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American uniqueness revisited: A comparative examination of two school shootings using the path to intended violence

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ABSTRACT

Although often perceived to be a uniquely American phenomenon, mass shootings in schools across the globe have led to continued concerns about how to keep educational institutions safe. To identify opportunities for intervention and prevention of these tragedies, this study utilises a comparative case study approach. Specifically, we analyse the events leading up to the mass shootings at Municipal School Tasso da Silveira in Rio de Janeiro (Realengo district), Brazil (2011) and Marjory Stoneman Douglas High School in Parkland, Florida (2018). Using the Path to Intended Violence model, we find that the perpetrators' pre-attack behaviours, escalating from grievances to the attacks themselves, are remarkably similar despite cultural differences and that multiple opportunities for intervention existed. Implications from these findings related to prevention, school security, and broader policy are considered.

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Mass shootings, particularly those that occur in public spaces (e.g., schools, workplaces, places of worship), have been described as “a uniquely American phenomenon” (Fox et al., 2022, para. 26). While, in the context of the U.S. crime picture, mass shootings are among the rarest forms of gun violence (see, generally, Schildkraut & Turanovic, 2022), their frequency of occurrence does exceed that of other developed countries (Lankford, 2016b, 2019; Silva, 2022). In fact, some estimates suggest that the US has more than six times its share of mass shootings relative to its proportion of the global population (Lankford, 2019). This disparity has largely been credited to differences in firearm availability between countries (Lankford, 2016a, 2016b), among other potential correlates.

To date, comparative studies examining mass shootings both in the US and abroad have focused on identifying differences not only in frequencies but also among perpetrator and event characteristics. Not only have mass shootings in the US been found to occur more frequently than those in other countries across the globe, but they also have been found to be more lethal (Anisin, 2022; Lemieux et al., 2015; Silva, 2022). Similarly, U.S. mass shooters have been found to be more likely to arm themselves with multiple weapons and target schools and workplaces compared to perpetrators of similar events in other countries (Lankford, 2016a; Lemieux et al., 2015; Silva, 2022). Lemieux et al. (2015) also found that U.S. mass shooters were more likely to use handguns, whereas Australian perpetrators typically employed long guns. Silva (2022) found that U.S. mass shooters were more likely to involve fame-seeking and/or ideological motivations and stem from either relationship or financial (including employment) problems (see also Anisin, 2022, who determined

that in addition to U.S. mass shooters being more likely to be ideologically motivated than perpetrators from other countries, they also were more likely to be mentally ill).

Importantly, each of these studies focused on comparing completed shootings and factors associated with their outcomes. Absent this line of inquiry, however, is consideration of both similarities and differences in the pre-attack behaviours of the perpetrators. Research into U.S. mass shooters, for example, finds that the perpetrators often engage in a series of escalating behaviours as they plan and prepare to carry out their attacks (National Threat Assessment Center, 2020, 2021; Silver et al., 2018). Given the disparities between mass shootings in the US and other countries, a comparative evaluation of their pre-attack behaviours is warranted to not only understand differences in their outcomes but also potential opportunities for prevention.

Another point of consideration is that most comparative studies of mass shootings lump together several different types of incidents. This *de facto* assumption that all mass shooting incidents in one country will be *similar enough to each other* to warrant grouping for further comparison to international incidents is an untested supposition; a brief description of intentional school shooting attacks, for example, shows that diversity of perpetrators and motivations is not uncommon (Freilich et al., 2022). In order to best leverage knowledge and inform prevention, a focus on comparing specific types of mass shootings offers a unique capacity for informing both situational and perpetrator-related responses. This is especially important in the context of school shooting incidents, when there is a built-in mechanism for identification and threat assessment through the school supervision process.

As a starting point to fill this gap, this paper presents a comparative case study of two mass school shootings – the attacks at Marjory Stoneman Douglas High School in Parkland, FL (2018), and Municipal School Tasso da Silveira in Rio de Janeiro (Realengo district), Brazil (2011). Specifically, the pre-attack behaviours of each shooting's perpetrator are analysed within the Path to Intended Violence framework, detailed below, to identify similarities and differences between the two cases. Findings from this comparative analysis can help not only to understand the events that preceded each shooting but where potential opportunities for prevention of each attack may have existed. This, in turn, can highlight important implications not only for prevention efforts in the US and abroad but also for future research that may seek to apply this framework to a broader sample of global mass shootings. In this way, lessons learned can be shared more widely.

The path to intended violence

The Path to Intended Violence model, as depicted in Figure 1, is used to illustrate how individuals who are at risk of committing targeted violence progress from *grievance* to *attack* (Calhoun & Weston, 2003). This model, developed by Calhoun and Weston (2003) is based on findings from the United States Secret Service's Exceptional Case Study Project (ECSP; Fein & Vossekuil, 1997). Among the findings of the ECSP were that individuals who had attacked a public figure or were at risk of assassinating one shared similar "attack-related behaviours" (Fein & Vossekuil, 1997, p. 48). A later analysis of school-based targeted violent attacks found similar patterns among the perpetrators studied, with 93% engaging in one or more of these pre-attack behaviours (Vossekuil et al., 2002). The findings of these two studies subsequently led to the development of the Path to Intended Violence model (Calhoun & Weston, 2003).

