The Mixed Methods Analysis of Police and Non-Police Shooters

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Abstract

The purpose of this mixed-methods research is to discover the common and differentiating factors between criminals who shoot at police or who shoot at others in Canada. This research collected secondary data from 52 participants. Two sample groups are the police shooters (shooters who target the police) and the general shooters (shooters who target nonpolice). Each sample group contained 26 participants from across Canada. Data was analyzed using a convergent, mixed methods approach. Both quantitative and qualitative factors were involved in the analysis. The research question of this study was, "How do characteristics vary for Canadian criminal shooters who target police compared to those who do not?" The characteristics are the identified past and present variables that may contribute to the criminal shooting. It was concluded that the police shooters and general shooters are similar, but they have some differences. There was a highly significant association between the police shooter and being arrested, there was a very significant association between the general shooter and the drug trade, and there was a marginally significant association between the police shooter and experiencing a traumatic event (in adulthood). The remaining variables discussed in this study were non-significant, but still relevant.

Keywords: Criminal shooter, firearm crime, gun violence, police shooter, firearms

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The most recent research suggests a firearm is the most common way a Canadian police officer is killed in the line of duty. Between 1961-2009, 92% of police officers killed were by firearms (Dunn, 2010). A criminal who discharges a firearm against a police officer is an immediate danger to public safety because the officer's life, and the lives of bystanders, are put at risk. The criminal shooter who targets police also can cause harmful long-term effects on police survivors. Negative long-term effects for police who experience violence includes time loss claims and police fatalities. The fatalities are due to disorders or traumatic injuries that are related to the initial incident (Cohen & Garis, 2018). This is relevant to police survivors who have been fired upon because the incident can affect their ability to continue to work in law enforcement. The consequences that the criminal shooter creates when they target police officers is concerning. This problem needs to be researched because criminals who shoot at police harm law enforcement efforts. The criminal use of firearms against the police is an important issue. This study will be comparing two types of samples. The cases in which firearms are used against police represent the police shooter sample (police shooters), and cases in which firearms are used against people who are not police represent the general shooter sample (nonpolice shooters). The general shooter sample poses an additional problem to society.

Violent firearm offences, including the discharge of a firearm with intent, have increased annually over the last six years in Canada (Moreau, 2021). The criminal discharge of a firearm is concerning because firearms can be used to aid criminals in their homicides, robberies, sexual assaults, and assaults against the public (Moreau, 2021). The contribution that the criminal use of firearms makes to homicides is of particular concern. Firearms have been the most common method of Canadian homicide annually from 2016-2020 (Statistics Canada, 2021a; Statistics

Canada, 2016). Prior to these time frames, firearms have been the most common or second most common method of homicide since 1987. This is because rates of homicide by stabbings compete with firearm homicides for the place of being the most common homicide method (Beattie et al., 2018). In addition to the prior issues that the criminal use of firearms has caused, there are also long-term effects on the crime survivors. Long-term harm of firearm-related crimes on Canadian victims may include mental health issues, substance use issues, reduced economic productivity, and health care costs (Zhang & Qin, 2012). The criminal use of firearms against the public and the police is a Canadian security concern. It has violent effects, and it negatively impacts the victims. The recent change of the increase in criminals discharging firearms have resulted in the need for a comprehensive research approach that may help improve future public safety strategies.

To date, there is very limited to no research that compares a police shooter sample (PSS) to a general shooter sample (GSS). This is because there has been minimal research about this topic, and the research that does exist has minimal relevance. A literature review first proved there is minimal research about this topic. Of the 151 potential results reviewed, 148 of the articles were not relevant to the current study and only three had minimal relevance. There is a lack of research comparing the GSS and PSS because of the lack of relevant articles to this subject field. Of the relevant articles, many were very limited in their relevance to the context of comparing the PSS to the GSS. The first article discussed police shooters in the context of the United States (Issitt, 2021). Issitt (2021), discussed two incidents of police shooters, and the factors about these shooters were identified. This research was very limited because it is only about two case studies of police shooters from the United States, they are about politically-related shootings (so not necessarily representing the typical police shooter), and no comparison

to a shooter who targeted nonpolice was done. This does not contribute to the understanding of the comparison of Canadian police shooters and Canadian general shooters. The next article is by Logan (2021), and it was in the Canadian context. This article was about a general overview of factors that predisposed someone to violence with firearms. This had some relevance to shooter profiles because it analyzed their risk factors. However, it offered very little to contribute to the current study. No comparison of the profile of the police shooter and general shooter was made, and no discussion of police shooter was conducted. The last article reviewed did mention some police shooter cases in the Canadian context. The final article reviewed was by Business Vancouver (2016) (that sources a 2015 Prince George Citizen article). It had some relevance because the profiles of Canadian police shooters were discussed. This article also has major limitations to how it contributes to the current study. It appears to be an opinion piece, and it does not compare police shooters to general shooters. All three articles established risk factors about the GSS and PSS. Overall, the risk factors of police shooters included having a criminal record, having multiple firearms bans issued by the court, access to illegal firearms, having a personal attitude of being wiling to use a firearm against a police officer (Business Vancouver, 2016), access to legal firearms, being a military veteran, the shooter being personally upset about the killings of African-Americans by police officers, and the shooter having a racist attitude towards White police officers (Issitt, 2021). In a more general overview, risk factors of shooters included having an untreated severe psychiatric disease, substance abuse, a history of violence, committing intimate partner violence, having a criminal record, having suicidal behaviour, having mental health issues, risk factors in the school environment, family environment, in the individual, and in community factors (Logan, 2021). Each of these articles had some relevance to the current study, but it was very limited.

The knowledge about the comparison of police shooters and general shooters is very limited, or not publicly in existence, based on the current literature review. The author of the current study is not aware of any study that has compared these two groups in the Canadian, or other contexts. This represents a major gap in the current academic knowledge of comparing police shooters to general shooters. However, the current study has made it possible to address these research gaps.

The purpose of this mixed-methods research is to discover the common and differentiating factors between criminals who shoot at police or who shoot at others in Canada. This research will collect secondary data and analyze it using a convergent, mixed methods approach. Both quantitative and qualitative factors will be involved in the analysis. This study will aim to achieve the purpose by studying 26 individuals from each group. A sample size of 26 individuals for each group was decided upon because a priori power analysis determined this was the sample size required to detect large differences between the groups. The factors of each shooter will be identified, then the characteristic averages of each sample group will be discovered, and then the sample groups will be compared. The comparison will reveal if there is any difference between the two samples. The appropriate research question to address this area of research is, “How do characteristics vary for Canadian criminal shooters who target police compared to those who do not?” The characteristics are the identified past and present variables that may contribute to the criminal shooting. A criminal shooter is a person who is convicted criminally of discharging a firearm at another (either a police officer or nonpolice officer). The researcher hypothesizes that criminals who target the police will have a greater chance of having a prior criminal record than those who target nonpolice persons.

Philosophical Worldview

The research was conducted with a postpositivist world view. This means that the researcher believes the data results can be tested and reviewed to make accurate conclusions. This worldview believes objective results can be produced with no major subjective interference (Creswell & Creswell, 2018). This is because statistical tests and educated-based reasoning will cause the effects of subjectivity to have such minimal effect that it will not cause a change to the overall conclusion. That is how the postpositivist view was applied in this research. An example this perspective can be given. This view recognizes that research (especially quantitative results) can explain things to make accurate conclusions. For instance, the reported number of shots can be measured to see if one group has a higher average of shots fired than the other group. However, it is acknowledged that results can never be 100% certain due to the limitations of understanding every existing variable, but it is still fair to have a high degree of certainty in objective results.

Theoretical Framework

The theoretical framework of this study includes the use of an inductive strategy, and incorporating a social science theory (Creswell & Creswell, 2018). This study will use an inductive strategy because the research strategy is designed to gather data (variables), look for patterns (such as frequencies), and a theory will be developed about the two samples (Blackstone, 2012). Additionally, the inductive strategy was used because a deductive approach would not be effective in this research context. A deductive approach is not ideal for this study because a deductive approach tests a hypothesis created on previous theories of the studied group (Blackstone, 2012). A hypothesis could not be generated as no previous theories about the populations was found in the limited prior research of this study field. There are many social

science theories that helped inform this research. These include sociological views, biological views, biosocial views, psychological theories, the moral development theory, and the social learning theory. Some examples of these theories will be given, all examples are in the context of how the factor affect crime. Sociological views focus on factors such as employment, school attachment, economic status, child maltreatment, and parental behaviour (such as drug use). Biological views focus on brain chemical interactions (such as serotonin and testosterone). Biosocial interaction views how social interactions can affect our biology, and psychological theories focus on the cognitive function (Schmalleger & Volk, 2018). Even though these social science views were considered, they were not the target variable type of collection. Any variables relevant to the offender and the offence were collected in order to minimalize a bias focus when identifying variables.

Methods

Research Design and Rational

Secondary data was collected from the Canadian Legal Information Institute (CanLII) database using the CanLII search engine (CanLII, n.d.). Using the CanLII database for research has many strengths. First, the cases of criminal shooters are easily accessible because they are published publicly, and they can be accessed through the internet. This is good for research because the cases can be collected and analyzed in a timely manner. The content of the cases in CanLII is another strength. The relevant factors of the convicted person are normally discussed by the judges and lawyers. Having the relevant factors of the convicted person makes the collection of relevant data to this study achievable because this study aims to identify variables about the criminal shooter. Furthermore, the CanLII database does not have weaknesses that an alternative research data source, such as news reporting database may have. This is because

CanLII does not publish their content in a biased manner when compared to a news database. CanLII does not choose what kinds of criminal offences they will report on because any offence will go to court, as long as the police submit the charges to crown, and crown approves of the charges. A news agency has greater discretion on what they will create reports on. A United Kingdom study found that news agency discretion can cause a bias in their database because relevant cases may not be included if they are not considered to be sensational (Gekoski, et al., 2012). CanLII was chosen because it is easy to collect data from, and the data is not published in a way that is bias like a new reporting database. Defining the terms used in this study is important to understand before the discussion of the search begins.

It is important to operationalize the terms criminal, shooting, and police officer to demonstrate the research analyzes what it claims to study. A criminal is any individual found legally guilty (also known as convicted) of a crime in Canada. A shooting is defined as the discharging (firing) of a firearm (a rifle, pistol, shotgun, or other type of firearm). This study does not define the discharging of a pellet rifle or a trades tool (such as a nail gun) as a firearm shooting. A police officer is a municipal, regional, provincial, or federal peace officer who has the duty of maintaining peace and law in the public. Provincial sheriffs, conservation officers, correction officers, and bylaw officers are not included in the definition of a police officer. In reference to the research question, criminal shooters who target people other than police, are known as “Others.” “Others,” is defined as any individual other than a police officer. The search terms used is another important part of the search methodology.

A systematic approach was used for data collection. First, the case would be collected by using the key terms in the CanLII search (later discussed), results were sorted from newest to oldest, results were sorted to attempt to reflect to population distribution of Canada as shown in

table 1A and table 2A (Appendix A). Each case was reviewed beginning with the first result, an inclusion and exclusion criteria was applied, and the review for cases would end when the population for that jurisdiction was met, or if the results were all reviewed. A “Coding Criteria Method” (later discussed) was applied to each case to detect the status of each variable.

Literature Search and Review Plan

The search terms (key words) used for each group differed slightly, but each represented the type of shooter concept accurately. The general criminal shooter sample key words included: "firearm" or "gun" or "handgun" or "pistol" or "rifle" or "shotgun" and "discharg*" or "shot" or "fired at" and "convict*" or "guilty" and "intent to cause bodily harm" or "reckless endangerment" or "intent to wound." The key words for the police shooter sample included: "shot at police" or "shooting at police" or "shot police" or "shot detective" or "shot at corporal" or "shot corporal" or "shot at constable" or "shot constable" or "shot at officer" or "shot officer" or "fired at officer" or "firing at police" or "firing at corporal" or "endangering police" or "discharg* at police" and firearm or "gun" or "handgun" or "pistol" or "rifle" or "shotgun" and "convict*" or "guilty." These search terms exclude some police ranks (such as sergeant). Other ranks were attempted to be used in the search terms, but the CanLii search engine would result in fewer, less relevant results. This may be due to some search engine issue. The search terms used for the GSS and PSS are slightly different, and there is reason for this.

The search term lists used for both samples are slightly different from one another. It was attempted to have the same search terms (other than the ones relevant to the police). However, this caused data result issues. The results were either too broad (14,924 results for the general criminal shooters) or too narrow (21 results for the police shooter sample). These search terms ultimately had a better case results number that allow for reliable case gathering counts, while

reducing an overload of thousands of results, as shown in table 1B (Appendix B). These search terms represent the same overall concepts, and are the appropriate for the shooting contexts. All of the key words represent the factual or legal phrases frequently involved in criminal and police shootings. There was an additional search strategy used for the Police Shooter Population because the first search strategy did not result in the required number of samples.

