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School Shootings in Russia Versus the US: New Reality, Key Similarities and Differences

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Abstract

Background: The Cumulative Strain Theory (CST) is a multi-stage explanatory model which is used to analyse students' involvement in mass shootings at schools across the world. School shootings were once considered a uniquely American phenomenon. However, over the last decade, the incidence of these violent attacks has spiked around the globe. In particular, recent reports from Russia have demonstrated a worrying increase in the number of school shootings despite efforts to implement policies to prevent them.

Aim: The aims of this report are (1) to discuss the genesis of school mass murders in the context of cumulative strain theory, and (2) to analyse the scope of the problem in the US versus Russia.

Methods: We used the five-stage cumulative strain theory to analyse the factors contributing to school shootings using two case studies from each country. We gathered information and evidence from a variety of sources including interview transcripts, statistical data, journal articles, reviews, and other secondary sources published in Russian and English.

Results: Our analysis revealed some common features among the school shooters in Russia and the US, such as the self-perception of superiority, vindictiveness and a lack of social support, including challenging relationships with parents and peers. However, the American shooters displayed a readiness for encounters with and possible firearm use against law enforcement officers during the mass murders. We further found that auto-aggressive behaviours were prevalent in the attacks that occurred – in Russia in particular. Unlike those from the US, the reports from Russia pointed towards an association between cumulative economic hardships and various behavioural outcomes ranging from poor psychological health to severe behavioural outbursts and violent behaviours.

Conclusion: We believe that the cult of weapons and militarism increase the risk of school shootings in both countries. Neither a single stage of CST nor all five stages together can predict or confirm the association with mass shootings.

INTRODUCTION

School shootings have been considered unique to the US since the 1970s. However, over the last decade, this problem has spiked around the globe.

In particular, recent reports from Russia have demonstrated a worrying increase in the number of school shootings despite efforts to implement policies to prevent them. The definition of a school shooting overlaps significantly with the definition of 'mass shooting', which means an event where four or more people, excluding the shooter(s), are

killed by a firearm(s) in a public space over the course of a single incident (Booty et al., 2019). The major differences are that, in school shootings, the firearm offence happens on school grounds and likely targets students and staff. These events, apart from being devastating and extremely stressful for the surviving victims, the affected families and the public in general, are also a point of political contention between gun rights and school safety activists. There are no strict provisions and consistent nationwide regulations in place in the US to screen individuals before they come into possession of firearms. The result has been a spate of school shootings rising steadily since the 1970s (Callcut et al., 2019). Additionally, the increased isolation and loneliness experienced by students during the Covid-19 pandemic have added to the stressors and psychological challenges that they face on a daily basis. This has been supported by recent research which has indicated that the issue of school shootings is becoming worse (Peña et al., 2021).

The shooting at a Texas elementary school in 2022 was among 28 fatal shooting incidents at US schools since 2018, which have resulted in the deaths of 75 people, including 60 children (Holtermann, 2022). In contrast, Russia, a country with stricter gun laws, has seen a steady rise in the number of school shootings since 2014 (Anisin, 2022). With such a high prevalence of shootings, similar patterns may exist between the different events in both countries. We hypothesised that mass shootings are more prevalent in the US than in Russia due to the psychosocial and cultural differences between the two nations. In this report, we compared four incidents of school shootings (two from each country) in the context of local environmental, sociopolitical and psychological factors that could have affected the perpetrators. We reviewed the similarities and differences between the school shootings in the US and Russia and the factors that contributed to their occurrences. Additionally, we examined the regulations put in place across all administrative levels to prevent future mass shootings. We believe the incidence

of school shootings could be reduced with a better understanding of offenders' psychological states and the timelines before and after these tragic events.

Theoretical basis

Jack Levin and Eric Madfis developed the cumulative strain theory (CST) to help understand the multifactorial causes of mass murder. The model comprises a five-stage sequential model of strain, with each of these stages being required for a massacre to occur. We utilised those principles in the context of school shootings as a model to explain perpetrators' engagements in school shootings in both the US and Russia.

Figure 1 summarises the theoretical basis of CST.

Chronic strain describes an individual's consistent experiences of failure and frustration, which results in extended periods of strain. Typically, chronic strain occurs for up to six months before a mass killing, with up to 63% of such individuals experiencing prior long-term stress (Silver et al., 2019). Some of the most common stressors contributing to chronic strain and becoming a mass murderer include male gender (97%) and mental illness (47%). Poor social and support networks can also contribute to chronic strain (Silver et al., 2019; Capellan, 2016). For school shooters, this often begins at home, where individuals may have weak relationships with their families. In fact, one study found that almost half of school shooters had negative home lives (Levin & Madfis, 2009).

