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A Second Look at Active Shooter Events: Expanding Our Understanding of Key Factors

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Abstract

In the current study, we investigate active shooter events (ASEs) with emphasis on expanding our understanding of key factors involved in these events. The impetus for this study is a 2015 exploration (Gamache et al., 2015) that highlighted common perpetrator and event characteristics in ASEs occurring in the US prior to 2014. Since the 2015 study, mass-shooting events have moved from tragic, isolated incidents, to a phenomenon that is widely discussed in the media and highly politicized. Our goal was to investigate continued trends, if any exist, and to compare our current sample of ASEs to the sample utilized in 2015. Differences were observed on two factors: events occurring after 2015 were significantly less likely to occur at a school compared to the early sample; and the presence of other stressors were present in the early sample but not in the recent sample. Recent data continues to show that active shooter events are deadly events resulting in significant loss of life and shared trauma. With the increasing frequency, these events are becoming a public health concern with major political and societal ramifications, and continued research must investigate this evolving form of public violence.

Keywords: active shooters, active shooting events, trends in active shooting events

Introduction

Mass shooting events have been a distressing part of American society for decades, with the United States experiencing a disproportionate number of these events (Lankford, 2016a). Initially, public mass shootings were rare in the United States, with events such as the University of Texas shooting in 1966 (Barr, 2004) and the 1984 San Ysidro McDonald's shooting (Gresko, 2004) seen as isolated tragedies. Unfortunately, this is no longer the case. Public mass shootings have become frequent in the United States, and the sheer violence of these tragedies has consistently produced wide-spread public outcry and fearful reaction. The reaction to these events has been highly politicized, with fierce debate regarding prevention of these events through gun control legislation and mental health treatment (McGinty et al., 2013; Semenza & Bernau, 2022).

Although the discussion and attention allotted to mass shooting events is passionate, there is great disagreement about what defines a "mass-shooting" event. Mass shootings have been mislabeled and mischaracterized by researchers and the media alike with the tendency to group these crimes with other kinds of mass murder and spree-killings. In the past, terms applied to these events changed readily and have included: *mass-murder, mass-shooter, spree-killing, snipers, massacre, and rampage-shooting* (Morton et al., 2008; Shultz et al., 2013). This is particularly evident when considering the focus of research on "school shootings" since the Columbine Massacre in 1999, suggesting that there is a distinction between mass-shootings that occur at a school and shootings that occur in a different setting (Curran et al., 2020).Additionally, media reports and political statements tend to group together all mass-casualty events with firearms in the same category, describing very different forms of violence such as family annihilation

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killings, gang-related gun violence, and terrorist actions as the same kind of "gun crime."Because this phenomenon is highly politicized, numerous news outlets and private organizations are tracking and reporting "mass-shootings." The growing focus is on events that encompass not only active shooter events (ASE) but also unrelated types of mass-casualty events in which firearms are involved (Gun Violence Archive, 2024; Knutson, 2023; Silverstein, 2020). Even formal definitions of mass-shooting events from law enforcement sources can be contradictory or change as time goes on (Fox & Fridel, 2022).

Before 2010, the term "active shooter" was generally confined to law enforcement training and tactical research. The term refers to a person or persons that is armed, often with firearms, "who has used deadly physical force on other persons and continues to do so while having unrestricted access to additional victims" (U.S. Department of Homeland Security, 2013, p.2). Initially, there was limited research with this phenomenon and often only explored in tactical manuals of law enforcement agencies or disaster response trainings. Within this context, the construct was often a tactical designation reserved for law enforcement and military personnel. A growing number of researchers have utilized the definition of *active shooter events* (ASE) to describe stranger based mass-casualty shooting violence that is distinct from other forms of gun violence such as gang-violence. With this in mind, future research is needed in order to continue to analyze highly destructive forms of gun violence that have increasingly become part of American life.

To address the initial dearth of research focusing on active shooting events, we conducted an archival research study to explore this type of mass-casualty event, investigating possible predictive factors related to perpetrator characteristics (Gamache et al., 2015). In our initial study we explored 88 active shooter events that occurred in the United States since 1965. We identified elements of the events such as number of victims, length of the event, weaponry utilized, and how the events ended. Additionally, we explored the individual characteristics of the ninety-two perpetrators of our sample events. Assessing demographic data, we confirmed previous studies' findings; namely that a vast majority of our shooters were white males, had easy access to firearms and, although they had incidents of behavioral issues, the shooters had limited history of past arrests. Other demographics indicated that the shooters were a heterogeneous group, however there was difficulty establishing a useful criminal profile due high variance.

The Current Study

Since our initial study in 2015, there have been significant changes in how these events are viewed, largely due to the increase in number of active shooter incidents in the United States. With heavy media reporting of these tragedies, there has been intense interest in the phenomenon of mass-shootings and several more research studies by social scientists have taken place on this subject with varied findings (Kim et al., 2021). Responses to these events have become highly politicized, with said responses drawn across party lines as these events are becoming increasingly commonplace (Semenza & Bernau, 2022). Much of the discussion about ASEs centers around individual characteristics of the perpetrators that could be used to explain or predict violence (i.e., "red flags"), often with limited results (Lee et al., 2020; Sommer et al., 2014)

Due to the consistently growing number of mass-shooting events, the prevailing public interest in these events, and what we believe is continued conflation of ASEs with other forms of American gun violence, we sought to return to this subject with an updated archival research study, analyzing ASE events that have occurred since our initial study in 2015 (Gamache et al., 2015). The purpose of this study is to explore ASEs that have occurred since 2014 and compare these cases to our previous dataset to explore similarities or differences between the sets, both in terms of the perpetrator characteristics and the elements of the events themselves.