As depicted in Figure 1, the Path to Intended Violence is comprised of six progressive stages. The first stage is the *grievance*, which refers to the idea that the perpetrators perceive themselves to be treated in an unfair or unjust manner (Calhoun & Weston, 2003). They also may feel as though they have been somehow wronged or slighted, leading them to take the role of "injustice collectors" who keep a running tally of these instances (O'Toole, 2000, p. 17). Grievances may either be real, such as the loss of a job, relationship issues, or feeling bullied, or they may be more perceptual, driven by paranoid or delusional thoughts. Importantly, while many individuals may experience similar grievances, those who continue along the path are unable to move beyond them.

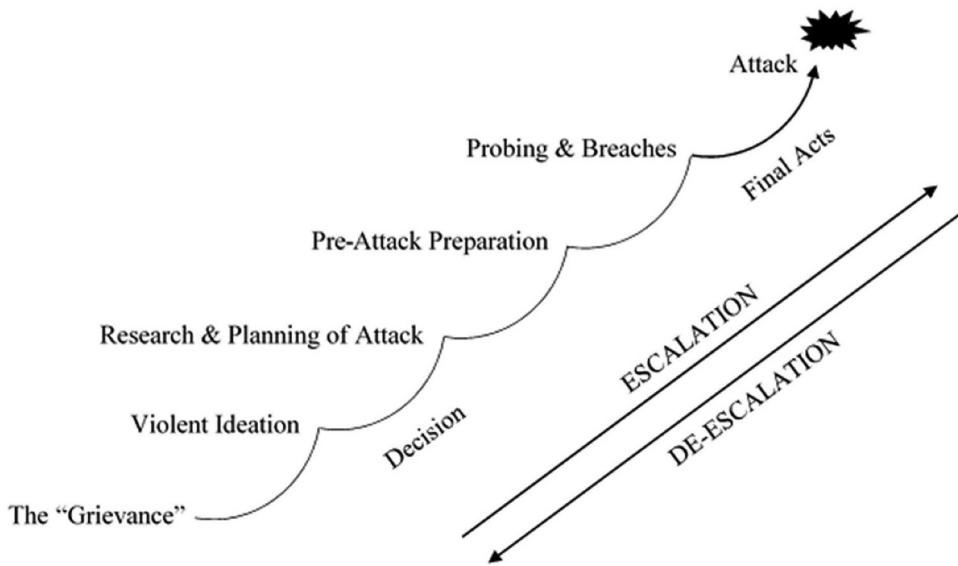


Figure 1. The Path to Intended Violence Model. *Note.* Adapted from Calhoun and Weston (2003) and White (2017).

Individuals who become fixated on these grievances may soon engage in the act of *violent ideation*, whereby they contemplate how they will resolve their issues (Calhoun & Weston, 2003). They can become immersed in their thoughts and fantasize about using violence to right these perceived wrongs (Calhoun & Weston, 2003; Kaiser, 2012). During this stage, they also may begin researching other mass shooting events, particularly those conducted by perpetrators with whom they identify. Unlike others who experience similar grievances, those who progress along the path are unable to move beyond the issue and, at some point, make a decision that shifts their plans from fantasy towards reality.

Around this time, individuals also may begin engaging in *leakage*, which occurs when the individual communicates their ideas or plans with someone else, often due to them being so consumed by their thoughts that they cannot keep it to themselves (Meloy & O'Toole, 2011). This may occur through person-to-person communications or other channels, such as social media, letters, or journal posts. Leakage is not only one of the most overt warning behaviours but also one of the most common. Several studies have found that most, if not all, school shooters and plotters communicate their intentions in advance, either through direct or veiled threats (NTAC, 2021; O'Toole, 2000; Vossekuil et al., 2002). In a majority of these cases, at least one other person had knowledge of the plot in advance, though multiple people – often friends or peers – knew in more than half of the incidents (Vossekuil et al., 2002).

As individuals progress further along the path, they begin to take actionable steps towards the attack, beginning with *research and planning*. This stage involves the individual gathering information and making logistical decisions about how they will carry out their attack, such as what type of weapon(s) they will use or how they will escape the scene (Calhoun & Weston, 2003). The length of the research and planning stage is dependent on the individual's familiarity with their intended target(s) and those they seek to harm.

The *preparation* stage involves the individuals taking active steps towards carrying out their plans. This can include acquiring the weapons and ammunition to be used in the attack and procuring other supplies (i.e., body armour). They also may craft manifestos or other legacy tokens, write suicide letters or other communications to their families and friends to be found after the attack, or give away personal belongings. During this stage, the individuals may become more isolated to prevent their plan from being derailed.

Once the individual has solidified their plan and acquired the necessary tools to carry it out as intended, they may engage in *probing* behaviours (Calhoun & Weston, 2003). This involves testing boundaries to assess the feasibility of their plan, such as conducting a dry run or testing security at their intended target to determine whether there are any barriers to access present, so they can alter their plans if needed. When individuals reach this stage of their path, an attack is imminent. Unless the plot is averted (i.e., law enforcement or others intervene to prevent it from being carried out), the individual will progress to the *attack* stage, the final phase when the plan is implemented and the attack is carried out (Calhoun & Weston, 2003).