The next stage, uncontrolled strain, describes an individual's perceptions of being marginalised because of their limited support system. One study concluded that 26% of mass murderers were socially isolated, with 24% of them living alone (Capellan, 2016; Levin & Madfis, 2009). Minimal social ties make individuals more likely to act upon their uncontrolled strain in the acute strain phase (Kennedy-Kollar & Charles, 2013).
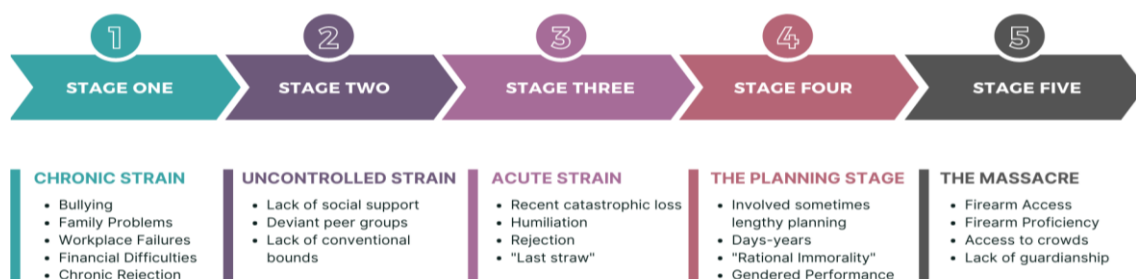
Figure 1. The five stages of cumulative strain theory in school shootings

As a result of loss, change or consistent strain, an individual may experience acute strain. This occurs within the six-month period before the attack, where the individual experiences an acute stressor that exacerbates their condition. Typically, the individual considers this stressor to be catastrophic, which causes them to feel hopeless and like they have nothing to lose (Silver et al., 2019; Capellan, 2016). Among school shooters, ridicule and isolation by peers are common examples of acute strain.

One or some of these precipitating factors initiate the planning phase, which is when the individual begins to consider the idea of a mass killing and sets in motion preparations for it (Capellan, 2016). School shooters typically start planning a minimum of two days before their attack, with some preparing for weeks or months in advance. Such plans typically include acquiring a weapon, planning the logistics of the killing and identifying targets (Levin & Madfis, 2009; Bonanno & Levenson, 2014). The final stage includes the individual acting on their mass killing fantasy and attempting to regain control by exerting violent power over others. Most often, these attacks occur in a familiar place, such as a classroom (Capellan, 2016).

METHODOLOGY

To perform a comparative analysis of the features present in school mass murders in Russia and the US, we used two recent cases from each country that had been widely covered by the media. We took advantage of publicly available information from international news reports, government-issued media releases and video materials for each incident, including recorded interviews with the parties involved. The materials were translated from Russian to English if necessary and reviewed and analysed by trained medical professionals. Each translated article was reviewed by one of our co-authors, each of whom holds academic positions and has extensive experience in writing and translating academic publications.

The inclusion criteria for each episode of a school mass shooting were (1) single-offender event, (2) the use of firearms, (3) four or more victims (excluding the offender), (4) occurrence on school property, (e) the presence of a specific motive, (5) significant media coverage (in other words national or federal level), and (6) occurrence between 2016 and 2021. The exclusion criteria were (1) familicides or any other shootings due to underlying crimes and (2) connections to gangs and/or organised crime groups. Using Levin and Madfis' five-stage sequential model (Levin & Madfis, 2009), we analysed the conditions and events surrounding the shootings within the following framework: chronic strain, uncontrolled strain, acute strain, planning and the shooting itself. We compared the cases based on the country in which the event happened.

The objectives of this review were: (1) to examine the characteristics of the school shooting incidents and the behavioural characteristics of the offenders, (2) to investigate whether any existing survival protocols and security measures, including addressing students' behaviours at school during the events, played a role in the outcomes of the shootings and (3) the effectiveness of the states' responses to the school shootings.

RESULTS

School shootings are unfortunately a common occurrence in the US, with a shooting occurring once a week on average. For example, the Oxford High School shooting marked the 29th shooting on school grounds in 2021 and the 651st incident in which at least four people were fatally shot (Werenka, 2021).

However, it is also clear that mass shootings are becoming more common in Russia. With such a high prevalence of shootings, there are similar patterns among the different events.

Table 1 summarises the four episodes included in our analysis.

The analysis of the four cases showed that most of the incidents were premeditated and well thought out in advance.

For example, a journal that was found in the bathroom Ethan Crumbley had been in before the shooting revealed 21 pages of disturbing drawings and a calculated plan to murder other students (Nissen, 2022). All the shooters leaned towards a slight theatricality in their actions. We also concluded that all the episodes resembled a ritual in which the shooter played the role of a god. A desire to take revenge (in others words, punish the people who had offended them) and challenging relationships between the shooters and their parents, friends and teachers were the main motivating factors for the completion of the homicides among both the American and Russian shooters. Our review of media reports also revealed that the school shootings in Russia could have been influenced by the 'Columbines' from the US (Nemtsova, 2020). Specifically, Vladislav Roslyakov was inspired by the Columbine High School massacre: he was notably dressed like one of the Columbine shooters, Eric Harris, during the attack.

Table 1. Summary of the cases

Episode	Date	Location	People killed	People injured	Shooter	Shooter's age	Post-murder suicide
Kerch Polytechnic College shooting	17 Oct 2018	Kerch Polytechnic College in Kerch, Crimea, Russia/Ukraine	21	70	Vladislav Roslyakov	18	Yes
Kazan School shooting	11 May 2021	Kazan's Public School No. 175, Kazan, Republic of Tatarstan, Russia	9	23	Ilnaz Galyaviev	20	Attempted
Oxford High School shooting	30 Nov 2021	Oxford Township, Michigan, US	4	7	Ethan Crumbley	15	No. Crumbley was arrested, unharmed, by the police.
Santa Fe High School shooting	18 May 2018	Santa Fe, Texas, US	10	13	Dimitrios Pagourtzis	21	No. Pagourtzis surrendered to the police after being injured.