Method

Samples Defined

The archival data collection of the previous study (Gamache et al., 2015) concluded in 2014. Since that time, there have been dozens of events in the United States that have been described as active or mass shooter events. To properly compare the results of our previous research study with these new events, the authors reviewed modern databases that track gun violence in the United States, namely *The Violence Project Mass Shooter Database* (Petersen &Densley, 2023)and *USA TODAY/Northeastern University Mass Killing Database* (Fox, 2023). Due to both of these databases using different criteria for identifying events, in an effort to improve the validity of our comparison we selected cases based on our previous inclusion criteria: the event took place outside of a private residence, three or more victims (besides the perpetrator) were killed or wounded, at least one of the victims was unknown to the

perpetrator, the shooting event was not in commission of another crime (i.e., bank robbery), the event was not organized or state-sponsored violence (i.e., most organized terrorist activity). To review new cases, we only sought shooting events that occurred since 2015.

The total number of cases present in the databases at the time of our review was 728. This included duplicate cases as well as cases occurring before 2015. On review of the databases, the authors identified 56 events that have occurred in the United States since 2015 that met the above criteria for an active shooter event. With these 56 cases, the authors then reviewed the data contained in the databases and sought out supplementary information about these events from published news articles regarding the details of the crime.

In our review, the authors utilized the same survey questions as in the previous study for ease of comparison. For each event, the authors cataloged data regarding the location of the event, number of victims killed or wounded, duration of the event, types of weaponry utilized, and how the event was resolved. The perpetrators' individual characteristics were also catalogued, including information about the shooter's education background, demographics, medical history, and observed behavioral traits. This information from these 56 cases was compiled into a dataset (the "2015-2023 dataset") to be compared to our previous dataset (the "prior to 2015 dataset").

Results

The purpose of this study was to explore the characteristics and elements of ASE, particularly considering the increasing frequency of these events in the United States. To do this, the researchers reviewed the dataset from our previous study (Gamache et al., 2015) and compared that dataset with a new collection of active shooter events that have occurred since 2015. The previous data set identified 88 unique events that met the operationalized definition of active shooting events, with a total of 92 perpetrators involved in the shootings. The new dataset further identified 56 additional active shooting events that occurred since 2015 and were perpetrated by 56 shooters. These data sets were compared, utilizing chi-square analysis and mean comparison where appropriate, to investigate significant differences between the two. Limited statistically significant differences were observed. As a result, broad findings will be discussed that encompass the combination of both data sets, cataloging 144 events with 148 perpetrators.

Event Data

The frequency of active shooting events was first analyzed by reviewing the date of occurrence. The first event that met the inclusion criteria occurred in 1966, with intermittent events occurring through to 1986. However, every year since 1986 there has been at least one mass shooting event that met the definition of an "active shooting". Overall, there were an average of 2.59 events a year from 1966 to 2023, but this is complicated by several early years having no events and several outlier years having more than 6. Comparison between the datasets shows increasing frequency more clearly, with the early data set (1966-2014) having an average 1.95 events, whereas the recent dataset (since 2015) having an average of 6 events a year (see Figure 1).