Another search strategy for the PSS was used because the original search strategy did not result in enough samples that reflected Canadian demographics. This additionally PSS search strategy was more broad search term which was, “shot the firearm at police” (no quotations used in search term). This gave results in regions to collect samples from that were priorly lacking samples. The results were not as relevant because this was a broad search term. Due to time, the researcher could open each case and read the details. Instead, the researcher did a research style that is somewhat like conducting an abstract review. After searching on CanLII, a long list of results appears. Each result is numbered with the case name. Under the case name is a brief overview of the areas of the case that are considered relevant to the search terms used (referred to as the “relevance section” by the researcher). The relevance section acted as the summary view of the case. Each relevance section was scanned to see if any obvious police shooting case existed. If it appeared to be a PSS case, the case of interest was further viewed, and the inclusion and exclusion criteria was applied. The additional search strategy for the PSS helped the researcher collect the required number of samples, while still maintaining an effective research strategy. One last search strategy was required to complete the PSS.

There was difficulty finding a PSS case for Nova Scotia, but this issue was resolved. The researcher found previous case law of a police shooter case when reviewing a case from the “shot the firearm at police” search. This case law was used and the process of how the case was

included is documented in the inclusion and exclusion spreadsheet. Once cases were searched for, the inclusion and exclusion criteria became an important aspect of the research.

The inclusion criteria of the criminal cases includes: The person(s) being convicted (guilty) in court of criminally discharging a firearm (in relation to a circumstance where the criminal shoots at another person), or having the intent to harm another person with a firearm (in relation to discharging the firearm), or recklessly discharging a firearm (in relation to a circumstance where a person is shot at), or the firearm is used and discharged in attempting to unlawfully cause bodily harm (against another person), or using a firearm to cause reckless endangerment (in relation to discharging a firearm at a person), or discharging a firearm with intent to endanger life (of another person), or aggravated assault (by firearm discharge against another person), or attempted murder (by firearm discharge), or second degree murder (by firearm discharge), or manslaughter (by firearm discharge), or in a case if the person is found guilty of careless use of a firearm (in relation to them shooting the firearm at someone else). There are many legal words in this study for how a person violently uses a firearm against another. This is because judges have multiple ways to apply the law in finding a person criminally responsible of discharging a firearm against someone else. Furthermore, in some cases, if the criminal discharges the firearm at a home or place where they believe or knew a person went into, that may be included in this study (this will be further justified why it is included or excluded on a case-by-case basis). The legal offence for this is known as being reckless as to whether another person was present in the place and discharging the firearm into that place. Additionally, the police shooter sample will have to meet the criteria of a police officer being shot at (previously mentioned).

Legal cases will be excluded if they meet one or more of the following criteria: When the shooting event occurred during the year 2000 or in prior years, the person charged is acquitted (innocent, not guilty, not convicted), if the person is acquitted later in an appeal case of all criminal charges related to the act of discharging the firearm against another person, when the person shooting is not shooting at any other person or in the direction where other persons are known to be, when the shooting charge is due to a hunting accident, or if the person was legally found to have acted in self-defence. The age of the people in the samples, location of the offence, and the time frame of the incident is another important part of the inclusion and exclusion criteria.

This research has considered the relevance of the offender's age, offence location, and time frame. This study will analyze offenders of any age (young offenders and adult offenders) because anyone who shoots a firearm at another person is a risk to public safety. Shootings that occur anywhere within Canada will be included because this study has the goal of focusing on Canadian shooters. Shooting incidents that occur outside of Canada will not be included. The CanLII search sorted cases from newest to oldest because the ideal timeframe (but not exclusive) of collection will be from 2011-2022. This is an important period to study because there was a change in firearm homicide trends. During this time, shooting homicides in 2011 and 2013 were the lowest in almost fifty years (Statistics Canada, 2012; Statistics Canada, 2014). However, the situation changed, and there has been an overall increase in firearm homicides. From 2016-2020 there have been over 250 firearm homicides each year. In 2020, there was over double the amount of shooting homicides than in 2013 (Moreau, 2021). Conducting research on this particular time frame will make information available for future researchers who may want to compare the criminal shooters of 2011 to 2020. However, cases were collected before this

timeframe in order to meet the sample size requirement of this study. For example, Newfoundland and Labrador's most recent reported police shooting case on CanLII was in 2010. 40 of the case incidents were from 2011-2020, while 12 of the shooting incidents were from 2004-2010. Including the cases that occurred prior to 2011 is necessary because it improved the case collection for areas where there otherwise would have been no representation. There is also is two types of exemptions to the inclusion criteria in regards to the shooter being criminally charged. In *R v Hennessey* (2009), the shooter was killed during a shootout with police, so the shooter could not be criminally trialed. Additionally, in *R v Morrill* (2016), the shooter was found not to be criminally responsible due to mental disorder. Both of these cases will still be included because both individuals shot a firearm at police, and they shot at the police without any legal justification. These two people still represent a threat to law enforcement as they endangered the lives of police officers by shooting at them, so they will still be included.

The cases were gathered from the newest to oldest (by a date sorting function on CanLII) cases. This was done because the research aimed to analyze a more recent time period (2011-2022, as previously discussed). The CanLII sorting of province or territory was also used. This geographic sorting allowed the cases to be collected in a manner that helped better reflect the distribution of the Canadian population as demonstrated by table 1A and table 2A (Appendix A). The cases found by this search strategy all underwent the inclusion criteria review (mentioned previously in the search methodology). If this case has a "history" link that refers to the "sentencing" case, the sentencing case will be where the data is gathered from. The sentencing case document is the most reliable document to gather data from because they typically contain the most relevant data to the variables involved. The offenders' circumstances, and the circumstances of the offences are frequently discussed in sentencing cases. In comparison, a

legal case that discusses the guilt or not of the accused may not fully account for the accused's circumstances until they are sentenced. However, cases other than a sentencing case may be used if the sentencing case is not available, or if the other types of cases contain important variable information that the sentence case does not (such as the type of firearm used in the offence). The legal cases analyzed will also reference prior legal cases (case law) that are similar. The case law references may be used to create a "reserve list" if the necessary amounts of cases cannot be collected through the search terms. A reserve list case will undergo a full-text review if it is included. If this study does use a reserve list, a bias limiting approach will be explained and used.

The researcher contacted his research supervisor when the shooting case was difficult to initially decern for including or excluding. Cases that were uncertain for being included was a rare event, but it did happen. In the *R v Kakfwi* (2018) case, the shooter was in a building. The shooter shot a warning shot into the air when he heard someone (a police officer) outside the building. The judge did not find that he meant to shot at the officer, and the discharged round did not go near the officer. The research supervisor assisted in reviewing the exclusion of this case. Having the research supervisor as a secondary review helped enhance the internal reliability of the case inclusion.

The inclusion and exclusion process were conducted for both samples. When the initial search was extinguished of results, a broader search term was used. The broader search term resulted in many results, so a scan of the key word area of each case in the result list was conducted. The police shooter sample had a total of 134 cases reviewed (Nunavut 1, North West Territories 22, Yukon 19, Newfound Land and Labrador 2, Prince Edward Island 5, Nova Scotia 5, New Brunswick 6, Quebec 5, Ontario 35, Manitoba 1, Saskatchewan 6, Alberta 8, British Columbia 19) and 1,227 case key word areas of scanned (Nova Scotia 129, New Brunswick 31,

Quebec 126, Ontario 500, Saskatchewan 14, Alberta 427). General shooter sample had a total of 56 cases reviewed (Nunavut 1, New West Territories 3, Yukon 2, Newfound land and Labrador 2, Prince Edward Island 1, Nova Scotia 1, New Brunswick 1, Quebec 9, Ontario 26, Manitoba 2, Saskatchewan 1, Alberta 4, British Columbia 3). A total of 190 legal case documents were reviewed and 1,227 case key word areas of legal case documents were scanned to generate the 52 required samples (participants) for this study. The studied samples generated many qualitative results.

Once the case met the inclusion criteria, it was downloaded as a PDF (portable document format) file. The researcher then read through the PDF file and applied the coding criteria method as shown in Appendix C. The Coding Criteria Method is a set standard of how the researcher reviewed each case. This ensured that there was a consistent way to review for each factor in all the cases. The factors (variables) were discovered, and then added to the Coding Criteria Method, then the researcher would go back to prior cases and scan for that same variable. If the variable was not mentioned, certain requirements were needed in order for it to be labeled as “no” (not present) or as a 99 (missing value). Reference Appendix C for a comprehensive overview of how each variable was reviewed. The data selection assessment (the coding criteria method) worked well because it allowed the research to apply a consistent way of scanning and coding data. Its development may not be as refined as the researcher would have preferred due to time constraints. However, it still completes the overall purpose of deeming if a variable is present, not present, if the value is missing, or if the value is not applicable.

The main challenges of this research were acquiring a sufficient number of cases, and budgeting enough time to conduct the discussion. It was initially difficult to find a sufficient number of cases because many combinations of the appropriate search terms had a different

number of results. A balance of the appropriate search terms and having enough results was a major task. Additionally, acquiring a sufficient number of police shooter cases was more difficult to find than general shooter cases. Using additional databases other than CanLII may be of future interest to address this challenge.

Ethical Issues

The researcher was first concerned if any external ethical approval was required for this study. The researcher's supervisor verified with the JIBC (Justice Institute of British Columbia) Chair of Research Ethics Board and the Program Manager of the Law Enforcement Studies Programs to confirm that ethical approval was not required for this study. Ethical approval was not required because this study collects secondary data that is publicly available. However, there are still ethical concerns with public data. The ethical concerns included the mislabelling of an accused person as a criminal and of researcher bias. The mislabelling of an accused person as a criminal is a concern. The author addressed this by assuring that all of the individuals labelled as a criminal are convicted of their criminal act, without any successful appeal. Appeals will be reviewed in the history tab of each CanLII case. This made sure that the study correctly labeled who was a criminal. Researcher bias is another issue that was effectively addressed to maintain the credibility of the findings. The researcher has a firearms licence and tends to view articles that are more bias towards maintaining a firearm licencing system. Additionally, the researcher will disclose that he is a member of a private Facebook group called "Canadian Coalition for Firearm Rights." Some may view this as a risk because they may believe the researcher will avoid including data that discredits licenced firearm owners. This issue was addressed because having a firearms licence is not part of the inclusion or exclusion data, and the included cases will have their overall data reviewed, regardless if a firearms licence status was noticed during

the initial inclusion and exclusion stage. Furthermore, the coding criteria (Appendix C) sheet has been designed to safeguard from any over estimation of criminals who do not have their firearms licence. The firearm licence factors had to be mentioned more directly than many other factors in order for it to be concluded as existing or not existing in each case. If this higher requirement was not met, then it would be coded as a missing value. Lastly, the author would like to mention that he did not grow up in a family that favoured firearms, and he has reviewed discussions over many years that are both for and against civilian firearm ownership. Though the author may have personal views about firearms, that did not become an ethical issue during the collection of the relevant data. Lastly, the author has also reviewed concepts that raise awareness of individual bias, and he will ensure that bias does not cause any change to the future results or to the discussion section (Pannucci & Wilkins, 2010). Furthermore, the researcher has prepared for any other potential ethical issues by reviewing relevant research policies (3401-3405, and 3407) (Justice Institute of British Columbia, n.d.). These are the major ethical issues that can have all been effectively addressed.

Data Analysis Plan

A Piori Power Analysis

For independent samples two-tailed t-test analyses for this study's scale data, and *a piori* power analysis using Cohen's (1988) convention of 0.8 for a large effect size (*r*) was conducted using G*Power 3.1. In order to sufficiently control for type II error with an alpha level (i.e., type I error) set at 0.05 and with a desired statistical power level of 0.8, the minimum sample size needed to detect a large effect was determined to be 52. This sample size is reflected by the 26 cases of the first sample (police shooters) and 24 cases of the second sample (general shooters). One of the 24 cases of the GSS had three participants in it (*R v Baugh*, 2021), so that is why only

24 cases were required. In the event that data was non-normal, a power analysis was also conducted for the nonparametric equivalent of a t-test – the Mann-Whitney test. Using the same parameters as outlined above (such as the power level of 0.8), a minimum sample size for a logistic distribution was calculated to be 48 and 36 for a Laplace distribution. The planned sample size of 52 exceeded the minimum sample size for both of these non-normal distributions.

Qualitative Data Analysis

The common themes (variables) were identified by reading through each case document (PDF), highlighting the variable (yellow highlight), and then determining if it already fell into an identified variable category, or if a new variable was needing to be generated (detail of what variable each yellow highlight is can be found in the PDF comment). An example of the coding process can be given from *R v Cornell* (2014). "Cornell's parents separated when he was very young [childhood divorce variable] … Because of his mother's drinking, Mr. Cornell lived with his paternal grandparents between the ages of three and five [childhood inadequate caregiver variable]". Each variable has a definition to whether a particular fact meets its inclusion criteria. This allowed the variables to be detected and counted for the quantitative process. The variables were grouped into categories by the researcher to improve the review process of the variables. The grouping of the variables was based on their relevance to one another. For example, demographic factors included gender, age, ethnicity, among others. Childhood factors contained childhood trauma, childhood inadequate caregiver, among others, as shown in table 1D (Appendix D). The raw frequency (how much of a sample had the variable present) was calculated by the number of participants who had the factor, divided by the number of applicable responses, and multiplied by 100. For instance, 5 (people who had the factor present) divided by 25 (of the total applicable number of people with that specific factor) multiplied by 100 gives a

frequency of 25%. The frequency of every variable was calculated to determine the top five and bottom five frequencies for the two samples as shown on table 1E and table 2E (Appendix E). This specific research focused on the frequency rates. However, some other researchers may give more value to the reporting of the raw numbers (such as 5/10 participants and 20/25 participants, rather than a 50% and 80% frequency rate). For raw numbers, see table tables 1F-6F (Appendix D) The raw number charts are reported in this study because readers of this research may also value what that data states.