There are presumedly many differences between the behaviours of shooters who intend to commit suicide and those who want to stay alive. However, these differences are not very clear in school shootings (Lankford, 2015). Interestingly, both the Russian school shooters in our study attempted to commit 'murder- suicide' and demonstrated other brutal forms of auto-aggressive behaviours and excessive cruelty. For example, Ilnaz Galyaviev attempted to commit suicide by biting an artery on his left arm while sitting in a police car (Business Online, 2021). He reportedly referred to himself as "a god" and to his victims as "bio-waste". In contrast, the American shooters included in this analysis attempted to get into reckless shootouts with the police even though they had never considered 'suicide by cop' (Wertz et al., 2020).

Predisposing and precipitating factors

All four school shooters were white men with challenging backgrounds and well-defined personality traits. Similarly, all the school shootings happened in rural and suburban schools and/or colleges, schools with students from low socioeconomic status families and schools where the majority of students were white. These findings are consistent with those of current research (Metzl &

MacLeish, 2015; Follman et al., 2022).

In terms of socioeconomic status, income inequality correlates with several social issues, such as homicide and crime rates. School shooters are therefore more likely to come from areas with more profound income inequality. This pattern may lead to the anger and resentment experienced in inequitable environments, which can eventually manifest as violence. However, there is no data that indicates that poverty rates influence the incidence of school shootings. The school shooters in both countries reportedly expressed feelings of marginalisation. In fact, at least three of the shooters included in this analysis experienced isolation and rejection, and three of the four left evidence of being victims of bullying (Ibbetson, 2018; Fitz-Gibbon, 2021; Porter, 2018).

The average age of the shooters included in this comparative analysis was 18.5 years. Physical, emotional and social changes, including exposure to poverty, abuse and/or violence, make individuals in this age group vulnerable to mental health problems and challenging behaviours, yet these remain largely unrecognised and untreated.

Certain common mental health factors and motives defined the minds of mass shooters in both countries. At least two of the four school shooters had a history of mental illness (TASS, 2018; Smith, 2019; KHOU 11, 2021). Among the school shooters with a diagnosed mental illness who were being treated, 50% were non-adherent to their psychiatric treatments.

Our review demonstrated that the shooters had signs of depression, rage and narcissism. Some of them exhibited 'splitting' and other maladaptive coping strategies. This is prevalent in certain personality disorders and is a way in which perpetrators rationalise their violent actions. These shooters had a hard time coping with failure and loss, and all four shooters had experienced some kind of personal loss leading up to the attack (Paygunova & Chistyakov, 2021). A personal loss may include, for example, the end of a relationship with a peer(s) or the loss of privileges at school or home (Ibbetson, 2018; Osborne, 2018).

Interestingly, only one of the Russian perpetrators was truly psychotic at the time of the event. Both the Russian shooters were young males with antisocial tendencies (Anisin, 2022), who meticulously planned and acted alone, and their longstanding fascination with weapons and violence led them to carry out their heinous acts in the middle of the workday (Smith, 2019; Roth, 2021).

The lasting impact of adverse childhood experiences, including neglect and exposure to abuse or extreme family conflict, may also negatively affect school shooters' mental health (Fitz-Gibbon, 2021). This trauma was often a precursor to psychological concerns among the mass shooters discussed in this report. For example, Roslyakov's father was aggressive towards him while his mother was a member of Jehovah's Witnesses and often punished him when he did not follow the rules (Smith, 2019; Topwar. ru, 2018). Similarly, Crumbley's parents faced involuntary manslaughter charges. They were accused of making the gun used in the shooting accessible to their son and failing to intervene when he displayed signs of mental distress and thoughts of violence (Hayes, 2022).

Perpetuating factors

All the school shooters demonstrated an inability to cope with the resentment, isolation and repeated disappointments experienced in their daily routines. This maladaptive pattern led to an "accumulation" of chronic stress that gradually increased and reached its peak when another objective or presumed stressor became the last straw. Furthermore, all four episodes highlighted the lack of structural and emotional support that the students needed in order to have their grievances addressed in a timely manner. Some of the passages in Crumbley's journal, for example, provide insights into his mental state: he made the word "help" bold on one page and wrote of having "zero help for [his] mental problems" (Nissen, 2022).

The report Mass Attacks in Public Spaces – 2019 released by the US Secret Service National Threat Assessment Center examined 34 mass attack incidents across the US and showed that school shooters are often exposed to additional risk factors such as substance abuse (NTAC, 2020). Nearly half the shooters in the US had a history of drug abuse. Despite high-level presidential and administrative support, there is scant Russian academic research on substance use issues among Russian shooters. Galyaviev (Bormotova, 2021) and Roslyakov (Priymak, 2022) reportedly had no issues with substance use.

While it could be assumed that school shooters would have had a history of violence prior to their assaults, our review of the available records and sources suggested that this is not necessarily true. Our findings demonstrated that most of the attackers (three out of four) had not had previous violent tendencies leading up to the incidents. However, all the perpetrators exhibited a profound interest in violence and/or guns prior to the incidents. Long-term exposure to violence, such as through video games and movies, is thought to desensitise Russian shooters to violence and sometimes even glorify it. Several attackers (two out of four) had also displayed an interest in violent history, such as with Columbine shooting and Hitler. The imitative 'Columbiner' nature of the two episodes from Russia have also been pointed out (RBC, 2022).