Although this model is discussed sequentially, it is important to note that how the perpetrator moves through these stages may not always be linear (U.S. Department of Justice, 2017). They may retreat to earlier points of the path at any point or may even skip stages altogether (Calhoun & Weston, 2003; U.S. Department of Justice, 2017). The rate at which the individual travels along the path often varies and is susceptible to a range of factors and some never reach the attack stage, either because of an intervention or because the individual decides against carrying out their plan on their own (Kaiser, 2012). Still, understanding these different stages of pre-attack behaviours can provide important opportunities for the identification, assessment, and management of the threat and ultimate prevention of the attack (Calhoun & Weston, 2003).

The present study

Case studies to date that have employed the Path to Intended Violence framework have focused solely on single events (Allely & Faccini, 2017a, 2017b, 2018; Faccini & Allely, 2016; Schildkraut et al., 2022; White, 2017), with all but one examining U.S. mass shootings. A comparative analysis, however, can provide an important opportunity to not only understand how mass school shooters progress along the path but also where commonalities and differences may exist between such individuals and responses to their behaviours, which can have important policy implications for prevention strategies. Accordingly, the present study was designed to provide a comparative analysis between 14 February 2018, shooting at Marjory Stoneman Douglas High School in Parkland, FL, and 7 April 2011, attack at the Municipal School Tasso da Silveira in Rio de Janeiro (Realengo district), Brazil. These cases were chosen for their similarities in both the perpetrators' backgrounds and the events themselves (as described further in forthcoming sections) that allowed for a more meaningful and equitable comparison of pre-attack behaviours. Both also were high-profile in their respective countries, leading to a large volume of information available for analysis.

The case study methodology

Using open-source data protocols similar to those introduced in The Global Terrorism Database (GTD; LaFree & Dugan, 2007) and amended for school shooting incidents in The American School Shooting Study (TASSS; Freilich et al., 2022), in-depth case studies were created for each of the two incidents.

The Realengo incident was identified through a global search of international targeted school violence attacks as part of a larger project. To gather data on international school attacks, including school shootings, online English language news sources were searched for key terms, including "school shooting," "school attack," "student shooting" and "student attack" (as well as derivatives of these terms).¹ After a global search was conducted, key countries were identified as needing targeted searches. Searches were repeated with over 50 specific countries where at least one targeted school violence attack was identified. In this case, Brazil was one of the countries chosen for more specific search strategies. Using a country-specific strategy, the Realengo incident was identified. A search of English language sources suggested that the incident was fit for inclusion in the larger study, at which time the incident was coded for a set of previously identified variables, including perpetrator, school, and incident characteristics. Using an iterative process complete with quality assurance

controls, where more recent sources were cross-checked against earlier sources, the case was included in a database of similar incidents.

Once chosen for this comparison, the team set out to create a comprehensive case study of the Realengo incident. This included both a comprehensive life history of the perpetrator and a detailed accounting of the incident, incorporating information from friends, law enforcement agencies, court records, and media. It quickly became clear that the English language press was missing key details about the attack, especially in follow-up reporting of the incident. To overcome this hurdle, Portuguese language sources were searched by a member of the research team, who is fluent in Portuguese, using the same parameters described above. More information, including additional details about the aftermath of the investigation, was found and the original files updated once the team member translated the articles retrieved. From there, the detailed case study was completed, with included variables guided by qualitative case studies used in the TASSS protocol (Freilich et al., 2022) and previous research on the Path to Intended Violence and mass shootings (Schildkraut et al., 2022).

The development of the case study for the Parkland shooting, including background on the perpetrator and a detailed reconstruction of the event, utilised a similar methodology with two notable exceptions. First, a Freedom of Information Act (FOIA) request was submitted to the Broward County Sheriff's Office, the lead agency charged with responding to and investigating the shooting, in January 2019. Electronic records, including interview transcripts (from the shooter, his brother, and numerous witnesses), police reports, and other similar documentation, were released to the researchers approximately 2 weeks after the initial FOIA request. Second, unlike the Realengo incident, a commission was formed after the Parkland shooting tasked with doing a thorough review of the attack and those events leading up to it. Two reports were authored by the Marjory Stoneman Douglas Public Safety Commission (MSDPSC) – an initial review (2019a) and a final briefing (2019b). Together with the resources obtained through the FOIA request, the MSDPSC reports served as the primary documents for the case study creation, with media reports serving as supplementary resources, yielding nearly 1,900 pages of documentation (see Schildkraut et al., 2022).

The case study method, as implemented in the current study, is appropriate when attempting to systematically investigate an event, or series of events, with the intention of gathering rich and in-depth information about a particular person, institution, or phenomenon in which nuances and patterns might be otherwise overlooked (Lune & Berg, 2017). Additionally, case studies require the use of multiple sources of data such as news stories, media reports, academic sources, public records, police records, court briefings and/or transcripts, and websites, among others. With this, the researcher(s) can develop a holistic description and explanation of the phenomenon (Lune & Berg, 2017).

Comparing attacks along the path to intended violence

As noted, the *attack* stage represents the end of the Path to Intended Violence. Here, however, we describe the shootings first to provide the necessary background for each case. This will not only establish the foundation to better understand the relative pre-attack behaviours that preceded these shootings but also to identify where opportunities for intervention and ultimately prevention may have existed. Table 1 provides a summary overview comparing the two shootings in each stage of the Path to Intended Violence model.