Descriptive Statistical Analysis

A descriptive statistical analysis was conducted to determine the percentages for nominal data (e.g., marital status), and means for scale data (e.g., age). Additionally, where applicable, standard deviations and minimum and maximum values were conducted (e.g., age). This process was applied to the following demographic variables: Gender, ethnicity, education, age, and marital status. This was done in order to reduce the chances of making a Type I error and reduce the potential for false positives, relevant tests were conducted to determine if there were any significant differences between the two samples on the aforementioned demographic variables.

Quantitative Data Analysis

All data was cleaned prior to running any quantitative analyses. For example, the data sheets were manually reviewed for any blank cells, gaps, or if any numbers were incorrectly inputted (such as a number that would not be properly coded). In addition, the assumptions of (1) independence of data, (2) normally distributed scale data, and (3) minimum cell sizes for nominal data were checked to ensure that there were no violations. Assumptions were checked for each study variable and for each of the two samples, where appropriate (the two sample groups were analyzed together and separately). First, the assumption of independence of data

was considered during data collection. Second, the assumption of normally distributed scale data was tested by visually inspecting normal Q-Q plots and histograms with normal curves. Datapoints clustered around the line of normality (Q-Q plots) or the normal distribution curve (histograms) support the assumption of normal data. Third, the assumption of minimum cell sizes for chi-square analyses of nominal data was checked. The standard convention for minimum cell sizes is greater than five per cell (Field, 2009).

Group differences were tested for all study variables. It was planned to run independent samples two-tailed t-test analyses for scale data, and Mann-Whitney tests if the data is non-normal. Chi-square analyses were used for nominal data, and odds ratios were calculated for significant results. For all analyses, missing data was excluded pairwise, meaning a case was only excluded from calculations when there was a missing value for the variable being tested.

Results

Descriptive Statistical Analysis

This study had a total of 52 participants from 50 different legal cases. 98.08% of the participants were male (*n*= 51) and 1.92% of the participants were female (*n*= 1; participant in the PSS sample). Participants had an age (in years) range of 15 to 57, and a mean age (average) of 27.36 (*SD*= 9.92). The ethnic representations of the studied group included (of those who reported in, n= 18) Caucasian 11.1%, Indigenous 61.1%, Middle Eastern 5.6%, South Asian 5.6%, Mixed 5.6%, and Other 11.1%. The education reporting (*n*= 26) showed 23.1% had less than high school, 38.5% had some high school, 23.1% completed high school, 3.8% had some college or university, 7.7% completed college, and 3.8% completed an undergrad university degree. The marital status reporting (*n*= 32) displayed that 40.6% were single, 46.9% were in a common law relationship, and 12.5% were married. Lastly, every province and territory in

Canada has some level of representation. Overall, the two groups were overall, similar in their gender, education, martial status, age, ethnicity as shown in table 1G (Appendix G).

Qualitative Data Analysis

Data coding was conducted in all of the cases to reveal qualitative themes. The themes were then put into groups. The grouped variables are classified together because they are part of a similar category. There were ten categories generated from the common themes. The 89 variables generated from the research are classified in these categories, as shown in table 1D (Appendix D).

The type of the criminal offence of the shooting has been analyzed, rather than the section number. The section numbers will not be analyzed because what the section numbers represent may change over time. The cases collected are from 2004-2020, and there have been changes to the Criminal Code during that time period (Government of Canada, n.d.). Therefore, reporting the Criminal Code section number would not provide meaningful or accurate information. The written section of the charges was mentioned in many of the legal cases. Of the 52 participants, there are 15 ways that a criminal shooter is convicted. The types of convictions that a shooter can be convicted of in relation to the shooting are shown on table 1H (Appendix H).

There are six incident categories that a police officer was responding to before being shot at. These incident types include

- Violence related (42.31% of incident response types, *n*= 11)
- Other (19.23% of incident response types, *n*= 5)
- Relationship related (11.54% of incident response types, *n*= 3)
- Theft related (11.54% of incident response types, *n*= 3)

- Drug related (7.69% of incident response types, *n*= 2)
- Suicide related (7.69% of incident response types, *n*= 2)

Other includes, person of interest to the police, a call for assistance, police warrant, person endanger, and a male walking in public carrying rifles and wearing camouflage.

There are four categories that can be related to why to nonpolice officer was targeted

- Drug related (40.91% of incidences, *n*= 9)
- Social dispute (31.82% of incidences, *n*= 7)
- Violence related (22.73% of incidences, *n*= 5)
- Alcohol related (4.55% of incidences, *n*= 1)

For context, violence related can be a violent conflict between individuals, or a violent event. In both instances, the situation is violent related before the firearm is criminally discharged. An example of violence related is the *R v P.B.* (2021), in which the criminal discharged a firearm during a robbery (a robbery is theft with violence).

Quantitative Data Analysis

Tested Assumptions

Prior to running any analyses, the assumptions of (1) independence of data, (2) normally distributed scale data, and (3) minimum cell sizes for nominal data were checked to ensure that there were no violations. Assumptions were checked for each study variable and for each of the two samples, where appropriate. First, the assumption of independence of data was accepted to be true because sound data collection strategies were employed (i.e., data were independent as each case was assigned to only one of the two samples). Second, the assumption of normally distributed scale data was tested. In both samples, normal Q-Q plots show that some data points

deviated slightly from the line of normality, and histograms revealed some non-normal distribution curves. Therefore, it was decided to use Mann-Whitney tests, the nonparametric equivalent to t-tests, for scale data. Two outliers for age (both aged closer to 60) were detected, but they were included (*R v Crockwell*, 2013; *R v Fobister*, 2009). The nonparametric test calculations adjusted for these data abnormalities. In order to prevent type II errors due to small sample sizes, marginally significant results were accepted ($p < 0.08$). Third, the assumption of minimum cell sizes for chi-square analyses of nominal data was checked. For any analyses where the cell sizes were fewer than five, Fisher's exact tests were utilized.

Ranked Dependent Variables

The five highest dependent variable frequencies (non-significant data except for intergenerational trauma) for the PSS are (the list exceeds five dependent variables as there were variables with the same frequency precents. Data from table 1E, Appendix E):

- Violent history (66.7%)
- Drug use history (61.1%)
- Criminal record (61.1%)
- Intergenerational trauma (57.1%) (Indigenous specific variable)
- Unemployment current 57.1%
- Unemployment history (56.3%)
- Alcohol use history (55.6%)

The five highest dependent variable frequencies (non-significant data) for the GSS are (the list exceeds five dependent variables as there were variables with the same frequency precents, data is table 2E, Appendix E):

- Childhood trauma (68.8%)
- Single parent (68.8%) (childhood specific variable)
- Father relation issue (66.7%)
- Criminal record (64.7%)
- Violent history (61.1%)
- Unemployment history (58.3%)

Refer to table 3E (Appendix E) for the highest frequency among both groups combines.

Shooting Incident Details

Among the PSS, the police shooter shot first 96% of the time, while the police shot first 4% of the time. Among the GSS the general shooter shot first 100% of the time. Among the PSS, the police had a 61.54% chance of discharging their firearm during the incident as shown in table1I (Appendix I).

The total amount of shots fired by each group was calculated, and their average shots fired per incident was documented as shown in table 2I (Appendix I):

- General Shooters total shots fired: 74 (an average 3.36 shots fired per incident)
- Police Shooters: 45 (an average of 2.37 shots fired per incident)
- Police Officers: 13 (an average of 2.6 shots fired per incident)

Shooting accuracy means the number of shots that hit the target when the shooter aimed at the target. Table 1I (Appendix I) displays the shooting accuracy of each group was:

- Police: 46.15%
- Police shooter: 26.67%

- General shooter: 19.5%

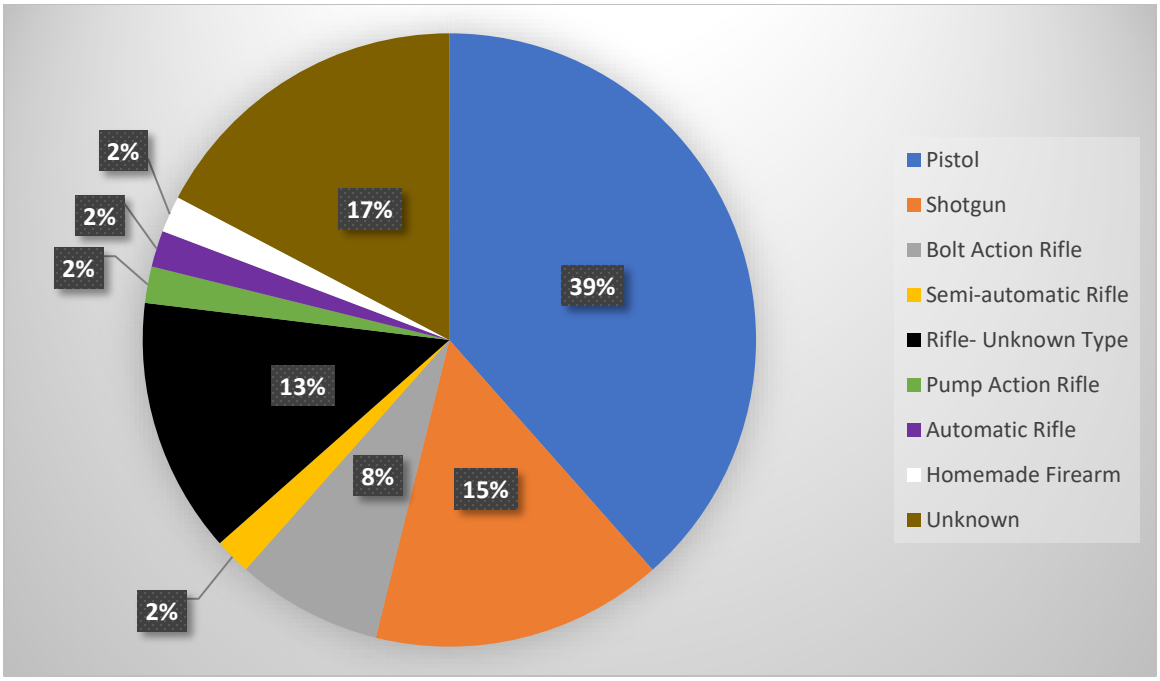
Each groups rate of survival, or rate of experiencing at least one or more deaths (in the context of police incidents), is displayed in table 1I (Appendix I) and is below:

- General shooter survival rate 100%, death rate 0%
- Police shooter survival rate 92.31%, death rate 7.69%
- Nonpolice target survival rate 80%, death rate 20%
- Police survival rate 84.62%, death rate 15.38% (The 15.38% is broken down as follows: 3.8% chance of one police death, 3.8% chance of two police deaths, 3.8% chance of three police deaths, and a 3.8% chance of four police deaths)

The types of firearms used by the shooter in both the PSS and GSS was documented and is shown in Figure 1.

Figure 1

Firearms Used by PSS and GSS



Note. This chart represents the types of firearms used by both the PSS and the GSS (*n*=52). This is rounded to the nearest percent.

When police are shot at, it typically is by a shooter with a long-gun (a rifle or shotgun), and not a pistol. 61.90% of police shooters use a long-gun, and 38.09% of police shooters used a handgun. Police are 16.45% more likely than the nonpolice to be targeted by someone using a rifle or shotgun. Criminals who target nonpolice use pistols 54.54% of the time, and a rifle or shotgun 45.45% of the time, as shown on table 3I (Appendix I).

The reporting participants (*n*= 29; PSS= 14, GSS= 15) demonstrated that no shooter had a firearms licence, as shown on table 1J (Appendix J).

Group Differences on Dependent Variables

The results of the Mann-Whitney analyses testing group differences on scale dependent variables are shown in Table 1K (Appendix K). Three out of ten tests were run because some factors were mutually exclusive to one group, so a test comparing both groups could not be done for those variables.

The results of the chi-square analyses testing group differences on nominal dependent variables are shown in table 1L (Appendix L). Contingency tables for all significant chi-square analyses can be found in Table 1M-3M (Appendix M).

There was a highly significant association between the police shooter and being arrested, x^2 (7) = 44.98, p<0.001****. Based on the odds ratio, the odds of police shooters were 6.75x times higher to be arrested than general shooters.

There was a very significant association between the general shooter and the drug trade, x^2 (1) = 8.6, p<0.006***. Based on the odds ratio, the odds of general shooters were 3.56x times higher to have the drug trade be relative to the shooting incident when compared to the police shooter.