Our review further revealed that a significant proportion of the Russian and American shooters' social interactions took place online. Online social networks turned out to be a major way through which these individuals interacted with the world.

In the case of the Oxford shooting, Crumbley posted photographs of himself on social media with a new gun, which his parents had given to him as a present, and multiple posts that caused worry and stress in the student community (Butler and Dane, 2021). Surprisingly, the local officials and school staff claimed they were unaware of the situation.

When we looked closer at the cases that occurred in Russia, some striking similarities became apparent: despite social media posts about the criminal acts being planned, there was little to no reaction from school officials or the shooters' peers. A clear example of this is the fact that before the events of the Kazan School shooting, the

perpetrator launched a Telegram channel on which he proclaimed himself to be a god and posted a photo of himself in full gear with the caption reading "I'm going to kill a bunch of biological trash and then I will shoot myself" (McBride, 2021).

Roslyakov and Galyaviev appeared to be more actively involved in online 'shooting' communities compared to their American counterparts. Unfortunately, the number of Russian teenagers interested in similar communities is growing constantly: in 2020, their number exceeded 70,000 (Gulalieva, 2020). In contrast, the same information about American teenagers is lacking.

DISCUSSION

According to Silva and Capellan (2019), a mass public shooting is an incident of targeted violence where an offender has killed or attempted to kill four or more victims on a public stage: (1) the act can involve more than one offender and take place at multiple related locations within a 24-hour period; (2) the main weapon has to be a firearm; and (3) the shooting is not related to state-sponsored, or profit-driven criminal activity (e.g., drug trafficking or gang shootings) (Silva & Capellan, 2019).

For the purposes of this report, a school mass shooting is defined as a multiple homicide incident in which four or more victims are murdered with firearms within one event and in one or more proximal locations within a school setting (Krouse & Richardson, 2015). Since researchers have defined school shootings differently, figures on reported school shooting cases have not been assessed consistently (NTAC, 2019). As school shootings do not generally have official criteria, researchers must define the types of incidents they include in their research; for example, some researchers use a minimum number of victims or the use of a firearm in the attack in their definitions (Böckler et al., 2013).

Mass shootings began to appear in the US in the late 1980s in the form of 'going postal' attacks in post offices and were followed by 'workplace massacres' that occurred in places of employment (Kerr et al., 2020). Since 2015, more than 150 cases of school shootings with the use of firearms have been recorded in the US. Many of the incidents have not been directly related to typical 'Columbiners' but conflicts between students and, less often, with teachers, parents or outsiders. For example, in 2019, a young man killed 23 and injured 23 others at a supermarket in El Paso. Moreover, many shootings occur in communities. In 2017, 58 people attending a live music festival in Las Vegas were shot and killed. This is considered the worst case of mass murder in US history (Lozada et al., 2019). The US death toll is

the highest in the world, and its fatality rate is alarming – particularly since the US was one of the first countries to implement mass shooting prevention programmes.

Although the US population is more than twice Russia's, we find no evidence of the higher incidence of school shootings directly correlating with higher population or density between the two countries (www.census.gov). Nevertheless, within the US mass murders on school grounds are reported at a higher rate in the states with a higher number of residents (Nowicki, 2020).

Although mass murder was once considered a highly Americanised phenomenon, over the last few decades, cultural and communicational globalisation has drawn attention to high-profile cases in other countries (Anisin, 2022). Although we noted a copycat effect in the Russian incidents included in this report, most of the school-based mass shootings in the US were inspired by previous attacks conducted by Americans who shared the same racial, linguistic and cultural backgrounds. The personal experiences of the Russian shooters appear to be very similar to those of the Americans when they conducted their mass shootings in the US.

Many of Russia's early mass shootings were within the military, with the first noted case in March 1992 when an unknown soldier killed eight soldiers and wounded two. Based on open-source information available for the last six years, there have been at least 16 cases of shootings in schools in Russia, including the incident in Kazan, since 2015. However, many of the incidents in Russia, although they are referred to as school shootings, are not actual 'Columbines' (in others words, pre-planned mass executions of students in schools committed by other teenagers). Before the incident in Kazan, there had been four such incidents in Russia over the previous six years, and the vast majority of them were associated with the use of pneumatic weapons. The incidents often stemmed from "hooligan motives". Several Russian researchers have defined "school-based violence" as a type of violence involving coercion and the use of force between children and teachers, and many Russian teachers have acted as aggressors (Gorbatkova, 2020).

How well understood are school shootings?

The study of school shootings as a phenomenon poses considerable challenges when considering the random nature of these events. Researchers have examined the effects of specific school shooting events, including Columbine High School in the US. The 1999 shooting at Columbine High School and more recent events, including Virginia Tech (2007) and Sandy Hook (2012), have been

characterised by many as a social crisis (Jaymi Elsass et al., 2016). Over the last 40 years, sociologists have identified patterns that contribute to mass murders in general. However, researchers lack a fundamental understanding of how risk factors contribute to school shootings given their random and unpredictable nature. Before 2019, only three studies had provided large-scale comparative analyses of mass shootings in the US and other countries (Lankford, 2015; Lankford, 2016; Lemieux, 2014).

In a 2002 report by the United States Secret Service (Keenan & Rush, 2016), the key characteristics of school shootings were identified as follows:

- The incidents of targeted violence at schools are rarely sudden, impulsive acts.

- Prior to most incidents, other people knew about the attacker's idea and plan to attack.