The attacks in Realengo and Parkland²

On 7 April 2011, a 23-year-old former student (W.M.) arrived at the Municipal School Tasso da Silveira in the Realengo neighbourhood of Rio de Janeiro in Brazil at approximately 8:15 a.m. local time (Nascimento, 2011). Carrying two revolvers, a speed loader, and ammunition in his

Table 1. Summary of the Stages of the Path to Intended Violence by Perpetrator.

Stage	Realengo	Parkland
<i>Grievance(s)</i>	Chronic Strains: Unstable family life, social problems at home and at school Uncontrolled Strains: Few friends, no romantic relationships Acute Strains: Death of mother, left job	Chronic Strains: Unstable family life, developmental delays, academic and behavioral problems Uncontrolled Strains: Short-lived friendships, abusive relationships (as aggressor) Acute Strains: Death of mother, failed military aptitude test, withdrew from school
<i>Violent Ideation</i>	Islamic fundamentalism, jihadist extremism, leakage	Suicidal and homicidal ideation, animal abuse and killing, leakage, fascination with weapons
<i>Research & Planning</i>	Researched school shootings	Researched school shootings, downloaded school bell schedule, researched different rifles and scopes, other concerning searches (e.g., police response time, crime scene cleaner)
<i>Preparation</i>	Acquisition of two firearms from private sellers, purchased ammunition and a speedloader, contacted a firearms instructor, wrote suicide letters, crafted legacy tokens (videos, photos)	Acquisition of seven total guns (one used in shooting), purchased ammunition and magazines, costuming, crafted legacy tokens (videos uploaded to social media)
<i>Breaching</i>	Practiced blending in with the public, changed appearance, visited school prior to the attack	Repeatedly brought ammunition and knives onto school grounds
<i>Attacks</i>	7 April 2011: 12 killed, 12 injured Perpetrator died by suicide	14 February 2018: 17 killed, 17 injured Perpetrator apprehended 76 minutes later

bag, the perpetrator accessed the building by indicating he was there as a guest speaker, alleging the school was inviting alumni back to talk to current students (“Atirador entra,” 2011; Bernardo, 2021). Once inside, he went to the administrative office and requested a copy of his transcripts, which he had called and requested in advance (“Atirador entra,” 2011). He then went to the first floor one level up, where he greeted a former teacher, before proceeding to a nearby classroom where an eighth-grade Portuguese class with approximately 40 students was in session and opened fire (Bernardo, 2021). Multiple students were killed and injured in the classroom before the perpetrator exited and continued firing in the hallway and a classroom across the hall (Bernardo, 2021). A 13-year-old student, who was wounded in the first room, escaped and alerted two nearby military policemen (Bernardo, 2021). As W.M. headed towards the stairs to go to the next level of the school, the police arrived and engaged him, shooting him in the stomach when he failed to comply with their orders to drop his weapon (“Atirador entra,” 2011; Bernardo, 2021). W.M. then shot himself, ultimately dying by suicide 15 minutes after entering the school (Bernardo, 2021). Twelve students, ages 13 to 15, 10 of whom were female, were killed, and an additional 12 were injured in the attack (Bernardo, 2021).

Nearly 7 years later, on 14 February 2018, a 19-year-old former student (N.C.) of Marjory Stoneman Douglas High School in Parkland, FL, arrived at the campus about 20 min before the end of the schoolday (MSDPSC, 2019a). He made his way to Building 12, which housed many of the freshmen classes, entering through the east hallway at approximately 2:21 p.m. local time. After loading his firearm and equipping himself with additional magazines in the building’s stairwell, he entered the first-floor hallway and opened fire, first on students who were in the corridor and then shooting into classrooms where teachers and students were attempting to get locked down. Nine students and two educators were killed, and 13 others injured, before N.C. made his way to the second floor of the building. Having heard the gunfire, classes on the second floor were able to successfully lock down; although N.C. fired into several rooms, no one was injured. Within the first few seconds of the initial shootings, the fire alarm was activated by debris falling from the ceiling tiles that reverberated from the gunshots. Hearing the alarm but not the gunshots clearly, classes on the third floor had begun their evacuation procedures; when they heard the shooting on the second floor, they tried to get back into their rooms. As N.C. reached the third-floor landing, about 20 people remained in the hallway. He opened fire, killing five students and a teacher and wounding four others before moving into the teachers’ lounge and trying to shoot out the windows to fire at fleeing students. Despite having a history of suicidal ideation, N.C. dropped his weapon

and escaped the school by blending in with other students. He was apprehended in a neighbourhood about two miles from the campus 1 h and 16 min later.

Grievances

Research has consistently highlighted the role of strain as a precipitator for violent crime (Agnew, 1992; J. A. Fox & Levin, 1994, 2005). In the context of rampage violence events such as mass school shootings, Levin and Madfis (2009) suggested that perpetrators experience what they term “cumulative strain” (p. 1229). In this model, the compounding effects of both long-term (chronic) strain and the absence of prosocial support systems (uncontrolled strain) lead to an inability to deal with a short-term negative event (acute strain). From this perspective, the introduction of the acute strain initiates behaviours that mirror the Path to Intended Violence, including fantasizing about violence to respond to the strain, planning the attack, and ultimately carrying it out.