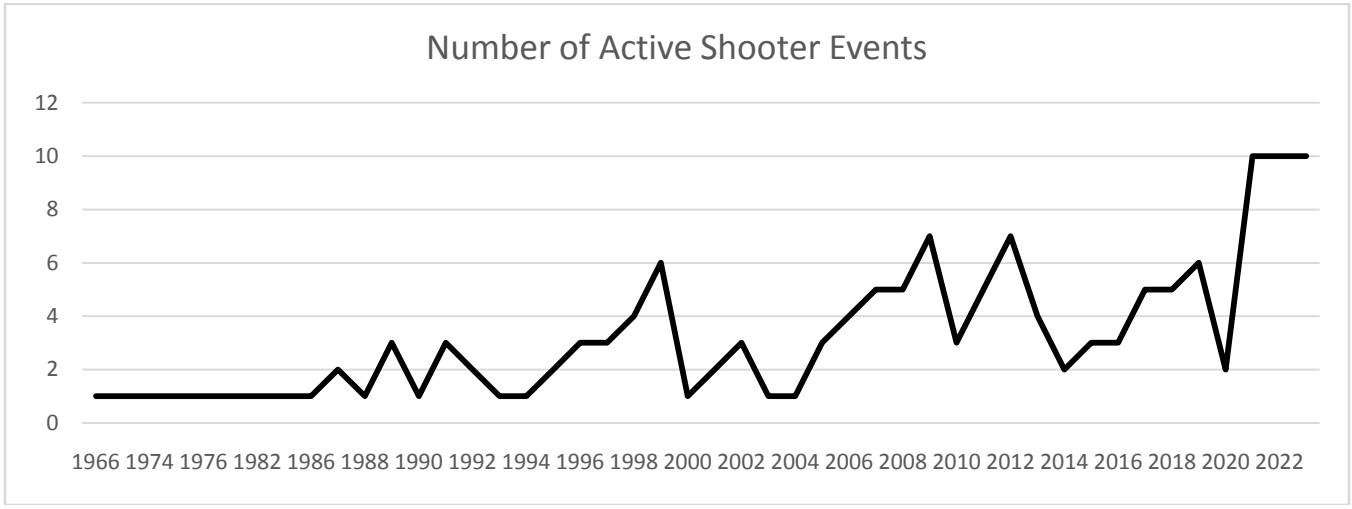

Figure 1

These events are deadly, with a total of 745 victims killed and 850 victims wounded by gunfire. The average event in the combined data set had a mean of 8.51 victims killed (*SD* = 8.96) and 11.44 victims wounded (*SD* =

34.77). These events were often short in duration, with the majority (53%) occurring in under 10 minutes, with few (14%) lasting more than 60 minutes. The perpetrators utilized multiple types of weaponry, but handguns and small arms were utilized in the majority of cases (71%) followed by semi-automatic long rifles (36%) and shotguns (18%) (see Figure 2). Researchers coded rifles as "assault rifles" if they were capable of automatic fire by design or through modification, and these weapons were used in sixteen percent of shooting events. Shooters would frequently (50%) bring more ammunition and weaponry than utilized in the crimes. To meet criteria for inclusion, these events must have occurred in a public location and thus all of them did, however it is worth noting that thirty-five percent of these events occurred at a school (primary, secondary, or post-secondary institution). Often, the events ended by the perpetrators committing suicide (41%), the perpetrators being killed or subdued by police (33%) or voluntarily ending their rampage (13%), with the remaining events being ended by victim or bystander intervention.

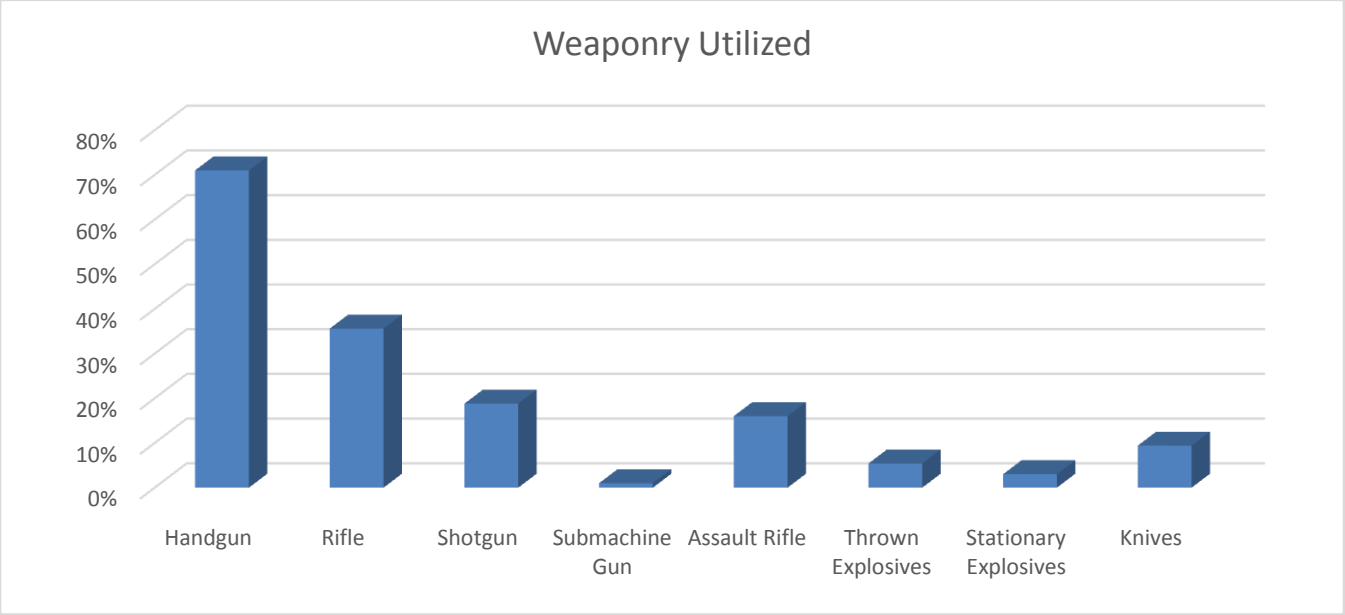

Figure 2

Shooter Characteristics

The demographic and individualistic characteristics of the shooters in the combined dataset were reviewed and notable traits are described here. The perpetrators of these crimes were overwhelmingly male (97%), the majority (69%) were White (see Figure 3) and the age of the perpetrators varied considerably (see Figure 4). The majority of the shooters were single (78%), and had easy access to firearms (86%) either by legally owning firearms or having unrestricted access to them. In many cases (29%), the perpetrators told others about their plans prior to the event, often in form of warning or threat. In the majority of cases (60%), the shooters left notes or manifestos discussing their crimes and motivation. Occasionally, the motivation for the crime was unknown, unclear, or there was limited information to assess a motive, however extremist ideology (religious and non-religious) was a primary motivator in roughly a third of cases (30%).