- Most attackers did not threaten their targets directly before advancing the attack.

- There is no accurate or useful profile of students who have engaged in targeted school violence.

- Most of the attackers engaged in some behaviour before the incident that caused others concern or indicated a need for help.

- Most of the attackers had difficulty coping with significant losses or personal failures, and many had considered or attempted suicide.

- Many of the attackers had felt bullied, persecuted or injured by others before the attack.

- Most of the attackers had access to and had used weapons before the attack.

More contemporary studies conducted within the last decade have provided additional characteristics regarding the attackers:

- Sex: 97% male

- Race: 53% White; 16% Black; 11% Latino – based on data from 1982 to 2022 (Statista, 2022)

- Poor mental health (47%) (Bartol & Bartol, 2012)

- Peer and social rejection (Bartol & Bartol, 2012)

- Poor social and support networks (e.g., broken homes, economic insecurity, feeling marginalised) (Silver et al., 2019; Capellan, 2016)

- Isolation/living alone (Silver et al., 2019; Capellan, 2016)

- Subjected to ridicule or bullying (Sommer et al., 2014)

- Predominantly from rural areas (de Apodaca et al., 2012)

- Transitioning from a smaller, more supportive school to a larger, more anonymous school may exacerbate pre-existing mental health issues among potential school shooters (Baird et al., 2017).

Interestingly, all the cases discussed in this report occurred at a local level (e.g., in the area where the offenders were born and raised) and affected random members of their own communities. Three of the four school shootings occurred outside densely populated areas, and those offenders were motivated by grievances against specific social groups – their classmates, teachers and 'friends'. The Russian offenders also tried to coerce and inflict violence upon specific teachers and selected students.

Many school shootings with murder-suicides have involved the wrongheaded invocation of one of four interpersonal virtues (mercy, justice, duty, glory) as well as a perversion of self-control and fate (Joiner, 2014). The perversion of heroic glory was noted in all the cases included in our analysis. Malkki (2014) also emphasised that to understand the intentions behind the actions of a school shooter, they should be read as a message with a hidden meaning (Malkki, 2014).

Research has shown that the more adversity a school shooter experiences, the more likely they are to have psychiatric symptoms and aggressive behaviours. The school shooters in Russia experienced a number of psychosocial stressors in their lives and suffered from chronic or acute strain. Our analysis, for instance, found an association between cumulative economic hardships and various behavioural outcomes ranging from poor psychological health to severe behavioural outbursts and violent behaviours. Nearly all the school shooters suffered from chronic strain and experienced clear signs of acute strain, while three of the four ended up experiencing uncontrolled strain. Just two of the offenders went through the classic planning stage, but all the shooters finalised their plans (the event stage). It is clear that not all shooters went through all five stages of CST.

Many school shootings are rooted in some sort of grievance, which is either real or imagined unfair treatment experienced by the offenders. All four offenders in our analysis were heavily influenced by group grievances. Interestingly, only one shooter was ideologically motivated and clearly stated that his violent actions could be attributed to ethnic and socioeconomic factors related to the target population. This highlights the likelihood of a greater similarity between the offenders across all four cases and situational contexts.

Are school shooters truly insane?

According to a recent study, the majority of school shooters had struggled with severe mental health issues, such as depression, psychosis and/or suicidal thoughts, which were not being treated when they committed their crimes (Glick et al., 2021). For example, Crumbley's public defence attorney told the court that leading up to the shooting, Crumbley had been hallucinating and hearing voices and "... was not sleeping, was extremely anxious and was not eating properly" (Moshtaghian, 2022). The Oxford High School counsellor also testified about disturbing drawings on Crumbley's math homework, which depicted a handgun and the words "blood everywhere" above the figure of a person who appeared to have been shot twice and was bleeding (Hayes, 2022). In late January 2022, it was revealed that Crumbley's defence had planned to argue an insanity defence for the 15 year old. Similarly, Dimitrios Pagourtzis was deemed incompetent to stand trial and has been receiving treatment at a mental health facility since December 2019. As of February 2022, Pagourtzis was still not considered mentally fit to stand trial (Brokaw, 2022).

A Russian court determined that Galyaviev was fully aware of his actions at the time of the crime and could be held responsible for them (Petrova, 2021). Interestingly, only two out of four of the shooters in our analysis were placed in involuntary treatment. The rest of the shooters were recognised as "sane" and were sent to jail.

Gun control and school shootings

One of the greatest arguments for reducing the prevalence of school shootings is restrictive gun laws. The right to bear arms in the US is protected under the Second Amendment to the United States Constitution (Ausman & Faria, 2019). Each state has its own laws regarding who is allowed to own or possess firearms, and there are various state and federal permit and background check requirements. In some states in the US, such as Texas, where the recent Uvalde Middle School shooting occurred in which 19 students and two teachers were killed, the requirements to purchase a gun are that one must be 18

and honour a short waiting period following application. Other states have stricter requirements. Although it would be difficult for us to estimate the correlation between gun control laws and school shooting prevalence based on four cases, some studies have indicated that weapon bans have decreased the number of school shooting fatalities across the US (Reeping et al., 2019). Other types of gun control laws, such as concealed carry laws, have not influenced the incidence of school shootings.