Both the Parkland and Realango perpetrators experienced chronic strains in their lives. Ironically, their earliest years were particularly similar – both were adopted within the first year of their lives (“Ele sempre foi,” 2011; MSDPSC, 2019a). W.M.’s biological mother had a documented history of severe mental illness (“Ele sempre foi,” 2011), while N.C.’s birth mother was reported to have problems with both drug and alcohol use, including usage during her pregnancy (Associated Press, 2022). Virtually no information is available on either of their biological fathers. In W.M.’s case, his adoptive father also was largely absent, and he was raised by his adoptive mother, an older woman who was described as strongly religious (“Representante das Testemunhas de Jeová,” 2011). He had five older siblings, all of whom were married, but he was largely disconnected from anyone in the family other than his mother, who W.M. considered to be his “safe haven” (Guimarães, 2011). Both N.C. and his younger half-brother were adopted by a couple, but at the age of five, his adoptive father had passed away, leaving his adoptive mother to raise both boys (MSDPSC, 2019a). Unlike W.M., however, N.C.’s childhood and adolescent years were marred with conflict as his adoptive mother struggled to maintain control of the household and often had to involve law enforcement (Schildkraut et al., 2022).

School was an additionally shared chronic stressor among the two perpetrators (“Atirador de escola de Realengo,” 2011; Schildkraut et al., 2022). For W.M., although he did academically well in school, he was reportedly “invisible” – he kept his head down and avoided interacting with other students as much as possible (Nascimento, 2011), even asking to do group work alone (Monteagudo et al., 2011). Despite trying to avoid any conflict, W.M. was repeatedly bullied in school both by his own account and recollections from his classmates (“Fantástico Revela Nova Carta,” 2011). He was put into trash cans (Nascimento, 2011) and even put headfirst into a toilet before it was flushed (“Fantástico Revela Nova Carta,” 2011). Despite these assaults, however, he never retaliated. Beyond school, W.M. never participated in extracurricular activities and largely spent most of his time on his computer, even eating meals alone in his room (Guimarães, 2011). N. C. also struggled in school, but in different ways from W.M. He showed significant developmental delays and struggled academically, including repeating his kindergarten year and often changing schools (Schildkraut et al., 2022). Although reports do suggest that he had been bullied in school, N. C. also exhibited significant behavioural issues and regularly received disciplinary referrals and both in- and out-of-school suspensions (MSDPSC, 2019a). Collectively, these experiences could have served as sources of chronic strain that developed in their formative years and persisted as they got older.

Both W.M. and N.C. struggled with relationships, or rather the lack thereof, which could have served as sources of uncontrolled strain. W.M. reportedly had few, if any, friends and no romantic relationships (Guimarães, 2011). He reportedly had difficulty connecting with women, and some speculated this was why most of his victims during the shooting were females (Bernardo, 2021). N. C. was able to form friendships with his peers, though they were often short-lived (Schildkraut et al., 2022). Romantic relationships for him also were problematic. He was both physically and verbally

abusive to his first girlfriend, whom he called the love of his life, and he also behaved erratically towards another girl he was interested in (Schildkraut et al., 2022). She refused to meet him anywhere but a public place, noting that she was afraid of him and told him the night before the shooting that a relationship would never happen because he was too unstable (Schildkraut et al., 2022). Their respective disconnections from their educational institutions and society more broadly also meant that it was difficult to form positive, prosocial relationships that could buffer the deleterious effects of other sources of strain (Levin & Madfis, 2009).

Leading up to the respective shootings, both W.M. and N.C. experienced multiple bouts of acute strain. Coincidentally, both of their adoptive mothers died within several months prior to their attacks (“Ele Sempre Foi,” 2011; MSDPSC, 2019a); this may not only have served as a source of acute strain but also may have compounded the present uncontrolled strains. W.M. quit his job shortly after his mother passed and never returned to work (Monteagudo et al., 2011), while N.C., who had set his sights on joining the military, failed the test to be considered for enlistment; he also subsequently dropped out of school (Schildkraut et al., 2022). Given the existing chronic and uncontrolled strains each was dealing with, they may have lacked any ability to cope with the onset of these acute stressors, either individually or within close temporal proximity to one another (see also Vossekui et al., 2002). Consequently, without intervention, the cumulative strains experienced by each perpetrator subsequently served as catalysts for and precipitants to their attacks (Levin & Madfis, 2009).

Violent ideation

Fantasizing about violence as a means to address one’s grievances may take a number of different forms. For W.M., his ideation was not specifically linked to mass or school shootings but rather violence more generally. Although he was never expressly connected to extremist groups (Bernardo, 2021; Ribeiro, 2011), he was found to share ideas and values with Islamic fundamentalists by authorities in their investigation after the shooting (“Irmã de Atirador,” 2011). In notes he left behind in his home, W.M. claimed to be corresponding with two extremists online (Ribeiro, 2011). It is possible, though unconfirmed, that while he may not have been a member of any specific group, he could have self-radicalized, at least in part, during the significant amounts of time he spent on the internet. W.M. was also fascinated with Osama Bin Laden, who coordinated 11 September 2001 terrorist attacks in the United States, as well as his group al-Qaeda (“Fantástico Revela Nova Carta,” 2011; “Manuscritos de Atirador,” 2011).