There was a marginally significant association between the police shooter and experiencing a traumatic event (in adulthood), x^2 (1) = 4.5, p<0.075*. Based on the odds ratio, the odds of a police shooters were 2.94x times higher to experience a traumatic event in adulthood prior to the shooting incident than the general shooter.

Discussion

A large amount of data has been discovered that can help answer the research question, "How do characteristics vary for Canadian criminal shooters who target police compared to those who do not?" Overall, the PSS and GSS are similar, but they have some differences. First there were two statistically significant differences (not including arrest as the arrest in not a characteristic). The GSS had a very significant association with the drug trade being involved in the incident, and they were 3.56x times more likely than the PSS to have the drug trade involved in their shooting incident. The GSS appears to be more involved in the drug trade than the PSS.

Next, there was a marginally significant association between the police shooter and experiencing a traumatic event in adulthood. Police shooters were 2.94x times more likely to experience a traumatic event in adulthood prior to the shooting incident than the general shooter. The PSS appears to be more affected by adulthood trauma than the GSS. The non-significant frequencies also displayed some differences, but many similarities.

There were some similarities and differences for the top frequencies (non-significant data) of each group. Both the PSS and GSS had a violent history, criminal record, and a history of unemployment in their top frequencies (table 1E, table 2E; Appendix E). The PSS had some factors in their top frequencies that the GSS did not have. Factors in the top frequencies of the PSS included drug use history, intergenerational trauma, unemployment current, and a history of alcohol use. These factors were not in the top frequencies of the GSS. Factors in the top frequencies of the GSS included childhood trauma, a single parent in their childhood, and father relation issues. Even though some of the top frequencies were similar, the PSS is more affected by intergenerational trauma, unemployment current, a drug use history, and an alcohol use history. In comparison, the GSS is more affected by childhood trauma, having a single parent at some point in their childhood, and by father relation issues. A total of 60 variables from table 1J (Appendix J) that all relate to the profile of the offender (not including their demographics, and other factors such as shots fired). Both the PSS and GSS had eight of the exact same frequencies (non-significant). These same frequencies include

- Childhood school trouble, both 46.7%
- Mother relation issue, both 33.3%
- Foster care, both 10%

- Firearm licence, dependent trouble current, dependent trouble history, extended family trouble current, extended family violence history, all 0%

Frequencies (non-significant) unique to the PSS include (5 factors)

- Aggressive music obsession
- Extended family violence
- Firearm obsession
- Sleep deprivation
- Violent videogame addiction

Frequencies (non-significant) unique to the GSS include (6 factors)

- Associate violent history
- Community partner violence
- Family violence history
- Nonfamily trouble history
- Misogyny
- Racism

There were 41 remaining frequencies (all non-significant, except for traumatic event [adulthood] and drug trade current) were shared at varying frequencies between the PSS and the GSS. Of the 60 variables (table 1J; Appendix J), it can be concluded that both the PSS and the GSS are similar, and they have some differences. They share 68.33% (41/60 variables) of the same variables at different frequency rates, they are 13.33% exactly the same (8/60), and they are exclusive in 18.33% (11/60) of the remaining variables. These percentages are subject to some change if the demographic and circumstance of incident (such as shots fired) were to be

included. It is important to discuss the variables in greater detail as to why they may be relevant to each population and their shooting action.

Statistically Significant Variables Discussion

The highly significant association of the police shooters and being arrested occurred because police are able to respond to the shooter instantly. Police can respond immediately to the police shooter because a police officer is the target, and that officer is in the immediate area ready to engage with and arrest the shooter. Furthermore, police backup to assist the officer under fire would bring more officers to the scene. Having an increased number of officers responding also increases the chance of arrest. If the criminal managed to temporarily evade police, the police would pursue the shooter and other police units in the region would be alerted of the shooter. The immediate response of the police under fire, having police back up called, using police pursuit tactics, and alerting police in the region about the shooter all contributed to the higher arrest rate of police shooters. In comparison, general shooters who targeted nonpolice have a greater chance of not being arrested during the initial shooting incident. The main reason for this is that police were far less likely to be present during a general shooter incident. In many cases, the general shooter would shoot at the nonpolice target, and then flee the scene. They would avoid arrest this way because no police officer would be immediately present at the scene to pursue the shooter. Once the police did arrive, or the victim was found, the shooter, in many cases, was not present. This made it less likely for the police to have the ability to make an arrest during the incident because an investigative approach would be required. The PSS is at a greater probability of being arrested than the GSS because the PSS engages directly with police.

The GSS had a very significant association with the drug trade being involved in the incident, and they were far more likely than the PSS incidents to have the drug trade involved in

their shooting incident. This is because there is a strong connection between the drug trade and violence with firearms. Addtionally, the drug trade is mainly composed of nonpolice individuals. This results in more general shooters in the drug trade. Firearms are used violently in the drug trade because many Canadian gang-related firearm homicides occur for drug trade reasons. Some of these reasons for gang-related firearm killings are for drug debts, the targeting a rival gang member, or a violent "turf war" between multiple gangs (Beattie, et al., 2018). Gang violence with firearms in the drug trade is also observable in the Canadian province of British Columbia (BC). In BC, gangs use firearms to gain control of the drug trade. These gangs want to dominate the drug trade because it is a very profitable illicit market (Heemskerk, & Davies, 2008). Any competition for drug profits would put a gang's own operations at risk of reduced profit, so they will use firearms to protect their ability to make financial profits from selling drugs. Furthermore, being involved in drug-related gang activity increases a person's chances of committing violence with firearms. When a BC gangster is involved in the drug trade, they are more likely to have firearms, and they are more likely to commit violence with firearms (Heemskerk, & Davies, 2008). Many cases in the GSS involved the drug trade, and all of them proved that they were willing to use firearms violently against others. There is further Canadian evidence that shows involvement in the drug trade is linked to shooters targeting nonpolice targets. Being involved in criminal activity, such as drug trafficking, greatly increases the risk of death by homicide, and firearm homicides in this field are prevalent. 89% of all Canadian homicide victims are involved in the crime business, crime security, or crime transportation, and killing others by firearm accounts for 87% of all Canadian gang related homicides. Furthermore, gang killings with firearms is also much higher than other areas of homicide because nongang-related homicides use firearms 27% of the time (Beattie, et al., 2018). Criminals are willing to

use a firearm violently to better position themselves in the drug trade. The majority of killing methods gangs use is by firearm, and they do this at a greater rate than nongang firearm killings. The drug trade is a violent cycle as gang members commit violence with firearms, and they are also at risk to be victims themselves of shootings. The link between the drug trade and general shooters in not a new societal issue. A study by Oscapella (1998), found that firearm related violence is used to regulate the drug trade by securing drug shipments, to collect drug debt, to resolve drug trade disputes, to intimidate competitors or customers, to kill informants, or to kill competitors. The drug trade is linked to general shooters because rival gangs use violence to supress one another, and gangs will use firearms to secure their power. There are reasons that the PSS is involved in the drug trade at far lower rates than the GSS.

The drug trade was not associated with the PSS because a criminal operating as a general shooter would want to avoid a police officer while engaging in their more common activity of the drug trade. This is because a police officer is a major risk to the general shooters involved in the drug trade. For example, if a drug dealer is caught by a police officer, they may be arrested, have their drugs confiscated, and they will lose time to sell drugs in the future because they will be engaged in the criminal justice process. It is important for general shooters to avoid police for the utilitarian purposes of not losing their drugs, and to not loose the time to sell drugs in the future. The general shooters also want to avoid police because the consequences are arrest are not favourable as their freedoms would be reduced. This is why the GSS did not engage with the police as often, and reduced engagement resulted in lesser adversarial engagements with the police. The drug trade was not significant for the police shooter so it was less of a contribution to their violence with firearms when compared to the GSS. Rather, the police shooters had adult trauma as a significant factor that contributed to their shooting.

There was a marginally significant association between the police shooter and experiencing a traumatic event in adulthood. The Social Learning Theory (SLT) and Biological Theory (BT) of trauma's relationship to crime can explain why trauma was associated with the PSS. SLT states that aggression and violence are learned by individuals when they observe others model the behaviour. If the subject observes a traumatic experience that involves violence, the subject may learn to adopt violence against others. This is because the social learning experience can cause them to believe that violence is rewarding, able to be justified, and is acceptable (Neller & Fabian, 2006). If a police shooter is victimized by violent trauma in their adulthood, they may later believe that violence (such as by using a firearm) is the method to express their disturbed state. The BT is the next way to explain the PSS's relation to trauma. Biological evidence has found trauma can increase violent behaviour of the subject in the future. Prior research found high levels of stress and potentially traumatic events reduces the serotonin production levels of the brain. Low serotonin levels have been associated with impulsive behaviour and aggression (Neller & Fabian, 2006). More recent research continues to support this concept found in previous studies. Research by Murrough et al. (2011) found there is a strong association between exposure to trauma and the reduction in serotonin receptors (type 1B receptor; meaning that serotonin levels are low because they are not received), and Grattan, et al. (2019) found trauma is associated with aggression towards others. The PSS has a strong level of adult trauma, and this has likely affected some of their serotonin in a negative way that favour aggression. Behaviours that trauma can led to include increased hostility, difficulty to regulate anger, and there are other emotional regulation problems, pessimistic thought processes, increased social detachment, more likely to incorrectly view others as malevolent. Many of these factors, such as anger, antisocial attitudes, cognitive distortions, and emotional dysregulation are

violent risk factors. It is important to note the majority of people who experience trauma do not commit future violence. However, research strongly suggests that trauma can directly predispose some people to commit future violence. Traumatic events may also contribute to a person's development of alcohol misuse or emotional dysregulation, and those two factors are associated with violence (indirect contribution to violence) (Neller & Fabian, 2006). Trauma increased risk of committing violence and engaging in antisocial conduct (Neller & Fabian, 2006). Other chemicals such as cortisol and testosterone should be explored with their relation to trauma and aggression.

Frequencies Discussion

Both the PSS and GSS have a violent history (non-significant) in their top five frequencies. Having a violent history has been found to be associated with committing future violence. For instance, violence in childhood is associated with the later use of a weapon in a violent act (Michie, & Cooke, 2006) and a longitudinal study that focused on discharged psychiatric patients found a history of violence is associated with violent and criminal act (Beaudoin, 2019).

Having a criminal record puts a person at a greater risk of committing a shooting. The PSS and GSS both have a criminal record in their top five frequencies (non-significant). The minority of Canadians have a criminal record because only 11.29% of Canadians have a criminal record (the discussion of the criminal record is in regards to any type of crime, such as a criminal record for drunk driving) (table 1O; Appendix O). However, those with criminal records are over represented in both shooting samples (over 60% of participants had a criminal record). Looking at violent offender particularly displays that they are also prone to reoffending. Canadian crime

statistics show that those convicted of a violent offence are prone to reoffend violently (Stewart, et al., 2019);

- Those convicted of homicide (for men and women) will reoffend by committing a violent crime at a rate of 14.2% over five years
- Those convicted of robbery (for men and women) will reoffend by committing a violent crime at a rate of 38.7% over five years
- Those convicted of assault (for men and women) will reoffend by committing a violent crime at a rate of 36.9% over five years
- Those convicted of other violent offences (for men and women) will reoffend by committing a violent crime at a rate of 27.2% over five years
- Rates of violent reoffence after five years is slightly higher for men

This reoffence rate may actually be higher because those incarcerated during the five-year follow up would have less opportunity to reoffended because they would be held in a secure facility. Having a criminal record display that the person is willing to commit criminal acts, and this research demonstrates that there is a likelihood of them continuing their behaviour.

The drug use history is a factor of the shooter groups (non-significant) because people are willing to commit crimes to reengage with their drug use. This means if a person has used drugs, then they do not have access to the fund for the drugs, they may turn to other means, such as violent offences to gain the finances or physical drugs to continue the drug use. Among federal Canadian inmates, they reported that 39% of their gainful crimes (crimes to get something in return) were committed to gain either illicit drugs or a combination of drugs and alcohol

(Pernanen, et al., 2002). An example was found among the GSS, in which the shooter shot and killed the drug dealer so he could take the illicit drugs and use them.

The majority of the GSS had a single parent (non-significant), and this contributed to their future risk of being a general shooter. Having a single parent disadvantages the child of the protective factors that two parents provide, and it poses some risk factors. Parents are important in the pro-socialization process of a child. A single parent will have less time to dedicate to their child's pro-social development (such as teaching acceptable behaviour, how to respect others, and how to control unacceptable behaviour) when compared to having both parents (Singh & Kiran, 2012). This may result in the child developing characteristics that favour firearm related violence. For instance, male children from single parent homes are more aggressive than males from two parent homes (Rodríguez et al., 2013). Harmful attitudes that a child develops are also less likely to be detected early on in the single parent home because the child will be supervised less (Singh & Kiran, 2012). Delinquency that occurs during childhood due to the single parent home can increase the person's risk of adulthood crime (National Institute of Justice, 2014), and there is a connection between childhood crime and later adulthood crime (Public Safety Canada, 2017). This occurs through the process known as the continuity of criminality. The continuity of criminality occurs when a crime-involved youth continues their crimes into adulthood. Children that are especially at risk of adult crime are those who commit crime earlier on during their childhood, and those who commit violence during their childhood (National Institute of Justice, 2014). Single parent homes place children at a great risk of being involved in crime because of lower supervision rates and because two parents are more effective at pro-socializing a child. These children are then more likely to commit crime in their adulthood, and may be why there is

a high percentage of general shooters who are from single parent backgrounds during their childhood.