As of 2013, Russian citizens over 18 years of age can obtain a firearms licence after attending gun safety classes and passing a federal test and background check. Initial purchases are limited to long smooth-bore firearms and pneumatic weapons with a muzzle energy of up to 25 joules; after five years of shotgun ownership, rifles may be purchased. Any person with a history of mental illness is disqualified. It is unclear whether the gun culture in Russia will survive as it has in the US. In fact, many Russians grew up in a time when owning a weapon was unthinkable due to the restrictions and punishment involved (Aleyev, 2018).

Like the US, self-defence is a vital aspect of Russian law, and the constitution guarantees a person's right to defend their life and property. Russian law strictly regulates the handling of weapons and prohibits the possession of short-barrelled, automatic and semi-automatic weapons. The actions of Russian law enforcement agencies have had a positive effect, at least when compared with the US: the number of mass shootings in Russian schools is certainly lower than that in the US. However, the new regulations and gun possession rules are often criticised for their low efficiency given that it seems there will be more 'Columbines' in Russia.

Role of the media

Media reports about gunfire on school grounds became more frequent in recent years. This can be naturally explained by the fact that nearly half of all school shootings since the 1970s have happened in the last decade (Fowler et al., 2021; CHDS, 2022). Although many benefits are apparent from having these tragic events covered promptly by the media, such as alerting the public, bringing the government's attention to the problem and providing justice for the victims, there are also significant drawbacks linked to the media approaches utilised, as seen not only in the US but also in Russia.

School shootings add significant stress to the lives of the surviving victims, the affected families and their communities. The media's role is therefore to promptly inform the public about the crime and to portray the

most accurate picture of the event. The latter is especially challenging due to the lack of verified information early after mass murders involving minors. Naturally, this can lead to misinformation that results in false accusations and harassment. As an example, the rushed news report from the Perm State University shooting led to the bullying and harassment of an innocent person with the same name as the killer (Slepchenko, 2019). Despite the local news agency admitting the mistake, the harassment and death threats towards the innocent person continued.

The mass panic triggered by social media coverage may also result in hasty emotional responses. For instance, the mayor of Santa Fe, Jason Tabor, while intoxicated, posted a video of himself condemning the investigation and accidentally revealed information that had neither been confirmed nor submitted in court (ABC13, 2021). This caused a wave of discontent and the formation of protest groups consisting of students who were against firearms (Greene, 2018).

Another incident involving a victim and their family took place after the Perm State University mass murder. An impersonator went on live TV to share her experiences of the event. It was only later that the mother of the actual victim confirmed her daughter had died in that shooting.

A month after the same shooting, new information about a woman who had supposedly recruited the shooter to commit the mass murder on school grounds came to light. Her photograph and personal information were broadcast. The investigation later revealed that the story had been completely fabricated, yet the woman suffered the consequences of the negligent journalism. In all three of the aforementioned cases, an overwhelming amount of unverified information dramatically affected the lives of multiple individuals, even people who were completely unrelated to the tragedy. Unfortunately, mistakes of this type cannot be solely attributed to the incentive to rush news reports.

While the media's massive and unrelenting coverage of mass shootings can create a higher level of awareness, the exposure can also glorify these acts, particularly in the minds of individuals who are already in the contemplation stage (Stein, 2021). The 'copycat effect' describes how, in some instances, school shooters have previously demonstrated an interest in or idolisation of previous perpetrators and sought to have a similar impact and media attention. Interestingly, these tendencies have been observed more frequently among Russian shooters than among those in the US.

It is also important to mention that wide broadcasts of a

perpetrator's photographs and personal information on the news and social media may lead to the idolisation of criminals and cult formation. For example, the popularity of and the public's unhealthy interest in the Oxford shooter forced the judge to deny press coverage of the court trial (Baldas, 2022).

When discussing the spread of information, it is important to take into account the wide use of social media by teenagers, which does contribute to the spread of certain harmful and dangerous ideas (Pevzner, 2021). Interestingly, we did not find those tendencies in recent cases from Russia. Accordingly, the growing number of incidents cannot be attributed to the use of social media alone.

The contents of a shooter's social media pages offer a useful tool in helping to build a more accurate picture of the preceding events, recognise warning signs or aid in the investigation of their crime (Stein, 2021). In terms of the specific differences and similarities between the US and Russia, which are culturally distinct parts of the world, social networks are actively controlled by law enforcement in the latter, and school teachers are incentivised to monitor their students' activities online (Lenta.ru, 2021). Several government initiatives have been proposed by lawmakers in Russia to end internet anonymity as a way to combat the spread of calls for violence and crime encouragement (Roache, 2021). Although there have been similar initiatives among officials and parent groups across the US, strict control of social networks has not been established. Taken together, such measures either in Russia or the US are yet to prove their usefulness.

Some concerns have been raised about the inadequacy of measures to prevent future shootings (Jervis, 2018). Media sources, in particular, have received a backlash from the public for underplaying information regarding school shootings, including a lack of strong condemnation of the perpetrators. Even the most extraordinary and unrepresentative shootings have been treated by cable television outlets and news websites as though they were representative of massacres generally (Fox & Levin, 2015). We believe this could play a role in portraying this nationwide problem as less than urgent. Actions that could help reduce and, ideally, prevent school shootings have therefore not been implemented in a timely manner. Moreover, after mass murders on school grounds, news covering other topics and events typically replaces shooting incidents, as has been observed in both the US and Russia. The nature of mainstream media news is another significant factor contributing to the underrated social perceptions of school shootings in both

countries. Oftentimes, without having reliable sources of information, hearsay and online speculation are presented as facts.