N.C., on the other hand, experienced both suicidal and homicidal ideations. Regarding the former, he had a well-documented history of experiencing suicidal thoughts and often engaged in cutting (Schildkraut et al., 2022). He also attempted suicide by ingesting gasoline during his junior year and made at least two other attempts between his mother’s death and the shooting. He was fixated on homicide and weapons, searching the internet for phrases like “is killing people easy” and “good songs while killing people” (MSDPSC, 2019a). He wrote multiple notes on his phone that were seen by his brother, who did not take them seriously and instead thought they were cries for attention. N.C.’s homicidal urges also manifested themselves through the harming and killing of animals, which is consistent with previous research on school shooters (e.g., Arluke & Madfis, 2014; Arluke et al., 2018). Following the shooting, at least 10 individuals provided statements that he killed animals such as frogs, squirrels, and a duck, either bludgeoning them to death, slitting their throats, or shooting them (MSDPSC, 2019a). He would then post pictures of the dead animals on his social media or bring their decapitated bodies to school (Schildkraut et al., 2022).

Additionally, not only did both perpetrators exhibit signs of violent ideation but they also both engaged in leakage, which is consistent with other school shooters (NTAC, 2021; O’Toole, 2000; Vossekui et al., 2002). For W.M., this often took the form of discussing Al-Qaeda, which earned him the organisation’s name as a nickname by his classmates because of how often he talked about them (Editorial Board, 2011a). A former classmate recounted how W.M. made claims about being

a suicide bomber and said he would blow up the school (Monteagudo et al., 2011), while his family noted that he referenced wanting to destroy planes like the 9/11 attacks (Thum, 2011).

N.C. also actively engaged in leakage not only as he planned his attack but for some time beforehand (Schildkraut et al., 2022). He regularly talked specifically about shooting up the school but also about killing people in general. Numerous people witnessed him having these conversations, including his brother, classmates, and even people he barely knew, such as the mother of a co-worker (Schildkraut et al., 2022). In addition to broad statements about killing people, he also directly threatened bodily harm to several people, including the new boyfriend of his first girlfriend. Further, beyond threats made through verbal communications, he regularly posted statements about shooting up the school and images of guns on his various accounts as well as in online chat rooms and forums (Schildkraut et al., 2022).

Research and planning

Vossekuil et al. (2002) suggest that school shooters vary in the length of time they plan, from just a few days to more than 6 months. Although it is unclear specifically when W.M. and N.C. began planning their attacks, the length of time spent does suggest they fell within this range. Videos found at W.M.'s residence, for example, suggested that he had been planning the attack for at least 9 months prior (Thum, 2011). His brother indicated that W.M. had researched other school shooters, including the Virginia Tech perpetrator (see "Fantástico Revela Nova Carta," 2011), but despite the searches being seen by family members after his mother's death, they were not reported as concerning ("Ele Sempre Foi," 2011). Notably, however, the specific contents of the searches and his subsequent plans are unclear as they do not appear to have been released to the public by police directly or through the media.

Comparatively, N.C.'s research and planning phase appears to be much shorter; his fascination with weapons and school shootings, however, had been ongoing for some time. Two months prior to the shooting, in December 2017, he wrote himself a note on his phone that discussed the need to engage in combat breathing to maintain shooting accuracy during the attack; this is believed to be the first documented reference to his plans (Schildkraut et al., 2022). In the 2 weeks leading up to the shooting, his planning activities appear to have picked up significantly. N.C. saved the school's bell schedule for his phone and conducted research online about different types of rifles and scopes as well as crime scene cleaners. In the several days prior to the attack, he researched different school shootings and watched videos made by some of the perpetrators. He also searched for terms like "how long does it take for a cop to show up at a school shooting" (MSDPSC, 2019a, p. 258) and downloaded the floor plans for the buildings on the high school campus (Schildkraut et al., 2022).

While Calhoun and Weston (2003) have suggested that the *research* and *planning* stage often is the most identifiable along the Path to Intended Violence, this does not seem to be the case for either perpetrator due to their isolation from others. After the death of his mother, W.M. went to live by himself in a different area of the region. N.C. became more withdrawn from the family he was living with just prior to his attack. With no one around to detect their behaviour, they were empowered to continue along the path without interruption. Still, many of their actions remain a hallmark of this stage.

Preparation

With their plans in place, W.M. and N.C. each engaged in the preparatory actions necessary to carry out their attacks. Among these was armament, or the gathering of their weapons and ammunition. Although firearms were heavily regulated in Brazil at the time of the shooting (though restrictions have since been repealed; see Marques & dos Ramos, 2022), such that only individuals within a select group of professions can purchase them, they were relatively easy to get on the black market (Lucas, 2008; Margolis, 2018). W.M. was able to acquire the two revolvers (.32 and .38),

ammunition,³ and a speed loader used in the shooting several months prior from private individuals, one of whom was an acquaintance and the other he was introduced to through a pair of brokers (Folha de S.Paulo, 2011; Freire, 2011). In both transactions, he led them to believe that he was purchasing the firearms for personal protection as he lived alone. W.M. also contacted a firearms instructor prior to buying the weapons to learn how to shoot but never followed through with the course (“Provas Mostram Como,” 2011).

