officers to be more proficient in developing empathy. Stigma can be reduced with the help of proper training concerning accurate knowledge about mental illness and exposure to people with lived experience sharing their personal story with officers to build understanding and sensitivity. Thus, without empathy officers will be restricted in their ability to build a rapport with their suspects, which ultimately reduced their ability to negotiate a peaceful outcome according to the BIS model.

Limitations

The main limitation of this study concerns methodological limitations. Some variables operationalized based on Marcoux and Nicholson (2018) dataset were retained and some of the variables were recoded into more precise coding (see Appendix B). However, not all jurisdictions made their documents public, which made it difficult to find specific variables like intoxication and distance from officer (e.g., New Brunswick). In addition, some provinces did not have independent investigators (Quebec) until only very recently (Marcoux and Nicholson, 2018). This is due to each province following a different investigation process and having different ways of reporting information. One way to help researchers would be to have a national reporting mechanism, instead of having reports that differ from province to province. This would help eliminate some of the missing variables and simplify coding. If every province would have a guideline, more accurate information would be gathered from province to province, which would then help not only understand fatal police shootings, but also help reduce them. Another option which is more realistic would be to have a more in-depth analysis of each case. In addition, while every effort was made to capture all incidents between 2006-2015, it is possible that some police-involved shootings were missed due to unclear media reporting or some of the

cases could have not been released yet due to ongoing investigation. Another limitation was the fact that older cases had more missing data, due to the way reports evolved over time and how they were kept. Not all older cases were available in pdf files for the public making it harder to find all the information and different types of information recorded; however, this can be addressed by increasing the range of the data set and instead of looking at only 10 years we could look at more years of police-involved shootings in Canada.

Finally, another limitation was the limited way in which variables were operationalized given the available data. The two main variables that had a limitation were history of mental illness and history of substance abuse. This study utilized definitions from Marcoux and Nicholson's (2018) data set, which based the coding of these variables on interviews and there was no direct access to the victim's files or family interviews. Thus, this study needed to base its definitions on what Marcoux and Nicholson's (2018) dataset found and if no sufficient evidence was shown of a mental illness then victims were coded as not having a mental illness, which can be problematic if indeed the victim had a mental illness that was not documented.

Future Research

Due to the lack of research on fatal shootings in Canada, more research in this area is needed because fatal police shootings have increased and more specifically have increased at a higher rate for PMI. This phenomenon needs to be understood if we want this number to drop and this can only be done if research on fatal police shootings is done. The first step to this is to have better access to reliable data. From there a lot of different research can be conducted. Some research could concentrate on different victim or situational characteristics or create different models or groups of variables. Research could concentrate on getting access to events where victims have survived police shootings and compared the variables between both survivors and

victims of police involved shootings. In addition, given the support for GAM related variables, continued research concentrating on exploring additional variables related to arousal would be an important step. For example, temperature can lead to more aggression, thus it would be important to study if more fatal police shootings occurred in the summer or even on the hotter days (Allen et al., 2018). Another example of GAM would be studying environmental modifiers like difficult life conditions and violent neighbourhoods and how they could impact fatal police shootings (Allen et al., 2018). Bolger (2015), believed that variables like criminal behavior, resisting arrest, conflict between citizens on-scene, and during the process of arrest were some of the highest predictor of UoF, thus making it important to study and would also easily be related to GAM theory. Finally, studying police beliefs and attitudes towards PMI or visible minorities could be a type of research that helps develop the understanding of fatal police involved shootings. Moreover, to concentrating on police subculture future research could explore officer's perception toward PMI and explore the effects of the behavioural stairway model on police training.

Chapter 7: Conclusion

To conclude, while fatal police shootings have seen an increase in research attention, most of the research has been conducted in the United States, and very few studies have examined these events in Canada (Carmichael & Kent, 2014). This research was conducted to contribute to the field of fatal police-involved shootings, particularly in the Canadian context. Results demonstrated that there was a rise in police fatal shootings between 2006 and 2015 and this increase was greater among PMI than non-PMI over time. Until now, there has been a paucity of research on differences in police-involved firearm fatalities based on mental health status of the victim. A key finding of this research was that based on a combination of both victim and situational variables it was found that a model based on ethnicity, weapons, incident type, intoxication and suicide-related behaviors could predict victim mental health status by 74.1%, highlighting key differences between PMI and non-PMI in fatal police-involved shootings.