Can school shootings be prevented?

Since the 1999 Columbine shooting, many schools have implemented stricter security measures, such as metal detectors, armed guards and zero-tolerance policies (Reeping, 2021). Lockdowns and active shooter drills have become more commonplace and are practised in 95% of schools. Some schools have even proposed arming teachers (Reeping, 2021). All these measures have received mixed reviews – some of them, especially lockdown and active shooter drills, have been implemented to increase the chances of survival, while others have actually made students feel less safe. At a state and federal level, through the implementation of Red Flag or Extreme Risk laws, law enforcement officials or family members can recognise behaviours that may indicate impending violence and act on these by removing the firearm from the individual (Reeping, 2021; ElSherief, 2021). While this can empower individuals to take action, it can also backfire due to biases against certain races (Reeping, 2021). One strategy that has been encouraged is having students report any suspicions of a potential incident involving firearms, since shooters tend to tell at least one person before their act of violence.

Russia has used a different approach to prevent school shootings. In response to one school shooting, President Putin ordered the Russian Federal Service of National Guard to implement new gun regulations. Additionally, the Russian government has tended to explain school shootings via American video games and movies to distract society from another deeper systemic issue, namely, Russia's educational system, which lacks the infrastructure to support the primary prevention of school shootings by identifying high-risk students (Bershidsky, 2014). Teachers are underpaid and overworked and, as a result, have neither the energy nor resources to help students who are being bullied or who come from domestic violence situations. An analyst in Washington DC, Pavel Luzin, stated: "It is not the weapons that provoke shootings or stabbings in schools, but the atmosphere of total psychological and often physical violence in schools and Russian families" (Mirovalev, 2021). We believe that a need for increased security check-ups at schools would be highly beneficial as it could prevent students and teaching staff from being endangered. Although some studies reported the direct effects of engaging in violent video games and aggression, this topic requires more robust research with a higher number of participants. As for now, there is not enough evidence to draw the line between the effect of playing video games with aggressive content and violence or criminal activities in children.

CONCLUSION

Although mass shootings are more common in the US than Russia, the number of mass shootings in Russia is rising. School shooters in both countries suffer from mental illness to a more frequent extent than the general population and are motivated more often by their grievances against specific subgroups (e.g., classmates, specific teachers, and school administrators). It must be noted that not all school shooters progress through all the stages or that the sequence is stationary. Nevertheless, a large number of school shooters do go through the stages of CST, which means that it is a scientifically valid model for explaining the nature of mass shootings in the US and Russia. Although the offenders included in our review experienced some of the classic features of CST, this theory should not be considered a predictive model. There is a need for further research to expand on CST because it does not include offenders' motivations or how they connect to a given stage in the cumulative process. From a theoretical perspective, the CST model underscores the belief that no single stage is sufficient for mass violence to be perpetrated and that it may be more useful to address the complex social interactions both leading up to and following the violence. School shooters experience different types of strains (e.g., the US attackers have tended to experience chronic and uncontrolled strains more often than their European counterparts), and the extent of their experiences is variable. Moreover, a strong understanding of these patterns may help shape future policies, reforms and initiatives aimed at preventing school shootings.

DECLARATIONS

Appendix

Mass shooting episode	Stage 1: Chronic strain	Stage 2: Uncontrolled strain	Stage 3: Acute strain	Stage 4: Planning stage	Stage 5: Massacre at school
Kerch Polytechnic College shooting	Vladislav Roslyakov's parents were divorced. He studied at a local school in which he displayed no interest and obtained poor grades. He had few friends, and his hobbies included weapons and video games. His mother belonged to the local Jehovah's Witnesses. She limited his social activity, searched his pockets and forbade him to go to the cinema or use a computer. She only allowed the latter when he turned 16.	Roslyakov "hated college because of the angry profs" and hinted that he would take revenge. Roslyakov's classmates reported: "he was very withdrawn, rarely spoke to anyone had deleted himself from social media". He also "took interest in maniacs". He may have been bullied because of his family's poverty and inability to contribute financially to his college needs. Roslyakov was in a number of online communities dedicated to serial killers as he could not establish any meaningful relationships in real life.	According to an ex-girlfriend (they broke up several weeks before the attack), Roslyakov had informed her that he had lost faith in people when his classmates started to ridicule him for being different. In the days before the attack, he discussed the ignorance of others, the lack of purpose in his life, mass shootings and suicide on social media.	It was discovered Roslyakov had obtained a weapon permit in 2018 and owned the gun legally; he periodically attended a shooting club. Shortly before the shooting, he legally purchased 150 rounds of ammunition. Roslyakov carried a type of safe out to a clearing and buried it. That was also where he burned all his flash drives, sim cards, photographs and the Bible, the burned pages of which were later found by law enforcement. His clothing resembled that of Eric Harris, one of the perpetrators of the 1999 Columbine High School massacre.	The shooter went in prepared: with combed hair, a T-shirt saying "hatred", black jeans tucked into boots and a large bag. Roslyakov entered the grounds of Kerch Polytechnic College via a back entrance (there was no security or metal detectors) at 11:45am (right before the school lunch break). He headed for the dining room, where he planted the bomb that detonated several minutes later. Roslyakov walked the halls with the guns. He first killed a teacher and then students who got in his way.
Kazan School shooting	Ilnaz Galyaviev had been experiencing severe headaches for at least a year prior to the shooting. Family members had noticed increasing aggression and irritability in his behaviour since the beginning of the year. His father remembered that Galyaviev had started slamming doors at home during that time without giving an explanation for his attitude. From the seventh to ninth grades, he had reportedly been experiencing a serious conflict with one of his teachers who had called him "stupid" and expressed her doubts about his ability to move to the 10th grade	Galyaviev was described as having a quiet, loner personality and not being prone to conflict. He was considered an outcast, a very odd person whom others avoided. Galyaviev started skipping college classes in September 2020. At the same time, he posted "God said: 'Fear the tears of the person offended by you, because he will ask me for help, and I will help!'" on his profile on the social media network VKontakte (Russia's largest social networking site). He ceased communication with his college advisor in January 2021. On 1 April 2021, he realised that "he is a god" and that he could do anything to anyone.	His family moved to another place at the beginning of April 2021 and left Galyaviev to live alone at the apartment. Galyaviev failed to attend three exams in mid-April 2021. As a result, he was expelled from college, which was his primary support system, on 26 April 2021.	The shooter received a permit to carry weapons on 14 April 2021 and legally purchased a Hatsan Escort PS Guard 2017 shotgun on 16 April 2021 but bought bullets in a different city. He hid the weapon in a safe in his apartment although his parents were aware of this purchase. By following instructions found on the internet on 5 May 2021, he made two bombs filled with submunitions using components he had bought online. He chose this particular school for several reasons: ○ The close proximity of the school to the place where he lived (three-minute walk) ○ The large number of students and so possible victims ○ Familiarity with the building as he had spent nine years studying there ○ The absence of security guards ○ The defective front door to the school building could be opened with little effort.	Galyaviev entered the school territory at 9:25am on 11 May 2021. He fired twice at a senior male technician; however the man survived. While walking through the first floor of the school, he killed the first teacher he saw in the corridor, then he started shooting a room full of eighth graders who were with their teacher. He then noticed a teacher alone in another room and shot her dead. He continued shooting children who were attempting to escape through the windows.