N.C. purchased the firearm used in his attack, a Smith and Wesson M&P Sport semiautomatic rifle, almost a year to the day prior to the attack (Schildkraut et al., 2022). He also purchased a shotgun 2 months prior and subsequently acquired five more firearms (rifles and shotguns) between February 2017 and the shooting in 2018 (MSDPSC, 2019a). Although the exact quantity of ammunition and magazines N.C. purchased was unknown,⁴ the amount taken to the school was documented by police – 328 rounds, of which 140 were fired during the attack (Schildkraut et al., 2022). He also acquired body armour and a ballistics helmet in the months ahead of the attack, though these were not used in the shooting; instead, he opted for a tactical vest to hold extra magazines, which was found discarded at the scene (Schildkraut et al., 2022).

Both perpetrators engaged in several additional preparatory acts, including creating their own versions of legacy tokens they left behind after the attacks. W.M. wrote a suicide note that explained some of the motivations for the attack and provided instructions for how he wanted his body and his belongings to be handled (“Veja as Cartas,” 2011). He also had recorded a series of videos, later found on his computer, which detailed his grievances as motivators for the shooting (Editorial Board, 2011b). The videos documented the steps he took to prepare (Bottari, 2011). Photos of him posing with the firearms used in the attack were also found on the computer’s hard drive (“O Assassino,” 2011). Additional notes found at his home included references to his motivations for the attack (“Fantástico Revela Nova Carta,” 2011; “Manuscritos de Atirador,” 2011). Like W.M., N.C. also recorded videos, one 6 days before the attack and the other two 3 days prior, which described how he was going to carry out his attack (MSDPSC, 2019a). Videos from both perpetrators illustrated fame-seeking behaviour, whereby they indicated that the public would know who they were because of their attacks (James, 2018; Thum, 2011). Unlike W.M., no computer was recovered in any searches of N.C.’s personal effects.

Breaching

Individuals along the Path to Intended Violence may engage in breaching behaviours, such as conducting a dry run of their plan or testing security boundaries ahead of the attack. Related to security boundaries, it may not have been necessary for either perpetrator to do so as they were both former students at the schools they attacked and already may have been familiar with any such obstacles (Schildkraut et al., 2022). Other actions taken by each perpetrator, however, may have served as proxies for breaching behaviour. W.M., for example, described in videos how he actively practiced blending in with the public, including shaving his beard to not draw attention to himself (Editorial Board, 2011b). This behaviour could have been in preparation to pass himself off as a guest lecturer to gain access to the school, which he visited 2 days before the attack (Thum, 2011). N.C. had repeatedly tested boundaries by bringing knives and ammunition to several of the schools he attended to see whether he would be caught (MSDPSC, 2019a; Schildkraut et al., 2022). Notably, it does not appear that either perpetrator spent a considerable amount of time in the breaching stage of the path. Still, without intervention, they were able to carry out their attacks.

Discussion

Despite evidence that mass shootings, both in and out of schools, are happening across the globe (Lankford, 2016b, 2019; Silva, 2022), common perceptions suggest that these tragedies are a uniquely American phenomenon. As a result, most scholarly research on school shootings

specifically is undertaken in that context. While there is merit to the fact that school shootings are more common in the United States than in other countries, the current study of the attacks at Marjory Stoneman Douglas High School in Parkland, FL, and the Municipal School Tasso da Silveira in Rio de Janeiro (Realengo district), Brazil, introduces ways in which cross-national research can be leveraged to inform early detection and prevention efforts. At the same time, the use of the Path to Intended Violence model offers a new opportunity to examine whether differences across cultures can explain variation in school shooting incidents between places. From our findings, four key conclusions are warranted.

First, the experiences described about the perpetrators in this study are not unique to the time and the place of these two attacks or these two individuals. In fact, cultural differences may not be the driving force as both perpetrators followed remarkably similar pathways from grievance to attack. Moreover, the current study has illustrated numerous missed opportunities of intervention in which the subsequent attacks could have potentially been prevented. Even when some stages of the Path to Intended Violence, such as planning, were short, others were more pronounced or manifested themselves in multiple contexts or in conjunction with one another (e.g., ideation and leakage).

Both perpetrators engaged in several pre-attack behaviours that were concerning in their own right and that should have alerted school officials of the need for intervention, even without the threat of a school shooting outcome. Poor treatment of peers and romantic partners, for instance, should have made N.C. a candidate for more intensive intervention even before he was able to secure a firearm. In examining the life histories of both perpetrators, a common theme of misogynistic and/or abusive behaviour towards women is evident. The radicalization of young men is of growing global concern and its connections to mass shootings have not gone unnoticed (see Cottee, 2021; Lindsay, 2022; O'Donnell & Shor, 2022). While less researched in the school shooting space, our study points to the ubiquity of these attitudes between cultures that needs more study in our understanding of perpetrator motivations. Globalization is real, and its effects cannot be ignored in the study of violence; mass shootings are no exception. At the same time, understanding these grievances, particularly when paired with violent ideation, can be key to identifying earlier opportunities for intervention to remove individuals from the pathway and prevent tragedies like school mass shootings.

Second, the role of leakage – often one of the most overt warning signs of impending mass violence – cannot be understated, even in this more global context. Both N.C. and W.M. engaged in this process openly and often, leading a number of individuals to be aware of their respective violent ideations. Former classmates of W.M. recounted his statements about blowing up the school, while peers and others who knew N.C. recalled his frequent discussions about shooting up his school and killing people in general. Nonetheless, these concerning statements were dismissed and/or downplayed by friends, acquaintances, family, and others and subsequently went unreported by most individuals, as often occurs with concerning statements that precede school mass shootings (see also NTAC, 2021).