In many cases, the father relation issue (non-significant) results in the single parent factor because the mother is left alone to raise the child. However, a greater context in regards to fatherless children, and adults with father relation issues can be discussed. First, having a father relation issue for young people can increase crime. Wong (2018) found that youth crime increases with Fatherless homes. This can be further supported by the reports from Lawson (2012). Lawson (2012) reported the Caribbean-Canadian and African-Canadian experience of Fatherless homes in Toronto. Even though this was not a quantitative assessment, it offers some detailed qualitative insight. For instance, a single mother reported that the children discuss their absent Fathers a lot, and that the fathers would be replaced by other factors such as gangs. Faith leaders in the community also stated that Fatherless homes result in a lack of role models, and many of the children turned to gangs to substitute their families. These gangs then lead them to be involved in crimes. Lawson (2012) also did a review of prior research that found fatherlessness is linked to an increase in incarceration rates, increases in violence, and an earlier onset of death. An adult who has father relation issues can also be at a greater risk of committing crime. This is because the father contributes to the parental social control that typically helps reduce their adult child crime (Johnson et al., 2011). When the father is not involved in the life of their adult child, that person will not gain the protective factors of the father, so crime is more likely to occur. This last area of discussion will be how the criminal can be charged.

The research of the written charge sections revealed that there are many ways a judge can find a shooter guilty of a criminal offence. These types of offences varied in the degree of evidence required to convict the person, so it was typical practice to see the crown lawyers

attempt to have the accused convicted of an offence that required a greater intent (such as murder), but if that failed, they would typically have the accused convicted of an offence with a lower degree of intent (such as second-degree murder or discharging a firearm to prevent arrest)

Conclusion

Overall, the PSS and GSS are similar, but they have some differences. Statistically significant differences between the two groups were found in the variables of engaging in the drug trade currently, experiencing trauma in adulthood, and the two groups were different in their initial arrest outcomes. This research will greatly improve the academic knowledge of shooters who target the police or others. This is because there are many unknowns when comparing shooters who target the police to shooters who target others. The literature review established that there is no clear consensus if the two populations are similar or have major differences. This research was able to explore those areas. This study will help inform law enforcement personnel by helping them better understand shooters who target the police, and shooters who target others. This knowledge can be turned into actions that improve justice intuitions by helping them further develop the risk analysis of police shooters. The study findings can also be used to help assist criminal analysts or frontline workers in their risk analysis profiles of police and criminal shooters. By helping improve the knowledge of justice professionals, it is expected that the research implications will have a positive impact on law enforcement efforts. Additionally, this study will help fill in the research gaps in regards to comparing the characteristics of the PSS and the GSS. The researcher also had personal goals during this project. The research was looking to personally develop his research skills, and this did occur. For example, he was able to learn how to use and read statistical software with the guidance of

the research supervisor. For further reference in this research, view table 1P (Appendix P) for a full list of definitions.

Limitations

The current study does have limitations. These limitations include the study's sample size, a gender imbalance, the type of shooters typically included in the CanLII database, time constraints, and the coding method. First, the small sample size of this study only allowed for the detection of large differences between the groups. The non-significant results may change if a larger sample size was used. A larger sample would have been more effective because smaller differences could have been detected. Gender was a limitation of this study because male shooters were over represented in this study (n= 51), and there was only one case of a female shooter in this study (*R v L.R.F.*, 2005). The shooter profiles in CanLII are a limitation because it is almost always about shooters who survive. This made it difficult to analyze police shooters and general shooters who died (during the incident) because they cannot be prosecuted in court. However, the current study was able to have some level of analysis of shooters who were killed (*R v Duro*, 2017; *R v Hennessey*, 2009). The general shooter and police shooter survival rates are most likely lower than what the current reports because CanLII does not typically report on shooters who died during the incident. The time constraints of this research did not allow some variables that were detected (towards the end of the research period) to be analyzed. They were not analyzed because all the cases reviewed before their detection would have to be reviewed again. This study was unable to analyze the prevalence of negative peers (associates of the shooter who were a negative influence), family crime (if the criminal had family who were involved in crime), organized crime involvement (of the shooter), if the shooter was living with someone other than their biological parent (such as living with a grandparent). These factors

were not detected early on, so they may not be as prevalent as other detected factors. Unfortunately, they could not be analyzed due to time constraints. Another limitation was the coding method used to review the presence of the dependent variables. The researcher believes there are ways that this can be improved, and it may assume that something was not existent because it was not reported in the legal document. Interviews with the shooters and other relevant sources (such as their parole officer or lawyer) would probably give more certain results to if a dependent variable is present. This does not mean the coding method is completely flawed, as it does make accurate inferences, some reasonable assumptions, and it has safeguards built into it to help prevent wrongful assumptions. Research methods can always be improved, and the future research in this field can learn from these limitations. Lastly, there were limitations due to time constraints. The dependent variables (below) were not able to be analyzed in this study, and they should be reviewed in future research. These variables were not studied because they were detected later in the research process, and the PDFs could not be reviewed due to time constraints. The variables include:

- the prevalence of negative peers (associates of the shooter who were a negative influence)
- family crime (if the criminal had family who were involved in crime)
- organized crime involvement (of the shooter)
- if the shooter was living with someone other than their biological parent (such as living with a grandparent)

Recommendations

Police departments should evaluate if a two-partner police patrol system (either fully or for part of the working shift) will improve their response to shooting incidents. There is evidence

that supports both a single and two-partner police patrol system, and departments should analyze if it will enhance officer safety and if it will improve their responses to firearm incidents (Anderson & Dossetor, 2012).

If tactically appropriate, police should resort to using semi-automatic rifles to engage police-shooters. The present study found that Canadian police are more likely to be targeted by a long-gun than a handgun, and they are shot at by long-guns more often than nonpolice individuals. Canadian police typically carry handguns. If the officer is shot at, the officer should resort to using a rifle as soon as possible, rather than their service pistol. The officer should only do this if it is the right tactical decision, it is safe to do so, and if there is time to do so. This is recommended because rifles are a more effective firearms than handguns. Rifles are more accurate than handguns, and rifles are capable of firing more powerful cartridge types (Kraemer, 2009). The claim that rifles are a more effective option is further supported by a firearm industry article as rifles are typically more powerful, have greater ammunition capacity, and they are more accurate (Douglas, 2020). A rifle will better protect the police officer because it is more effective for self-defence than a service pistol. Furthermore, if the criminal is already using a rifle, the police officer should have their rifle ready as this firearm will better match the criminal's firearm's capability.

Police should be ready to use a trauma-informed approach to aid in de-escalation. A trauma-informed approach will help when police are dealing with shooters who have trauma (such as adulthood trauma). This is limited in its application because the shooter must be willing to communicate and police must be able use this in a way that does not compromise their safety and the safety of others (for instance, a police officer currently being shot at should shoot back at the criminal and find cover, rather than attempt to use a trauma-informed approach). A trauma-

informed approach may be used during a standoff, during communications, or during a post-arrest of the shooter. A trauma-informed approach means to be able to understand the past trauma and the impacts it had on the person. This approach is based on safety and getting the person connections for help. Police are able to play an important role in the trauma-informed approach, and police who are competent in trauma are better prepared to deal with vulnerable populations (Jones, 2020). Jones (2020) recommends the trauma informed training course created by the Canadian Police Knowledge Network (Canadian Police Knowledge Network, n.d.). This course is recommended by the researcher for dealing with trauma of the shooters, and each police department should see how they can use this to potentially develop better in house trauma informed approaches. This recommendation appears to be of use. If it is implemented as one of the tools for dealing with the shooter populations, it will need to be assessed to see if it is worth continuing to implement.

Involving drug treatment courts (DTCs) as part of the rehabilitation process of shooters who have drug use issues may be of use. However, they may not be admitted due to their violent offence. Public Safety Canada (2012) has found DTC reduce reoffence rates from 4%-8%, though it is uncertain how this would apply to the shooter population specifically.

The government should continue to fund initiatives that support family structures because general shooters have a high frequency of broken-family factors (e.g., single parent, father relation issue). There are government-supported programs that work with the community to enhance the family structure. Some people in the affected communities of broken families have claimed that improving the family structure has helped turn the youth away from gangs; which then helped address the violence with firearms (Lawson, 2012). However, this should be formally evaluated to ensure this is an effective practice.

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Appendix A

The Distribution of Canadian Population and of the Study's Participants

These tables reflect the population distribution of Canada and of the study. This study aimed to match the population distribution of Canada.

Table 1A

Canadian Population Provincial and Territorial Distribution Desired Reflection

Place (Province or Territory)	Population	Percent of Canadian Population	Desired Cases in the Study (26 per group)	Case Percent of the Study
Newfoundland and Labrador	519,664	1.3%	1	3.84%
Prince Edward Island	161,514	0.42%	1	3.84%
Nova Scotia	982,012	2.57%	1	3.84%
New Brunswick	784,156	2.05%	1	3.84%
Quebec	8,579,370	22.53%	4	15.38%
Ontario	14,759,431	38.77%	7	26.92%
Manitoba	1,381,459	3.62%	1	3.84%
Saskatchewan	1,178,971	3.09%	1	3.84%
Alberta	4,431,454	11.64%	3	11.53%
British Columbia	5,163,919	13.56%	3	11.53%

Yukon	42,344	0.11%	1	3.84%
Northwest Territories	45,323	0.11%	1	3.84%
Nunavut	39,255	0.10%	1	3.84%

Note. This table demonstrates population estimates of Canada for the first quarter of 2021 (Statistics Canada, 2021b).

Table 2A

Canadian Population Provincial and Territorial Distribution Actual Reflection

Place (Province or Territory)	Population	Percent of Canadian Population	Representation of Both Samples	Police Shooter Sample (26 total)	Police Shooter Sample Percent	General Shooter Sample (26 total)	General Shooter Sample Percent
Newfoundland and Labrador	519,664	1.3%	3.85%	1	3.85%	1	3.85%
Prince Edward Island	161,514	0.42%	1.93%	0	0%	1	3.85%
Nova Scotia	982,012	2.57%	3.85%	1	3.85%	1	3.85%
New Brunswick	784,156	2.05%	3.85%	1	3.85%	1	3.85%
Quebec	8,579,370	22.53%	9.62%	4	15.38%	1	3.85%
Ontario	14,759,431	38.77%	28.85%	5	19.23%	10	38.46%

Manitoba	1,381,459	3.62%	3.85%	1	3.85%	1	3.85%
Saskatchewan	1,178,971	3.09%	7.7%	3	11.54%	1	3.85%
Alberta	4,431,454	11.64%	9.62%	2	7.69%	3	11.54%
British Columbia	5,163,919	13.56%	15.39%	5	19.23%	3	11.54%
Yukon	42,344	0.11%	3.85%	1	3.85%	1	3.85%
Northwest Territories	45,323	0.11%	3.85%	1	3.85%	1	3.85%
Nunavut	39,255	0.10%	3.85%	1	3.85%	1	3.85%

Note. This table demonstrates how close the current studies population reflects geographic spread the population of Canada

Appendix B

Search Types and Revisions

These tables reflect the population distribution of Canada and of the study. This study aimed to match the population distribution of Canada.

Table 1B

Initial and Revised CanLII Search

Database	Search Term	Number of Hits
CanLII	[GSS initial search] "firearm" and "convicted" and "discharging" or "intent to cause bodily harm" or "violent" or "violence"	14,499
CanLII	[GSS second initial search] "firearm" and "discharging" and "intent to cause bodily harm"	77
CanLII	[GSS revised search] "firearm" or "gun" or "handgun" or "pistol" or "rifle" or "shotgun" and "discharg*" or "shot" or	577

	"fired at" and "convict*" or "guilty" and "intent to cause bodily harm" or "reckless endangerment" or "intent to wound"	
CanLII	[PSS initial search] discharged a firearm at police "convict*" "shot"	2,379
CanLII	[PSS second initial search] discharged a firearm "at police" "convict*" "shot"	77
CanLII	[PSS revised search] "shot at police" or "shooting at police" or "shot police" or "shot detective" or "shot at corporal" or "shot corporal" or "shot at constable" or "shot constable" or "shot at officer" or "shot officer" or "fired at officer" or "firing at police" or "firing at corporal" or "endangering police" or "discharg* at police" and	116

	firearm or "gun" or "handgun" or "pistol" or "rifle" or "shotgun" and "convict*" or "guilty"	

Note. This table demonstrates the initial and revised search terms of the PSS and GSS.

Appendix C

Coding Criteria Method

This is the coding criteria method that was used to determine if a variable was present, not present, or missing.