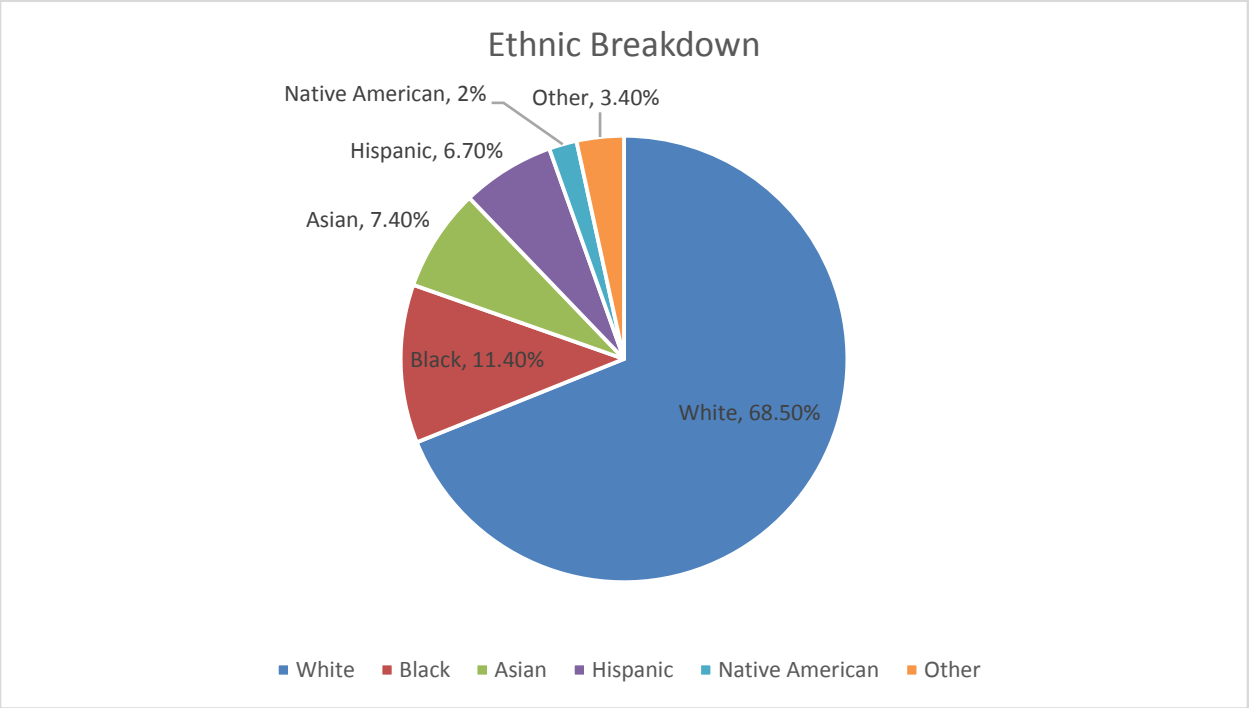

Figure 3

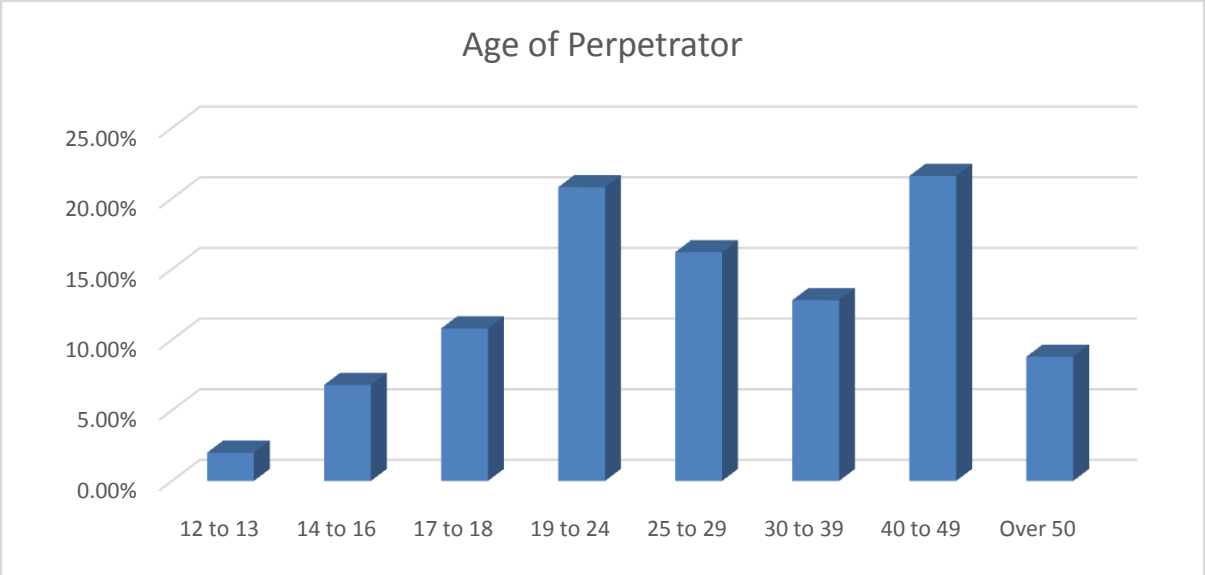

Figure 4

Psychological Traits

The psychological experiences and possible mental illness of the shooters were explored and coded. These variables were recorded when the shooter had a formal diagnosis prior to the events; diagnosed after the events (in the case of the shooter's survival); or after the shooter's death (using historical data). To summarize, roughly a fifth (22%) of the shooters had a history of psychological issues with 28% seeking mental health treatment in the past. Past suicidal ideation (28%), psychosis in the form of hallucinations or delusions (24%), and anger/homicidal ideation (23%) were the most common issues in shooters' reported psychological histories. Trauma and abuse were present in 22% of the shooters' histories, with 18% having a history of multiple traumatic and/or abusive events. Substance-abuse issues were present in the reviewed cases, with 21% of shooters having some form of substance-abuse history. More than a third (40%) were openly suicidal at the time of the event, stating suicide as a motivator (i.e., "suicide by cop") or left suicide notes as explanation for their crimes. It is important to note that not every shooter who was

openly suicidal prior to the event completed suicide, nor was every shooter who completed suicide openly suicidal prior to the event (see Figure 5 for summary).

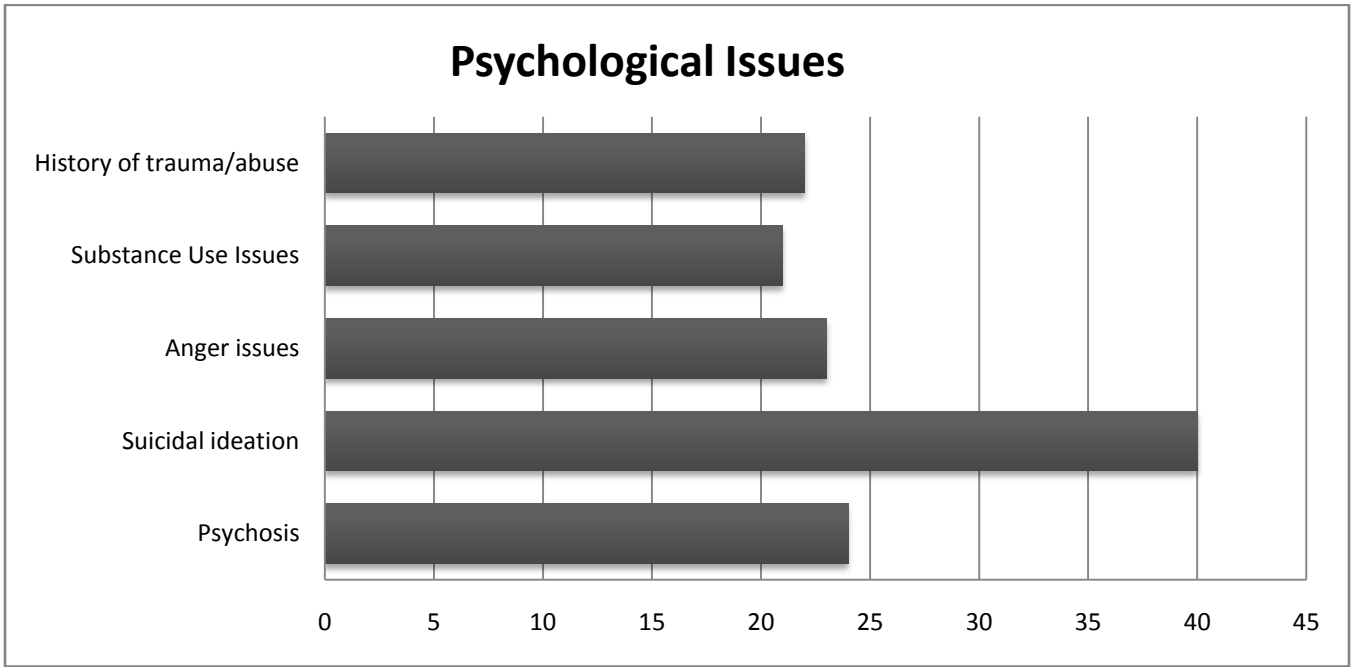

Figure 5

Behavioral Issues

The perpetrator's behavior in professional and personal life was also assessed. In the majority of cases (54%), the perpetrators displayed disturbance in behavior prior to their crimes. These issues were commonly found at work (28%) or in school (22%), with disciplinary action, suspensions, or termination being the common outcomes. A general history of past violent actions was present in 32% of the shooters in our population, both associated with criminal charges (34%) and with harmful behavior that didn't result in charges (i.e., unreported violence or charges dropped) (see Figure 6 for summary).