Efforts to prevent tragedies such as those that occurred in Parkland and Realengo should seek to increase the likelihood that leakage is not only detected but reported to those who can assess the credibility of the threat and work to manage it. One such remedy would be increased education for students, school officials, and the general public about what leakage looks like and why it is a concern (Schildkraut et al., 2022). This includes helping to overcome the stigma of “snitching” and the “code of silence” by encouraging such individuals to instead focus on “helping” keep their schools and communities safe (Madfis, 2014). Anonymous tip lines, whether school- or law enforcement-based, have shown promise in averting school shootings/attacks as they create avenues for those with information like what was leaked by the Parkland and Realengo perpetrators to come forward confidentially (Daniels & Page, 2013; Planty et al., 2019). Further, existing school safety protocols should be consistently reinforced. Schools are places of high turnover for both students and staff; norms and best practices around security protocols can suffer as a result.

It bears noting that both perpetrators were former students at the times their attacks occurred. As such, detecting leakage closer to the actual shootings may have proved more difficult, especially for those at the school. Therefore, prevention efforts must take a layered approach and include elements of situational crime prevention and physical security, especially as both perpetrators were able to gain access to the locations where the shootings occurred with relative ease. Existing school safety protocols, such as ensuring outside doors are locked to the general public, should be reinforced.

Third, while it is critical to identify pre-attack behaviours as individuals move along the Path to Intended Violence, it is equally as prudent to pair such efforts with broader mechanisms, including legal options, to be able to intervene. Additionally, given the easy access to firearms in both countries (whether through legal or illicit market means), this study underscores the importance of meaningful gun control policy to reduce mass shootings. While Brazil may have had strict gun laws in place at the time of the shooting, the reality of easy access via the illicit market undermined those laws. Even in the United States, the diversity of state laws creates a situation where those states with strict regulation must contend with perpetrators who access firearms through friends and family or from neighbouring states with lower levels of control. Early identification and intervention with at-risk individuals are only one part of the prevention equation.

Fourth, it is important to recognise the limitations of the current study. Although a considerable amount of material was collected on the Realengo perpetrator, this was solely through the media as Brazil lacks a FOIA process to be able to retrieve information through official sources, like law enforcement. Similarly, there did not appear to be an after-action report akin to the documents released by the MSDPSC. As such, it is possible that the perpetrator exhibited additional pre-attack behaviours consistent with the Path to Intended Violence that are not documented in our case study. Further, both the Parkland and Realengo cases were particularly high-profile events in their respective countries that led to a lot of material being made public that ultimately was analysed in this comparative analysis. As such, trying to compare cases that garner less media and public attention may prove challenging in future research, particularly if researchers are not able to obtain information through official sources. This issue may be further compounded by definitional challenges related to mass shootings (see, generally, Freilich et al., 2020). Additionally, while the comparative case study approach is useful for drawing parallels between two events, it fails to account for other factors, such as the offenders' decision-making nor the locations in which the incidents occur. Future research may wish to expand this study's analysis using the script method (see, generally, Freilich & Newman, 2009), which can provide added insight needed for developing prevention strategies, especially those related to situational crime prevention.

While we have focused on proximal and practical places for social and legal intervention, we also acknowledge the extensive trauma histories of both perpetrators described here. There are varying levels of social support offered to families and children in both the United States and in Brazil, and an examination of early childhood factors in these two cases suggests that support was lacking. Children and families deserve social welfare support and access to meaningful services, therapeutic and otherwise. In both cases, it is possible that early childhood intervention for other reasons could have helped prevent these attacks. At the same time, we also must acknowledge that most individuals who experience traumatic childhoods do not resort to violence, much less violence of this degree, so we limit our discussion of prevention to those scenarios that offer an opportunity for the application of universal prevention for at-risk individuals.

Although mass shootings are not a uniquely American problem, their prevention remains a priority for people across the world. Understanding the behaviours and actions that precede such attacks provides an important starting place to achieve this goal. The application of the Path to Intended Violence framework to these two incidents in the current study is designed to further the conversation, hopefully to a place of action, with the implementation of policies and practices to

prevent similar such attacks from occurring. The way forwards may lie in examining our similarities rather than our differences.

Notes

1. In keeping with TASSS protocol, the team searched several web-engines encompassing: (1) media aggregators, (2) web-based newspaper archives, (3) legal research services, (4) administrative sources, (5) academic sources, (6) notable incident trackers, and (7) public records. We searched these sources to identify relevant information about each event and the perpetrators.
2. In accordance with the No Notoriety protocol (see also Schildkraut, 2019), the perpetrators of each attack will not be named in this paper. To avoid confusion as there are two cases, they will be referred to by their initials (W.M. in Realengo and N.C. in Parkland) consistent with previous commission reports (see, for example, Sandy Hook Advisory Commission, 2015).
3. It is unclear how much ammunition W.M. purchased in total. The acquaintance sold him approximately 60 cartridges in the transaction (Freire, 2011). During the attack, 62 rounds were fired (Bernardo, 2021).
4. Official records do not provide an exact number of rounds purchased but N.C.'s brother reported that he had a duffle bag filled with shotgun shells and a significant quantity of rounds for the weapon used in the shooting (Schildkraut et al., 2022).

Disclosure statement

No potential conflict of interest was reported by the authors.

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