If the factors are mentioned anywhere in the document they will be counted, otherwise if the applicable section/relevant area is discussed without the factor being mentioned, it will be assumed that factor is not present (no). However, this assumption does not apply to everything. There are some factors that do require more explicit mentions, otherwise they will be 99. Reference the operationalization sheet for further inclusion detail on each factor if required.

Section: Facts of the event (when the case discuses the fact of the event in detail)

*Assumed factor is "no" if not mentioned and this section (facts of the event) exists. If the facts of the event are not mentioned, then it is 99 (missing value)

Partner violence current

Partner trouble current

Dependent trouble current

Alcohol use current

Drug use current

Addiction current

Suicide risk current

Mental health current

Family trouble current

Family violence current

Extended family trouble current

Extended family violence current

Nonfamily trouble current

Section: Circumstances of the offender (or Gladue Factor section, "the accused" section, or if there is a section that discusses the accused's background)

*If the circumstance of the offender section is mentioned and the factor is not present, it is assumed "no." If the circumstances of the offender are not mentioned, then the factor is 99 (missing value)

Alcohol use history

Drug use history

Addiction history

Suicide risk history

Mental health history

Antisocial emotions

Traumatic event (not childhood)

Violent history

Prior threat to law enforcement (or no criminal record)

Traumatic event (not childhood)

Associate violence

Hunter

Specific Areas relevant to a Certain Factor

*The brackets section is what must be mentioned for it to be assumed that the factor is not present ("no"). If no relevant section or discussion to the factor is made, it is a missing value.

Childhood trauma (if childhood (including any part of child up brining) mentioned)

Childhood inadequate caregiver (if childhood, parent)

Childhood school trouble (if childhood (including any part of child up brining) or school mentioned)

Childhood crime (if criminal record or childhood (including any part of child up brining) mentioned)

Childhood divorce (must be explicitly mentioned, or assumed no divorce if parents are supportive during childhood and later on)

Single parent (must be explicitly mentioned, or raised by one parent, implying they are single)

Firearms licence (must be explicitly mentioned if they have one or not, or violate the relevant criminal code, or if they are violating a firearms prohibition during the offence)

Parental drug use (if parent or person raising them mentioned)

Family trouble history (if any part of family is mentioned and the circumstances of offender disused or the family is discussed in this regard)

Family violence history (if any part of family mentioned and the circumstances of offender disused or or the family is discussed in this regard)

extended family violence history (if any part of extended family mentioned and the circumstances of offender disused or the extended family is discussed in this regard)

extended family trouble history (if any part of extended family mentioned and the circumstances of offender disused or the extended family is discussed in this regard)

nonfamily trouble history (if any nonfamily relationships are discussed and no issues are found)

Intergenerational trauma (if Indigenous and impacted by the operationalized definition criteria)

Partner violence history (if partner(s) exists)

Partner trouble history (if partner(s) exists)

Dependent trouble history (if has kids)

Unemployment history (if any work is discussed)

Unemployment current (if any work is discussed)

Marital status (this usually requires an explicit statement, but if the criminal's social relationships are discussed, and no partner is presented, it will be assumed "single." Assumed common law if boyfriend/girl friend)

Education (must be mentioned)

Father Relationship Issue (either their circumstances are discussed and the father is mentioned with no issues, or it is explicitly stated)

Mother Relationship Issue (either their circumstances are discussed and the mother is mentioned with no issues, or it is explicitly stated)

Foster care (assumed no if circumstances discussed or that both the person's parents are involved in raising them or in their life)

Assuming no if not mentioned anywhere in the document (does not require a specific section, but the court case document must have detail on the facts of the event) (See R. v. Duro, 2017 ONSC 4573 (CanLII) for an example of a case that lacks discussing any detail other than minimal inclusion)

Court case document that are too vague (extremely minimal information) will have these factors as missing values (99s)

Drug trade current

Sleep Deprivation

Drug trade history

Aggressive music obsession

Violent video game addiction

Firearm obsession

Community violence with firearms

Community drug use

Associate violence history

Racism

Misogyny

Poverty

Community partner violence

Corrupt government current

Appendix D

Coding Criteria Method

This shows how the variables were grouped into categories by the researcher. This was done to improve the review process of the variables. The grouping of the variables was based on their relevance to one another.

Table 1D

Categories of Variables

Category	Variable generated
Case documentation (6 variables)	
	Case identity
	Case name
	Case link
	Case type
	Sample type
	Code conviction
Circumstance of incident (19 variables)	
	Jurisdiction
	Offence year
	RC Reason police called
	RC Reason nonpolice targeted
	Incident mins

	Who shot first
	Police shoot
	Shots fired criminal
	Shots fired police
	Shots hit criminal
	Shots hit police
	Shots hit nonpolice
	Police killed
	Criminal killed
	Nonpolice killed
	RC Resolvent
	Firearm type
	Drug trade
	Associate violence history
Demographic (7 variables)	
	Gender
	Age
	Ethnicity
	Ethnicity mixed
	Ethnicity other
	Education
	Marital status

Childhood (7 variables)	
	Foster care
	Single parent
	Childhood inadequate caregiver
	Childhood trauma
	Childhood divorce
	Childhood school trouble
	Childhood crime
Relationship (19 variables)	
	Partner violence current
	Partner violence history
	Partner trouble current
	Partner trouble history
	Dependent trouble current
	Dependent trouble history
	Father relation issue
	Mother relation issue
	Parental drug use
	Family trouble current
	Family trouble history
	Family violence current
	Family violence history
	Extended family trouble current

	Extended family trouble history
	Extended family violence current
	extended family violence history
	Nonfamily trouble current
	Nonfamily trouble history
Substance use (6 variables)	
	Alcohol use current
	Alcohol use history
	Drug use current
	Drug use history
	Addiction current
	Addiction history
Mental health (6 variables)	
	Suicide risk current
	Suicide risk history
	Mental health history
	Mental health current
	Sleep deprivation
	Antisocial emotions
Characteristics of the shooter (13 variables)	
	Corrupt government view
	Traumatic event
	Violent history

	Firearm licence
	Firearm obsession
	Hunter
	Criminal record
	Aggressive music obsession
	Violent video game addiction
	Prior threat to law enforcement
	Misogyny
	Racism
	Intergenerational trauma
Socioeconomic (3 variables)	
	Unemployment current
	Unemployment history
	Poverty
Community factors (3 variables)	
	Community offences with firearms
	Community drug use
	Community partner violence

Note. This table shows the categories, the number of variables it applies to, and the type of variables in the category.

Appendix E

Top Five Frequencies of the PSS and GSS

These tables list the five most common frequencies of the samples. There may be more than five frequencies on the table if they have the same percentage.

Table 1E

Top Five Frequencies of the PSS

Highest Percent Rank	Variable Name	Percent of "yes"	Total applicable responses (n= yes/no responses)
1	Violent history	66.7%	18
2	Drug use history	61.1%	18
2	Criminal record	61.1%	18
3	Intergenerational trauma	57.1%	7
3	Unemployment current	57.1%	14
4	Unemployment history	56.3%	16
5	Alcohol use history	55.6%	18

Note. This chart demonstrates the highest percent scores of when a variable is present in the PSS

Table 2E

Top Five Frequencies of the GSS

Highest Percent Rank	Variable Name	Percent of "yes"	Total applicable responses (n= yes/no responses)
1	Childhood trauma	68.8%	16
1	Single parent	68.8%	16
2	Father relation issue	66.7%	15
3	Criminal record	64.7%	17
4	Violent history	61.1%	18
5	Unemployment history	58.3%	12

Note. This chart demonstrates the highest percent scores of when a variable is present in the GSS

Table 3E

Top Five Frequencies of the PSS and GSS Combined

Highest Percent Rank	Variable Name	Percent of "yes"	Total applicable responses (n= yes/no

			responses)
1	Violent history	63.9%	36
2	Criminal record	62.9%	35
3	Single parent	59.4%	30
4	Childhood trauma	57.75%	31
5	Unemployment current	53.55%	24

Note. This chart demonstrates the highest percent scores of when a variable is present in the combined samples of the GSS and PSS

Appendix F

Raw Reporting Numbers of the PSS and GSS

These tables discuss the raw reporting numbers of the PSS and GSS.

Table 1F

Top Five Raw Reported Factors of the PSS

Most number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no responses)
1	Violent history	12	18
2	Drug use history	11	18
2	Criminal record	11	18
3	Alcohol use history	10	18
3	Mental health history	10	19
4	Unemployment history	9	16
4	Traumatic event	9	18
5	Unemployment current	8	14

5	Childhood crime	8	16
5	Alcohol use current	8	24
5	Mental health current	8	24

Note. This chart demonstrates the scores that have the highest number of reported "yes in the PSS.

Table 2F

Top Five Raw Reported Factors of the GSS

Most number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no responses)
1	Drug trade current	13	23
2	Childhood trauma	11	16
2	Single parent	11	16
2	Criminal record	11	17
2	Violent history	11	18
3	Father relation issue	10	15

3	Drug trade history	10	23
4	Unemployment history	7	12
4	Childhood school trouble	7	15
4	Drug use history	7	19
5	Childhood crime	6	15
5	Family trouble history	6	16
5	Alcohol use current	6	25
5	Community offences with firearms	6	25

Note. This chart demonstrates the scores that have the highest number of reported "yes in the GSS.

Table 3F

Lowest Five Raw Reported Factors of the PSS

Lowest number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no

			responses)
1	Dependent trouble current	0	21
1	Dependent trouble history	0	10
1	Family violence history	0	14
1	Extended family trouble current	0	25
1	Extended family violence history	0	4
1	Nonfamily trouble history	0	12
1	Associate violence history	0	20
1	Firearm licence	0	14
1	Community partner violence	0	24
1	Misogyny	0	24
1	Racism	0	24
2	Poverty	1	24
2	Firearm obsession	1	24

2	Aggressive music obsession	1	24
2	Violent video game addiction	1	24
2	Prior threat to law enforcement	1	19
2	Extended family trouble history	1	5
3	Extended family violence current	2	25
3	Family trouble current	2	24
3	Foster care	2	20
4	Nonfamily trouble current	3	25
4	Sleep deprivation	3	24
4	Corrupt government view	3	24
4	Family violence current	3	24
4	Partner violence	3	21

	current		
4	Partner trouble current	3	21
4	Childhood divorce	3	13
5	Drug trade current	4	25
5	Suicide risk current	4	24
5	Community drug use	4	24
5	Suicide risk history	4	18
5	Antisocial emotions	4	18
5	Hunter	4	16
5	Partner violence history	4	15
5	Childhood inadequate caregiver	4	15
5	Family trouble history	4	14

5	Intergenerational trauma	4	7

This chart demonstrates the ranking of the lowest number of "yes" for the PSS.

Table 4F

Lowest Five Raw Reported Factors of the GSS

Lowest number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no responses)
1	Aggressive music obsession	0	25
1	Dependent trouble current	0	25
1	Dependent trouble history	0	12
1	Extended family trouble current	0	26
1	Extended family violence current	0	26
1	Extended family violence history	0	10
1	Firearm licence	0	15

1	Firearm obsession	0	24
1	Sleep deprivation	0	26
1	Violent videogame addiction	0	25
2	Corrupt government view	1	26
2	Misogyny	1	26
2	Suicide risk current	1	26
2	Community drug use	1	25
2	Community partner violence	1	25
2	Associate violence history	1	17
2	Family violence history	1	16
2	Partner violence history	1	12

2	Extended family trouble history	1	10
2	Intergenerational trauma	1	3
3	Family violence current	2	26
3	Partner violence current	2	26
3	Racism	2	26
3	Drug use current	2	25
3	Prior threat to law enforcement	2	21
3	Foster care	2	20
3	Childhood inadequate caregiver	2	17
3	Nonfamily trouble history	2	17
3	Parental drug use	2	16
4	Family trouble current	3	26
4	Partner trouble	3	26

	current		
4	Addiction current	3	25
4	Poverty	3	25
4	Hunter	3	18
4	Suicide risk history	3	18
4	Traumatic event	3	18
4	Partner trouble history	3	12
5	Mental health current	4	24
5	Addiction history	4	18
5	Childhood divorce	4	11

Note. This chart demonstrates the ranking of the lowest number of "yes" for the GSS.

Table 5F

Highest Five Raw Reported Factors of both the PSS and GSS combined

Highest number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no responses)

1	Violent history	23	36
2	Criminal record	22	35
3	Single parent	18	30
3	Childhood trauma	18	31
3	Drug use history	18	37
4	Drug trade current	17	48
4	Drug trade history	17	45
5	Unemployment history	16	28

This chart demonstrates the ranking of the highest number of "yes" in the combined samples of the GSS and PSS

Table 6F

Lowest Five Raw Reported Factors of the PSS and GSS Combined

Lowest number reported "yes" rank	Variable Name	Number reported "yes"	Total applicable responses (n= yes/no responses)
1	Dependent trouble current	0	46
1	Dependent trouble history	0	22
1	Extended family trouble current	0	51

1	Extended family violence history	0	14
1	Firearm licence	0	29
2	Aggressive music obsession	1	49
2	Associate violent history	1	37
2	Community partner violence	1	49
2	Family violence history	1	30
2	Firearm obsession	1	48
2	Misogyny	1	50
2	Violent video game addiction	1	49
3	Extended family trouble history	2	15
3	Extended family violence current	2	51
3	Nonfamily trouble history	2	29
3	Racism	2	50
4	Sleep deprivation	3	50

4	Prior threat to law enforcement	3	40
5	Foster care	4	40
5	Poverty	4	49

Note. This chart demonstrates the ranking of the lowest number of "yes" in the combined samples of the GSS and PSS

Appendix G

Demographic Statistical Tests

This demonstrates the statistical tests that were conducted to see if there were any differences between the two samples in their demographic variables. There were no significant demographic differences.