This paper argued that police subculture, prejudiced attitudes regarding mental illness, together with GAM theory could explaining the prevalence of PMI involved in fatal police shootings. A fruitful future research direction in addressing police-involved shootings could be empirical validation of the behavioural stairway model, which is theorized to help officers negotiate during the events and reduce the need for force. This model could lead to a change in the police subculture and divert officers from using force by instead taking control through de-escalation and rapport building. This would be done with training that not only focuses on the UoF, but also on negotiation tactics and empathy. Thus, officers could establish an improved understanding and positive attitude towards PMI and people in mental health crisis, which may in turn contribute to a reduction in police-involved fatalities involving people with mental illness.

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Appendix A: Use of Force Model

Source: PSIS - Security Guard Study Guide Use of Force Theory. (n.d.). Retrieved from https://www.mcscs.jus.gov.on.ca/english/PSIS/BasicTesting/SecurityGuardStudyGuide UseofForceTheory/SG_use_of_force.html

Appendix B: Codebook

Variables

Gender. Gender was coded as either male (0) or female (1). In addition, if no information was given the variable was coded as missing (99). Information was drawn from the Marcoux and Nicholson (2018) dataset that was shared with us and was cross-checked using SIU reports and other documents.

Age. This numerical variable was coded using the age of the victim of police-involved shooting. 99 was used when information on age was missing or unknown. Both Marcoux and Nicholson (2018) dataset and coroner's report was used to gather this information.

Day. This variable was based on the day of the week that the event occurred: 0 = Monday, 1 =Tuesday, 2 =Wednesday, 3 =Thursday, 4 =Friday, 5 = Saturday and 6 = Sunday. This information was found using Marcoux and Nicholson (2018) dataset and was crossed checked with SIU and Coroner reports.

Year of Death. This variable was coded based on the year of death of the victim that was involved in the police shooting. This was found using Marcoux and Nicholson (2018) dataset. Not crosschecked?

Ethnicity. The variable of ethnicity was coded using the CBC dataset. The codes were 0 = Arab, 1 = Black, 2 = Caucasian, 3 = Indigenous people, 4 = Latin American, 5 = South Asian, 6 = other and 99 = missing or unknown. This variable was coded by Marcoux and Nicholson (2018) as the following "In order to assess whether certain groups in Canadian society are overrepresented in fatal interactions with police, our researchers made best efforts to assign a race or ethnicity to each victim using a collection of family statements in media reports,

interviews with friends or neighbours, pictures from social media or obituaries, and through logical inference" (Marcoux and Nicholson, 2018).

Incident Type at Dispatch. This variable captured the type of incident that were called into dispatch. This was gathered using Marcoux and Nicholson (2018) dataset and was recoded to create fewer groups. Disturbance/Distressed person = 1, 2 = domestic dispatch call, 3 = other, 4 = suspicious or wanted person, 5 = theft or property crime and 6 = traffic stop.

Location. To begin variables were coded based on where the event occurred precisely, for example, house, street, bank, etc. Data was then recoded into 4 categories; a 1 = outdoor public, 2 = residence, 3 = vehicle and 4 = other. Information for the coding of this variable was drawn from SIU reports and independent investigators reports.

Distance from Officer. This variable was coded based on a slightly modified scale that was created by Petersson, Bertilsson, Fredriksson, Magnusson and Fransson (2017). The distance of officer was coded in meters and was divided into 4 groups. 1 = 0-3 meters, 2 = 4-7 meters, 3 = 8-15 meters and 4 = greater than 15 meters. In addition, when SIU reports gave a range for the distance the number in the middle of that range was chosen.

Verbal Request to be Killed. Verbal request to be killed is a nominal variable that was coded based on the SIU reports, independent investigators and media coverage. Coding for this variable looked at if there was any verbal request to be killed by the officer during the interaction. The code 0 was given when there was clear evidence of a verbal request, for example, "Kill me" or "Shoot me". The code 1 was given when there was no evidence of any verbal request. A code of 99 was given when information was missing or not found.