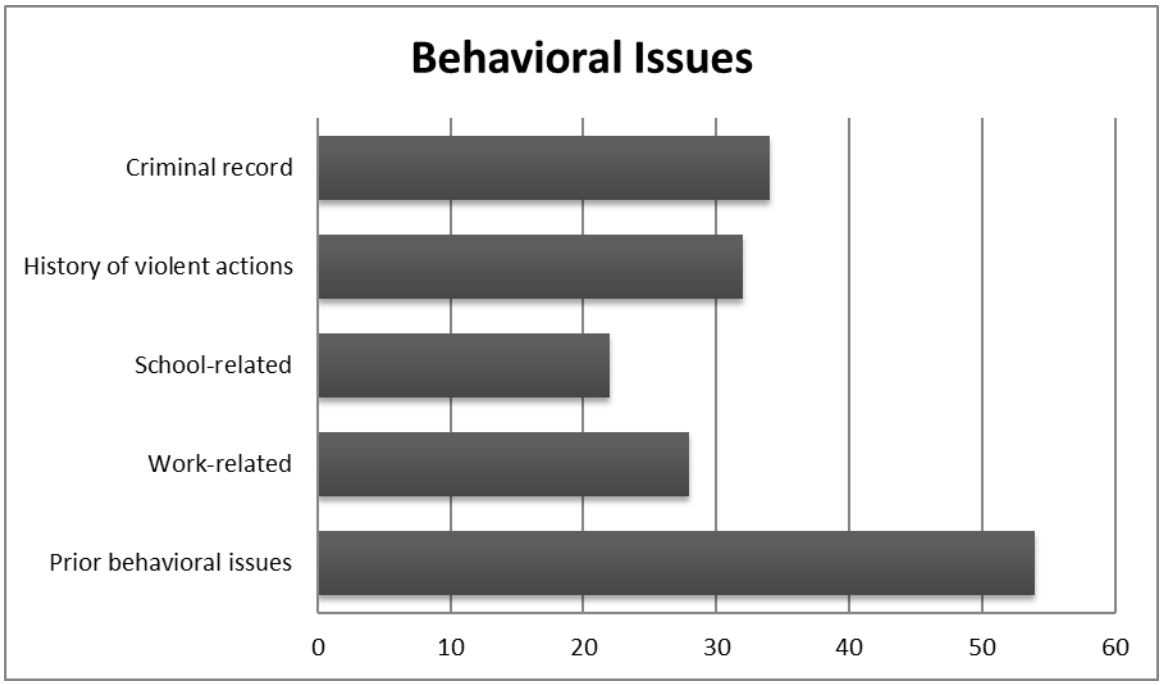

Figure 6

Personal-Social Issues

The final group of characteristics reviewed was issues related to social environment and personal adaptation. Figure 7 displays the distribution of percentages across the shooter population assessed in this study. Almost half (45%) of the shooters were being affected by additional stressors beyond psychological or behavioral factors. These additional stressors included an obsession with weaponry and shooting (28%), as well as violence and violent media, especially an interest in previous mass shooting events (33%). Twenty percent demonstrated maladaptive attitudes and embraced hatred towards a specific or general group, including identification with Nazism, racist ideology, or misogyny, and when present this was almost always (98% of cases where the shooter displayed this trait) a primary motivator for the shooting event.