Table 1G

Testing for Demographic Differences

Demographic	Statistical Test Type	Exact Sig. (2-sided) (*p* value)	Statistically Significant
Gender	Fisher's Exact Test	1	No
Ethnicity	Fisher-Freeman-Halton Exact Test	0.414	No
Education	Fisher-Freeman-Halton Exact Test	0.871	No
Age	Mann-Whitney U Test	0.165	No
Martial Status	Fisher-Freeman-Halton Exact Test	0.78	No

Note. This chart demonstrates the statistical tests used to detect any differences among the two sample groups compared. There were no significant demographic differences between the two sample groups. If any statistical score was $p<0.05$ then it would be deemed significant.

Appendix H

Types of Shooting Convictions

This demonstrates type of conviction a criminal shooter can be convicted of.

Table 1H

Types of Convictions for Criminal Shooting

Conviction Type
• Murder • Second degree murder • Attempted murder • Discharging a firearm to prevent arrest • The unauthorized possession of a firearm • Not having a firearm licence while in possession of a firearm • Possession of a firearm knowing it was unauthorized due to a court order • Possession of a weapon for a purpose dangerous to the public peace • Discharging a firearm with intent to wound • The reckless discharge of a firearm • Assault with a firearm • Using a firearm during an offence • Unlawfully pointing a firearm • The careless use of a firearm • Having a firearm that was obtained by the commission of an offence

• The transferring of a firearm knowing it was not authorized to do so

Note. This is a list of the types of convictions a criminal shooter can be convicted of among the PSS and the GSS.

Appendix I

Shooting Incident Factors

This area discusses the outcomes that occur during the shooting incident.

Table 1I

Group Shooting Engagement, Accuracy, Death, and Survival Rate

Variable Name	Police		Police Shooter		General Shooter		Nonpolice Target	
	Percentage (%)	*n*	Percentage (%)	*n*	Percentage (%)	*n*	Percentage (%)	*n*
Shot first	4	25	96	25	100	26	0	26
Likelihood to shoot in incident	61.54	26	100	26	100	26	NA	NA
Shot accuracy (shots that hit target)	46.15	5	26.67	19	19.5	20	NA	NA
Chance of death of at least one group member	15.38	26	7.69	26	0	26	20	25
Survival rate of group member	84.62	26	92.31	26	100	26	80	25

Note. This table looks four groups; the police, the police shooter, the general shooter, and the nonpolice target. It compares shooting related factors between the groups. It was not considered if nonpolice targets shot back.

Table 2I

Shots Fired by Groups

Variable Name	Police		Police Shooter		General Shooter	
	Number	*n*	Number	*n*	Number	*n*
Total shots fired by the group	13	5	45	19	74	22
Average number of shots fired per incident	2.6	5	2.37	19	3.36	22

Note. This chart looks at three groups; the police, the police shooter, and the general shooter. It considers the total shots fired by each group, and the average shots fired by each group per incident.

Table 3I

Long-guns and Pistols Used by Shooters

Firearm Category	Police Shooter		General Shooter	
	Percentage (%)	*n*	Percentage (%)	*n*
Rifle or Shotgun	61.90	13	45.45	10
Pistol	38.09	8	54.54	12

Note. This chart demonstrates the type of firearm used against the police by the PSS (n= 21), and against the nonpolice by the GSS (n=22). The homemade firearm and unknown firearms (that were not known if it was a long-gun or a pistol) were not included in this chart.

Appendix J

Variable Overview

This table demonstrates the percentages and raw numbers of each variable. It is in alphabetical order.

Table 1J

Variable Overview

Variable Name	Police Shooter Sample		General Shooter Sample	
	Percentage (%)	*N*	Percentage (%)	*n*
Addiction current	29.2	24	12	25
Addiction history	41.2	17	22.2	18
Aggressive music obsession	4.2	24	0	25
Alcohol use current	33.3	24	24	25
Alcohol use history	55.6	18	27.8	18
Antisocial emotions	22.2	22	26.3	19
Associate violent history	0	20	5.9	17
Childhood crime	50	16	40	15
Childhood divorce	23.1	13	36.4	11
Childhood inadequate caregiver	26.7	15	11.8	17
Childhood school trouble	46.7	15	46.7	15

Childhood trauma	46.7	15	68.8	16
Community drug use	16.7	24	4	25
Community offences with firearms	20.8	24	24	25
Community partner violence	0	24	4	25
Corrupt government view	12.5	24	3.8	26
Criminal record	61.1	18	64.7	17
Dependent trouble current	0	21	0	25
Dependent trouble history	0	10	0	12
Drug trade current	16	25	56.5	23
Drug trade history	31.8	22	43.5	23
Drug use current	20.8	24	8	25
Drug use history	61.1	18	36.8	19
Extended family trouble current	0	25	0	26
Extended family trouble history	20	5	10	10
Extended family violence current	8	25	0	26
Extended family violence history	0	4	0	10
Family trouble current	8.3	24	11.5	26
Family trouble history	28.6	14	37.5	16

Family violence current	12.5	24	7.7	26
Family violence history	0	14	6.3	16
Father relation issue	35.7	14	66.7	15
Firearm licence	0	14	0	15
Firearm obsession	4.2	24	0	24
Foster care	10	20	10	20
Hunter	25	16	16.7	18
Intergenerational trauma	57.1	7	33.3	3
Mental health current	33.3	24	16.7	24
Mental health history	52.6	19	26.3	19
Misogyny	0	24	3.8	26
Mother relation issue	33.3	15	33.3	15
Nonfamily trouble current	12	25	20	25
Nonfamily trouble history	0	12	11.8	17
Parental drug use	33.3	15	12.5	16
Partner trouble current	14.3	21	11.5	26
Partner trouble history	40	15	25	12
Partner violence current	14.3	21	7.7	26
Partner violence history	26.7	15	8.3	12
Poverty	4.2	24	12	25
Prior threat to law enforcement	5.3	19	9.5	21

Racism	0	24	7.7	26
Single parent	50	14	68.8	16
Sleep deprivation	12.5	24	0	26
Suicide risk current	16.7	24	3.8	26
Suicide risk history	22.2	18	16.7	18
Traumatic event	50	18	16.7	18
Unemployment current	57.1	14	50	10
Unemployment history	56.3	16	58.3	12
Violent history	66.7	18	61.1	18
Violent video game addiction	4.2	24	0	25

Note. This table demonstrates the frequencies of factors relevant to the shooter samples. The "n" is based on the total "yes" and "no" responses, and the percent is the frequency of the "yes."

Appendix K

Testing Group Difference on Scale Dependent Variables

This table demonstrates the outcomes of the Mann Whitney tests of the scale dependent variables.

Table 1K

Mann Whitney Analyses Testing Group Differences on Scale Dependent Variables

Variable	*Mdn*- GSS (median)	*Mdn*- PSS (median)	*U*	*z*	*p*
Age	23	28	205.5	9.92	0.17
Incident mins	2	224	10	2553.17	0.33
Shots fired criminal	2	2	193	3.09	0.66
Shots fired police	NA	0	No test	No test	No test
Shots hit criminal	NA	0.5	No test	No test	No test
Shots hit police	NA	0	No test	No test	No test
Shots hit nonpolice	NA	1	No test	No test	No test
Police killed	NA	0	No test	No test	No test
Criminal killed	0	0	No test	No test	No test
Nonpolice killed	NA	0	No test	No test	No test

Note. No test= No data from GSS so the test cannot be conducted. * $p < 0.08$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Appendix L

Testing Group Difference on Scale Dependent Variables

This table demonstrates the outcomes of Chi-square tests on nominal dependent variables.

Table 1L

Chi-square analyses Testing Group Differences on Nominal Dependent Variables

Variable	x^2	*df*	*p*	*odds ratio*
Ethnicity	5.45	5	0.41	NA
Gender	1.02	1	1	NA
Marital status	1.13	2	0.78	NA
Education	3.25	5	0.87	NA
RC reason police called	6.77	6	0.29	NA
RC reason nonpolice targeted	NA	NA	NA	NA
Who shot first [if criminal shot first]	1.06	1	0.49	NA
Police fired	NA	NA	NA	NA
If criminal killed by police	2.08	1	0.49	NA
Resolvent- suspect arrested	44.98	7	0.001****	6.75
Resolvent- suspect fled	44.98	7	0.001****	PSS has zero so odds ratio cannot be

				calculated
Partner violence current	0.53	1	0.64	NA
Partner violence history	1.49	1	0.34	NA
Partner trouble current	0.08	1	1	NA
Partner trouble history	0.68	1	0.68	NA
Dependent trouble current	No group did this	NA	NA	NA
Dependent trouble history	No group did this	NA	NA	NA
Alcohol use current	0.52	1	0.54	NA
Alcohol use history	2.9	1	0.18	NA
Drug use current	1.65	1	0.25	NA
Drug use history	2.18	1	0.19	NA
Addiction Current	2.22	1	0.17	NA
Addiction History	1.46	1	0.29	NA
Suicide Current	2.28	1	0.18	NA
Suicide History	0.18	1	1	NA
Mental Health History	2.75	1	0.18	NA
Mental Health Current	1.78	1	0.32	NA
Sleep Deprivation	3.46	1	0.1	NA
Corrupt Government View	1.27	1	0.34	NA
Anti Social Emotions	0.08	1	1	NA
Traumatic Event [adulthood]	4.5	1	0.075*	2.94

Childhood Trauma	1.55	1	0.29	NA
Childhood Inadequate Caregiver	1.16	1	0.38	NA
Childhood divorce	0.51	1	0.66	NA
Childhood school trouble	0	1	1	NA
Childhood crime	0.31	1	0.72	NA
Single parent	1.9	1	0.46	NA
Father relation issue	2.78	1	0.14	NA
Mother relation issue	0	1	1	NA
Parental drug use	1.92	1	0.22	NA
Foster care	0	1	1	NA
Family trouble current	0.14	1	1	NA
Family trouble history	0.27	1	0.71	NA
Family violence current	0.32	1	0.66	NA
Family violence history	0.91	1	1	NA
Extended family trouble current	No group did this	NA	NA	NA
Extended family trouble history	0.29	1	1	NA
Extended family violence current	2.17	1	0.24	NA
Extended family violence history	No group did this	NA	NA	NA
Nonfamily trouble current	0.6	1	0.7	NA
Nonfamily trouble history	1.52	1	0.5	NA
Violent history	0.12	1	1	NA

Associate violence history	1.21	1	0.46	NA
Intergenerational trauma	0.48	1	1	NA
Unemployment current	0.12	1	1	NA
Unemployment history	0.01	1	1	NA
Poverty	0.01	1	0.61	NA
Firearm licence	No group did this	NA	NA	NA
Firearm obsession	1.02	1	1	NA
Hunter	0.36	1	0.68	NA
Firearm type	6.08	8	0.73	NA
Criminal record	0.05	1	1	NA
Drug trade current	8.6	1	0.006***	3.56
Drug trade history	0.65	1	0.54	NA
Aggressive music obsession	1.06	1	0.49	NA
Violent video game addiction	1.06	1	0.49	NA
Prior threat to law enforcement	0.26	1	1	NA
Community offences with firearms	0.07	1	1	NA
Community drug use	2.14	1	0.19	NA
Community partner violence	0.98	1	1	NA
Misogyny	0.94	1	1	NA
Racism	1.92	1	0.49	NA

Note. NA due to being exclusive to one group, or because another group has zero so a comparison could not be conducted, or because the results were not significant so the odds ratio was not required to report. * $p < 0.08$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Appendix M

Testing Group Difference on Scale Dependent Variables

This table demonstrates the outcomes of the Mann Whitney tests of the scale dependent variables.

Table 1M

Contingency Table: Resolvent

Resolvent Type	Outcome	GSS	PSS	Total
Suspect arrested	Yes	2	14	16
	No	22	12	34
	Total	24	26	50
Suspect Fled Scene	Yes	14.5	0.5	15
	No	10.5	26.5	37
	Total	25	27	52

Note. This table demonstrates the difference between the GSS and PSS outcomes in regards to being arrested of fleeing the scene. *The Woolf-Haldane Correction was made to this variable (original Yes for PSS was zero, add 0.5 to each number involved for the odds ratio to be conducted)

Table 2M

Contingency Table: Drug Trade Current

		GSS	PSS	Total
If the shooting incident is drug trade related	Yes	13	4	17
	No	10	21	21
	Total	23	25	48

Note. This table demonstrates the GSS and PSS incident connection to the drug trade.