Mass shooting episode	Stage 1: Chronic strain	Stage 2: Uncontrolled strain	Stage 3: Acute strain	Stage 4: Planning stage	Stage 5: Massacre at school
Oxford High School shooting	Ethan Crumbley experienced routine bullying at school and had access to firearms in his home. Crumbley also allegedly tortured baby animals and left a baby bird's head in a jar on his bedroom floor during this period.	Both parents have an extensive legal history. Crumbley was left alone frequently during his childhood while his parents were out socialising. Crumbley's parents knew that their son was depressed and heading down a dangerous and violent path, but they ignored his 'troubling' texts and other red flags.	Crumbley's only friend had moved away at the end of October 2021, the family dog had died, and Crumbley was sadder than usual.	26 November 2021: Crumbley's father purchases a 9mm Sig Sauer handgun. 26 November 2021: Crumbley posts a photo of the gun on Instagram. 27 November 2021: Crumbley's mother posts a picture on social media with the following inscription: "Mom and son day testing out his new Christmas present". 29 November 2021: a teacher saw Crumbley searching online for ammunition with his cell phone during class and reported it to the school official. The incident was ignored by his parents. Crumbley recorded a video in which he discussed killing students. 30 November 2021: 9am: a teacher noticed that Crumbley was making violent doodles on paper. Crumbley was removed from the class. While the school tried to reach his parents, Crumbley remained in the counsellor's office for an hour and a half as the counsellor continued to observe and speak with him. 10:30am: Crumbley's parents were advised that they were required to obtain counselling for him within 48 hours. His parents refused a request to take their son home for the day and left without him; they apparently returned to work.	30 November 2021: at 12:51pm, Crumbley emerged from a bathroom with the gun his father had bought him four days before. He fired at people in the hallway, killing four students and wounding six students and one teacher. Deputies captured him within minutes of the shooting.

Mass shooting episode	Stage 1: Chronic strain	Stage 2: Uncontrolled strain	Stage 3: Acute strain	Stage 4: Planning stage	Stage 5: Massacre at school
Santa Fe High School Shooting	Dimitrios Pagourtzis had been teased and bullied in the past not just by fellow classmates, but also by football coaches.	It does not seem as if Pagourtzis lacked a support system to combat the bullying he was experiencing as he was involved in a good number of extracurricular activities and had a friendship group. Further, his family was involved with a close-knit Greek community.	The alleged shooter repeatedly made advances towards one of his classmates before the shooting. The victim had a younger sister who was being bullied in school, so the victim had wanted to set an example for her sister on how to stand up for herself by openly rejecting the advances of Pagourtzis. This event may have been a trigger for Pagourtzis to initiate plans to attack the school.	It can be assumed that Pagourtzis bought a shirt with the words "Born to Kill" with the intention of wearing it during the shooting and that the medallions he wore (which included Nazi medallions), especially the meaning behind the medallions, could have been influenced by his desire to start a school shooting.\n\nVictims of the shooting recalled that during the time of the attack, he was wearing this shirt. He was intrigued by the Nazis because he thought that the different guns that they had looked cool.	The gunman first entered an art classroom, said "Surprise!" and started shooting. The suspect's ex-girlfriend was among the people shot in that classroom.\n\nAs he shot each person and killed them, Pagourtzis would sing "Another one bites the dust". After Pagourtzis surrendered, the police searched the whole school and found multiple home-built explosives throughout the school.

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