Verbal Threat Towards Officer. Verbal threat towards an officer is a nominal variable that was coded based on the SIU reports, independent investigators and newspaper. Coding for this

variable included the presence or absence of any verbal threat made towards the officer during the interaction. The code 0 was given when there was no evidence pointing towards a verbal threat, for example, “I will kill you” or “I will shoot you”. The code 1 was given when there is was clear evidence of any verbal threat. Finally, a code of 99 was given when information was missing or not found.

Toxicology. Toxicology is a nominal variable and was coded with a 0 if there was no evidence of intoxication during the autopsy. Then a 1 was coded if was evidence of intoxication was found in the victim at the moment of the autopsy. The code 99 was coded if information was missing. This was coded using the coroner’s report, SIU reports for each of the events and independent investigators.

Suicide-Related Behaviors. Suicide-related behaviors was operationalized as the reported presence of the shooting victim demonstrating any form of suicide-behavior at the time of the encounter. Examples include making gestures that demonstrate suicidal intent (e.g., holding knife to throat) or saying, “I want to die.” This was coded using SIU reports and independent investigators.

History of Mental Illness. History of mental illness captured whether there was evidence that the shooting victim have a lifetime history of mental illness or mental health crisis. For the variable, 0 = no sufficient evidence of any history of mental illness, a code of 1 = sufficient evidence of a history of mental illness. Finally, a code of 99 = missing information.

Substance Abuse. This variable was coded based on Marcoux and Nicholson’s (2018) dataset which was defined as: “Indicates if the victim was known to have had a history of substance abuse at any time -- not necessarily at the time of the incident”. This variable was originally coded based on reports, and/or family statements as collected by the CBC and includes

alcohol abuse." 0 = no sufficient evidence of substance abuse and 1 = sufficient evidence of substance abuse. 99 = missing.

Presence of Weapon. The variable weapon examined whether the victim possessed a weapon during the event. This was initially coded based on the Marcoux and Nicolson's (2018) dataset and the was subsequently reduced. 0 = the victim possessed no weapons or unreported weapons, a 1 = a firearm and replicas or airguns, the code of 2 = type of sharp weapon, a 3 = a vehicle as weapon, and 4 = for any other types of weapon used during the interaction. In addition, if more then one weapon was found the most serious weapon was coded.

Deployed Other Physical UoF Options. This variable addressed if police officers used any other type of physical UoF options before using their firearm. The code 0 was used if no other type of physical use of force was used prior to the firearm, and 1 = a baton was used, 2 = pepper/OC spray was used, 3 = CEW deployment, and 4 = any other type of physical force. In addition, 99 was used for any missing data.

Presence of Other Officers. This represents a continuous numerical variable based on the amount of police officer's present at the scene. This information was reported based on the SIU reports and independent investigators reports. The number 99 was used if this information is missing.

Presence of Bystanders. This variable examined and looked at if any bystanders were present. This was coded as either yes (1), no (0) or missing (99). This was coded based on if officers described in the SIU reports and independent investigators report that they were any bystanders around and not witnesses.

Presence of Other victims. This variable captured if the shooting victim harmed any other bystanders, however, the person injured in this variable cannot be an officer. Making them victims of the event. 0 = no other victims were involved and 1 = other victims were involved.