Table 3M

Contingency Table: Traumatic Event (Adulthood)

		GSS	PSS	Total
If the shooter experienced a traumatic event in adulthood	Yes	3	9	12
	No	15	9	24
	Total	18	18	36

Note. This table demonstrates the GSS and PSS outcomes when their adulthood trauma was measured.

Appendix O

Canadians with Criminal Records

This table demonstrates the percent of Canadians who have a criminal record (for any crime).

Table 1O

Canadians with a Criminal Record (2009)

Canadians with Criminal Record (2009)	Canadian Population (2009)	Percent of Canadians who have a Criminal Record
3,800,000	33,628,571	11.29%

Note. The Royal Canadian Mounted Police Criminal Records Division in 2009 reported 3.8 million Canadians had a criminal record (Public Safety Canada, 2016). The population of Canada in 2009 was 33,628,571 (Statistics Canada, n.d.).

Appendix P

Variable Operationalization

This table demonstrates the definitions of each variable in this study.

Table 1P

Variable Definitions

Variable name	Definition
case_identity	The unique identity code given to the case by the researcher
case_name	The legal title of the case as found on the CanLII website
case_link	The internet hyper link to the case
case_type	The type of court hearing (such as a trial of guilt or innocence, or a decision for sentencing)
sample_type	If the case is categorized in the general shooter sample or the police shooter sample
jurisdiction	The jurisdiction place (geographic area) of the offence
offence_year	The year of the shooting offence
gender	Whether the criminal is male or female
age	The age (in years) of the criminal at the time of the shooting
ethnicity	The ethnicity of the criminal
ethnicity_mixed	A combination of ethnicities
ethnicity_other	Another form of ethnicity that is not coded in ethnicity

code_conviction	The criminal code of Canada conviction(s) that resulted due to the criminal shooting. All charges in relation to the firearm(s) offences and the number is a criminal code statute. YCJA mentioned when applied
reason_police_called	The initial reason why police were called or responding to the incident
RC_reason_police_called	The initial reason the police responded to the incident.
reason_nonpolice_targeted	The reason the criminal shot at the nonpolice officer
RC_reason_nonpolice_targeted	The reason why the nonpolice person was shot at.
incident_mins	This measures how long the incident was in total; including the time that police were on site, or when they were first received the call for service, to when the incident was resolved (such as the subject is arrested)
who_shot_first	Whether the criminal or police fired the first shot
police_shoot	If the police shot their firearm at the criminal
shots_fired_criminal	The number of shots (bullets fired) that criminal shot at or towards the police or civilian target of the GSS. Does not include shots that had no target. Does not include rubber rounds, only real bullets.
shots_fired_police	The number of shots (bullets fired) that police shot at or towards the criminal. Does not include shots that had no target. Does not include rubber rounds, only real bullets.
shots_hit_criminal	The number of shots (fired by the police) that physically

	impacted the criminal
shots_hit_police	The number of shots (fired by the criminal) that physically impacted the police
shots_hit_nonpolice	Nonpolice targets hit, usually in the context of a criminal shooter shooting at an associate criminal or non criminal person
police_killed	Number of police killed by the shooter with a firearm
criminal_killed	If the criminal was killed by the police
nonpolice_killed	The number of nonpolice people killed by the criminal's shots
resolvement	How the shooting incident was resolved
RC_Resolvement	How the incident was resolved (typically when the person was attested or if they fled. If they were in flight while the police were still looking for them, and then they were arrested, it counts as an arrest.
education	The formal educational level of the criminal
marital_status	The relationship status of the criminal
partner_violence_current	This occurs between current relationship partners and is any form of intimidation or emotional, physical, verbal, or psychological abuse. Current means on the day of the event
partner_violence_history	This occurs between current relationship partners and is any form of intimidation or emotional, physical, sexual, verbal, or psychological abuse. History means any day

	prior to the offence date
partner_trouble_current	Any negative conduct that occurs in the criminal's relationship with their partner (excludes partner violence variable). Current means on the day of the event
partner_trouble_history	Any negative conduct that occurs in the criminal's relationship with their partner (excludes intimate partner violence). History means any day prior to the offence date
dependent_trouble_current	When the criminal is mistreating their child, stepchild, or a dependent. Child maltreatment. Current means on the day of the event
dependent_trouble_history	When the criminal is mistreating their child, stepchild, or a dependent. Child maltreatment. History means any day prior to the offence date
alcohol_use_current	If the criminal had consumed alcohol on the day of the offence.
alcohol_use_history	If the criminal had history of alcohol use (that was deemed problematic, was relevant, or if there was alcohol addiction). History means any day prior to the offence date
drug_use_current	If the criminal had consumed drugs or was under the influence of drugs during the offence (other than alcohol; the alcohol variable does not apply to this section). Current means on the day of the event
drug_use_history	If the criminal had a history of drug consumption (other

	than alcohol) that was illicit drugs, problematic drug use, or the drug use was relevant. History means any day prior to the offence date
addiction_current	If the criminal had an addiction to a drug during the day of the offence (explicitly states an addiction, or going through the withdrawals of not using the drug). Current means on the day of the event. Includes diagnosed substance use disorder
addiction_history	If the criminal had an addiction (or was deemed to be dependent on the drug) to a drug prior to the day of the offence. History means any day prior to the offence date. Includes diagnosed substance use disorder.
suicide_risk_current	If there was indication that the criminal was suicidal during the day of the offence. Suicide includes ideation, attempts, or verbal statements of wanting to commit suicide. Current means on the day of the event
suicide_risk_history	If the criminal had a history of suicide prior to the offence day. Suicide includes ideation, attempts, or verbal statements of wanting to commit suicide. History means any day prior to the offence date
mental_health_history	Any mental wellness concern or condition that existed prior to the day of the offence, this does not include suicide or addiction variables. The psychiatric diagnosis history check

	(after the crime) can also reveal this factor. History means any day prior
mental_health_current	Any mental wellness concern or condition that existed during the day of the offence, this does not include suicide or addiction variables. This condition can be diagnosed after the event as long as it would have existed during the crime. Current means on
sleep_deprivation	Any period of sleep deprivation that occurred during the days before, or the day of the incident
corrupt_government_view	Any view that believes the government (local, provincial, or federal), the justice system, or that Canadian laws are corrupt
antisocial_emotions	Any display of short temper, lack of remorse, or being manipulative towards others in the persons emotions. These emotions must be observed as part of the person's character (not due to drug use). Includes conduct disorder symptoms diagnosis
traumatic_event	Any traumatic event/predisposing (does not include childhood trauma) that had a major impact on the criminal. An event that occurred, or is perceived to have occurred as a mental health episode (mental event is being subject to a figure/environmental hazard). Does not include partner violence.

childhood_trauma	Any childhood (age 17 years old or younger) event or series of events that had a major or lasting negative impact on the criminal. This may include but is not limited to physical, sexual, emotional, psychological, distressful, or traumatic events. This does not include divorce, but it can include witnessing family violence, parental fighting, witnessing parental substance abuse as a child.
childhood_inadequate_caregiver	Criminal is not appropriately cared during childhood (17 years of age of younger) for by their parents, caregivers, or other persons responsible for their upbringing. This can last for a certain period of time or for their whole childhood.
childhood_divorce	If the criminal's parents divorced during the criminal's childhood (age 17 or younger, "childhood," "very young," or "child")
childhood_school_trouble	When the criminal, in childhood, receives school disciplinary action, skips school, quits school, gets into school fights, or is removed from school for causing issues
childhood_crime	This does not apply to young offenders (aged 17 or younger). When the criminal engaged in criminal activity in their childhood or had interactions with the youth justice system during their childhood. does not include personal drug use
single_parent	If the criminal was previously raised in a single parent

	household at any point from 0-17 years of age
father_relation_issue	If the father was not consistently in the persons life or not involved in the shooter's upbringing or if it only states "raised by Mother," or "lived with Mother" (implies Father not actively involved or involved), or if Father died during criminal's child
mother_relation_issue	If the mother was not consistently in the persons life or not involved in the shooter's upbringing "raised by Father", "lived with Mother" (implies Mother not actively involved or involved), or if Mother died during criminals' childhood
parental_drug_use	If a parent of the criminal uses illicit drugs or abuse alcohol
foster_care	If criminal was in foster care or was adopted
family_trouble_current	When the criminal experiences major or reoccurring issues with their siblings or parents. Current means on the day of the event
family_trouble_history	When the criminal experienced a major or reoccurring issues with their siblings or parents prior to the offence date. This is in the context of family dispute of conflict and not abuse. History means any day prior to the offence date. Does not include childhood trauma, childhood inadequate caregiver, or divorce.
family_violence_current	If the criminal physically harmed, threatened, or verbally threatened a family member on the day of the offence, or

	during the incident that the offence was part of. This occurs before the shooting. includes nieces/nephews. Does not include D/P
family_violence_history	If the criminal physically harmed, threatened, or verbally threatened a family member on any day prior to the offence day (Mother, Father, Sibling). Does not include dependent or partner violence
extended_family_trouble_current	If the criminal, on the offence day, has conflict (other than physical or violence related) towards an uncle, aunt, grandparent, or cousin
extended_family_trouble_history	If the criminal, prior to the offence day, has conflict (other than physical or violence related) towards an uncle, aunt, grandparent, or cousin
extended_family_violence_current	If the criminal, on the offence day, is violent (verbally or physically) towards an uncle, aunt, grandparent, or cousin
extended_family_violence_history	If the criminal, prior to the offence day, was violent (verbally or physically) towards an uncle, aunt, grandparent, or cousin
nonfamily_trouble_current	If the criminal, on the day of the offence, has a social or relational dispute with a person who is not a partner, family member, or relative (does not include violence committed against another as this is in violent history)
nonfamily_trouble_history	If the criminal, any day prior to the offence, has a social or

	relational dispute with a person who is not a partner, family member, or relative (does not include violence committed against another as this is in violent history)
violent_history	If the criminal, prior to the offence day, had previous violent convictions, violent actions, or verbal threats against others
associate_violence_history	If the criminal physically harmed, threatened, or verbally threatened the victim (who is not a family member, dependent, or partner). Any day prior to the offence
intergenerational_trauma	Occurs when the criminal is Indigenous, and has been subjected to intergenerational or colonial trauma (a traumatic or major negative experience from another) that originated from an oppressive practice that targeted Indigenous peoples
unemployment_current	If the criminal did not have a job at the time of the offence. Current means on the day of the event. A current volunteer positions counts as employment.
unemployment_history	If the criminal had a history of frequently not being employed. History means any day prior to the offence date
poverty	If poverty was current or occurred the offence date and was relevant to the offender's current circumstances. Not having enough money to meet basic needs including food, clothing and shelter.

firearm_licence	If the criminal had a Canadian government issued firearms licence or, if licencing is unknown, but with a s. 91 charge of the criminal code (unauthorized possession; no firearms licence or no proper registration of the gun), s 109 violating prohibition
firearm_obsession	If the court finds the person was "obsessed with firearms" or if the person buys firearms to the point that it negatively affects their relationship with a family parent or spouse
hunter	If the criminal was preparing to go hunting or had a history of hunting (hunting for wild animals; not fishing)
firearm_type	The type of firearm used by the criminal shooter
criminal_record	If the criminal had a prior criminal record
drug_trade_current	If the criminal works in the drug trade or the circumstances of their engaged in are involved the selling, transportation, or possession of drugs/drug equipment in relation to the drug trade, or if the shooting is a drug trade related incident (debts)
drug_trade_history	If the criminal has a history of drug trade involvement or engagement. Any day prior to the offence
aggressive_music_obsession	If the criminal developed a habit of listening to aggressive music that the court found relevant to the criminal court discussion
violent_video_game_addiction	If the psychological or psychiatric assessment deemed the

	criminal had an addiction to violent video games
prior_threat_to_law_enforcement	This occurs before the day of the offence. Any verbal or physical threats towards law enforcement (police, sheriff, corrections, bylaw, or jail guard), or any physically assaultive behaviour towards a law enforcement member
community_offences_with_firearms	If the judge observed that the criminal's community had a concerning level of violence, of firearm offences, or an impacting level of violence on the criminal with firearms prior to the date of the offence
community_drug_use	If the community of the criminal or of the offence area suffers from drugs use. Almost every community does suffer this, but it is state it is relevant or it is an issue when it is mentioned in the court document
community_partner_violence	If the community of the criminal has a concerning rate of intimate partner violence that the judge views have some level of relevance to the criminal's offence
misogyny	If the criminal has a belief or attitude that expresses their personal sexist hatred of women (excludes intimate partner violence; i.e., partner violence variable). Can be current or prior.
racism	If the criminal referred to the victim during, or prior to the shooting, with any racial slur or believed that the victim was inferior or deserving of suffering due to racial reasons

Note. This displays the definitions of the variables. Childhood is when the person is of 17 years of age or younger, or if the court states “childhood” as childhood is legally defined as 17 years of age or younger.