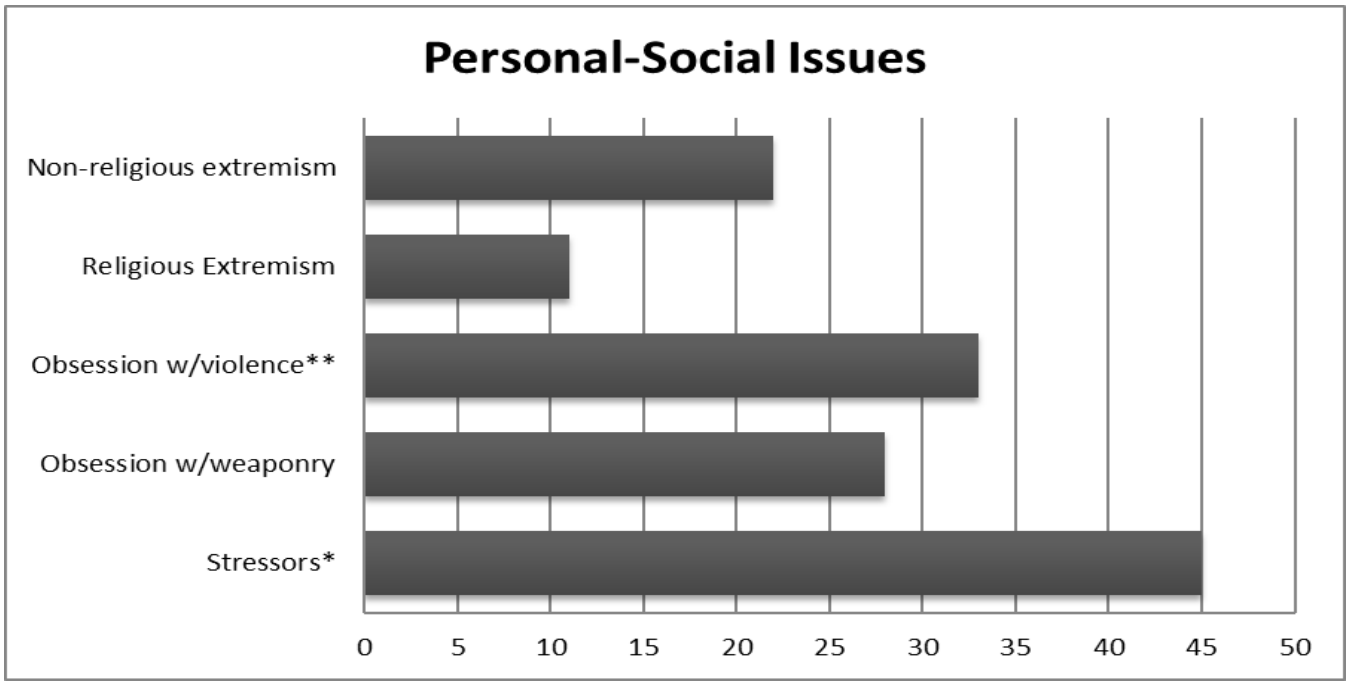

Figure 7

Comparison between Datasets

To compare the characteristics and factors of the events after 2015 with the data from our previous study, chi-square analyses were conducted, and few statistical differences emerged. There were two exceptions to this. First, the events occurring after 2015 were significantly less likely to occur at a school ($\chi 2$ (1, n= 148) = 11.8, p< .001), with the recent events occurring at a school 18% of the time compared to 46% of the events prior to 2015.Secondly, the presence of other stressors were present in the early sample (37.8%) but not in the recent sample ($\chi 2$ (1, n = 148) = 54.84, p< .001). Beyond these factors, although variance existed between the samples, none of the differences reached statistical significance.

Discussion

The results of these analyses add to the research on a form of large-scale violence that is increasing in frequency in the United States. When comparing older mass shooting events to more recent ones, there was no statistical differences between the datasets with level of violence, suggesting that although the frequency of these events may be increasing, the lethality has remained the same and mass-shootings remain as deadly as they have been. With increasing prevalence of this form of extreme violence, more attention has been devoted to policies gauged at preventing these events.

The majority of shooters had legally owned the weapons they utilized or had unfettered access to deadly weapons in their homes. There has been increased attention to the form of weaponry utilized in mass-shooting events, with so-called "assault rifles" being targeted for specific regulation as a preventative measure (Everytown for Gun Safety, 2023; Post et al, 2021). Our findings suggest that the majority of these events are committed with weapons that

could not be considered "assault weapons" regardless of the technical or tactical definition utilized (i.e., pistols), so hyper-focus on these kinds of weapons is likely to be less effective than other policy interventions (RAND, 2023). Indeed, the authors believe that the most effective interventions will be on the individual level by identifying risk and creating policy that improves psychological and social well-being.

Firearm Acquisition

Within the current dataset, there was an overwhelming number of shooters who had easy access to firearms (86%), which is not surprising given the relaxed regulations on gun acquisition in the United States. As of current federal law, persons who purchase firearms from licensed dealers are required to fill out a Firearms Transaction Record, ATF Form 4473, and are subject to a National Instant Criminal Background Check System (NICS) check, however, there are certain stipulations that allow individuals to avoid this 'check' (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2014). Despite the significant federal effort to prevent higher risk individuals from acquiring firearms (The Brady Handgun Violence Prevention Act (1993), approximately half of the states allow persons with "valid" permits to bypass the NICS check requirement in the process of legally obtaining a firearm (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2023). Even with the availability of the NICS, under federal law, local governments and federal government employees cannot be held responsible for providing information to the NICS that results in the failure to prevent the sale of a firearm unlawfully or for preventing the sale of a firearm to an individual who is lawfully able to possess a firearm (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2014).

Moreover, a person prohibited from legally purchasing a firearm in the United States (e.g., felons, individuals with history of psychiatric institution commitment, undocumented immigrants), can legally acquire firearms that are considered "antiques" (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2014), thus still allowing them some kind of gun acquisition.

Federal law does not address firearm sales that are conducted by unlicensed sellers (e.g., via online, gun shows), consequently allowing any individual to acquire a firearm, regardless of their personal, criminal, or mental health background. Further, there are a variety of circumstances wherein a federal firearms licensee is allowed to legally sell firearms without the necessity of a NICS check, for example, private sales or dealings at gun shows (in most states). There are only five states, Connecticut, Colorado, Illinois, New York, and Oregon, that require background checks to be completed in the process of firearm acquisition at a gun show. According to the ATF, from 2017 through to 2021, 70% of guns used in a crime were purchased through a legal dealer (i.e., anyone in the business of selling or repairing firearms; Bureau of Alcohol, Tobacco, Firearms and Explosives, 2024). Further, of all traceable firearm crimes committed from 2017 to 2021, the majority of the weapons were legally sold by dealers, pawnbrokers, and firearm manufacturers (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2024).