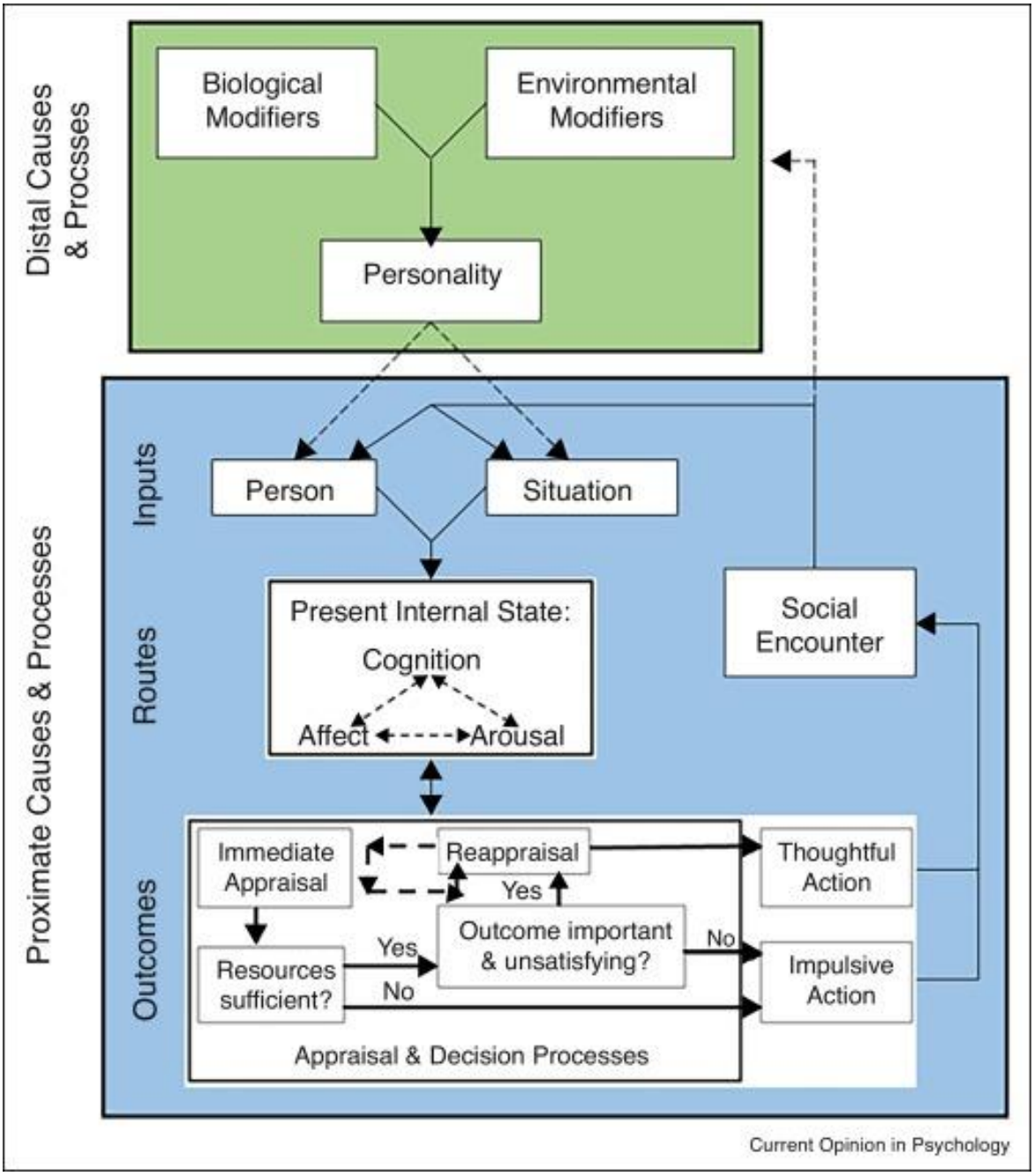
Province. This nominal variable was coded based on the province or territory the event took place in. 0 = for Alberta, 1 = Labrador, 2 = New Brunswick, 3 = Nova Scotia, 4 = North west Territories, 5 = Prince Edward Island, 6 = Saskatchewan, 7 = British Columbia, 8 = Manitoba, 9 = Newfoundland, 10 = Nunavut, 11 = Ontario, 12 = Quebec and 13 = Yukon.

City/Town. In addition, to the province, the city or town that the event took place was coded. Each town or city was coded individually on a nominal scale. This codes ranges from 1 to 118.

Confined Space. This variable looked at if officers were in a confined space when shooting occurred. Confined space was operationalized as the officers were in a space with limited ability to physically move and limited protection between them and the subject through barriers, distance or cover. 0 = if the SIU report did not describe the officers being in a confined space and a 1 = officers were described to be in a confined space. This data was gathered using SIU reports and independent investigators report.

Injured Officers. This variable captured whether any officers were injured during the event based on the SIU reports or in the independent investigators report whereby 0 = no sufficient evidence of officer injury during the interaction; 1 = evidence of officer injury. However, seriousness of injuries was not coded.

Appendix C: GAM Diagram



Source: Allen, J. J., Anderson, C. A., & Bushman, B. J. (2018). The general aggression model. *Current Opinion in Psychology, 19*,75-80.