Individual Differences

The focus of research on mass violence should be preventative in nature and seek to identify risk factors that could be explored to avert future violence. To this end, this research examined individualistic characteristics of the perpetrators of mass shooting violence. As expected, based on previous research conducted on mass violence, the overwhelming majority of the shooters were males, and a large percentage was White. It is worth noting, however, that the ethnic breakdown of the population was more diverse than would be suggested based on public discourse regarding American mass shooting events (Taylor, 2019), and the shooter population is widely heterogenous in terms of other demographic variables and personal characteristics.

Prior to the mass-shooting events of the late 1990s, there was a perspective that mass-shooting events were rare events with no rational explanation (i.e., the perpetrator "just snapped"). As more of these events occur, and deeper investigations into the motivations and actions of the perpetrators occur, it is consistently shown that this is not the case, and our research findings support this. No predictive pattern emerged in the research on mass-shooting, and our research is no different, however there are some factors that are worth special attention. Mental health concerns were present in a substantial percentage of the population, with shooters having often sought mental health treatment and reported symptoms associated with severe and persistent mental illness. With that being said, the majority (77%) of the perpetrators had no history of mental health issues.

Since 2015, there has been a focus on political motivations for mass-shooting crime with focus on the perpetrator's association or interest in extremist ideology (often right-wing authoritarianism, religious terrorist, or white supremacy) (Dolliver & Kearns, 2022). Although extremist views were present in the population (20% for non-religious extremism, 11% for religious extremism) and often accounted for the shooter's motivation for the crime,

extremist ideology was not present in the majority of cases. More commonly, the shooters had a history of violence or aggression and behavioral concerns that disrupted their functioning. Although their issues were diverse, many had criminal charges and aggressive behavior in their history and more than half of the shooters displayed some form of behavioral issues prior to their crimes, including disruptive behavior at school and at work. Indeed, multiple perpetrators engaged in aggressive behavior, but charges were repeatedly dismissed, leaving no legal avenue to prevent their access to firearms and possibly prevent future violence. Many of the shooters had directly or indirectly warned or threatened about impending violence, and, in hindsight, this "leakage" (O'Toole, 2000) could have allowed for intervention prior to explosive violence.

Limitations

There are a number of limitations to this study that should be taken into consideration when interpreting the results. Most significantly, this study suffers from the limitation of archival research in that we are limited to the information of these high-profile incidents that has been made publicly available. We sought to utilize research databases that are currently cataloging and tracking mass-shooting events and believe that the databases we utilized are the best publicly available. That said, there is widespread disagreement on the definition and inclusion of these events. Additional information was gathered from sources available on the internet, mostly from news articles and available reports, and these varied wildly in quality of the content available.

An interesting anecdotal effect was also observed in regard to the quality of information available on these events. Unless the event had been widely studied (such as the 1966 University of Texas Shooting) events that occurred prior to widespread Internet access (roughly prior to 1996), had somewhat limited information available to them compared to events that occurred in the 2000s (the rash of "school shootings" following the Columbine Shooting in 1999 for example), so events occurring from 2000 to 2014 had a disproportionate amount of data available to review. We had described this limitation in our previous research, but we observed a similar issue in this study with the later events (post 2015). Since roughly 2015 there has been a concern that intense reporting on the histories of the perpetrators was glorying their crimes and leading to a contagion effect that was contributing to the increasing frequency of mass-shootings (see Follman 2015; Lankford, 2016b; Tufekci, 2015; Zarembo, 2016 for overview). This led to a concentrated effort in the media to focus on the victims of these crimes and avoid discussing the shooter in significant detail. Although the authors agree with empathic, victim-centered reporting of crime, this phenomenon has created a dearth of information about the traits and motivations of recent perpetrators.

A final limitation is in the coding of the data for analysis. Our research looked at over 100 separate factors of the events and the perpetrators. Some of these factors were objective (i.e., number of victims killed in event), but even these factors had a great deal of nuance and could be ambiguous depending on the information available in the case (i.e., "employment status at time of event"). Most significantly, the majority of the factors was subjective in nature (i.e., "obsession with violence", "ease of access to firearms") and required specific decisions for operationalization. Additionally, several of these variables have become politically contentious (i.e., "assault rifle") with intense disagreement of common definitions. In crafting our definitions, we sought to be clear, accurate, and as neutral as possible, but almost certainly there will be challenges related to how we defined variables.

Future research in ASEs should respond to these issues, especially by setting standard operational definitions for social scientists and policymakers to utilize. Future research should focus on identifying risk factors that allow for prevention of these mass causality events, as well as developing community response to cope with trauma associated with the aftermath of mass-shooting events.

Conclusion

Mass-shooting events have become a troublingly frequent occurrence in the United States, with intense public debate centered around understanding the cause of these events as well as strategies on how to prevent them. Our previous research (Gamache et al., 2015) sought to explore these kinds of crimes with an operationalized definition showing them to be unique from other forms of gun violence. Due to the increasing frequency of active shooter events in the United States since our initial study, the authors sought to examine new mass shooting incidents to assess changes or differences found in contemporary events. The current study continues to show that active shooter events are deadly events resulting in significant loss of life and shared trauma. With the increasing frequency, these events are becoming a public health concern with major political and societal ramifications, and continued research must investigate this evolving form of public violence.

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