[Introduction]

Though it was not the first of its kind, the shooting at Columbine High School in 1999 marked a watershed moment for American K-12 education. School shootings have been a persistent feature of American public education since then; such events captivate the national media and public discourse, even more than other venues of mass-shootings and especially if the shooter is male, ideologically motivated, or a racial minority (Silva & Capellan, 2018). Much research and public discussion has focused on the theoretical causes of such incidents, with variable focuses on individual qualities such as mental health or access to guns, community contexts such as bullying or inequality, and cultural contexts such as toxic masculinity, the media, or political contexts (Muschert, 2007). The main line of research and discourse has operated on the assumption that identifying the causes of such incidents can allow schools and policymakers to reduce their frequency. For example (insert section on Virginia Threat Assessment here, cf. Cornell)

Occasioned by the 19th anniversary of the shooting in Littleton, Colorado, the Washington Post published a dataset of every school shooting in the intervening two decades[[1]](#footnote-1). The data suggest that rather than being an increasing trend, as perhaps portrayed in the media and argued by some researchers (Cohen, Azrael, & Miller 2014), these data show that the frequency of such shootings has remained roughly constant, with about 11 (plus or minus 3) such incidents per year. Neither have any prevention efforts made a reduction in the frequency of mass shootings: in fact, at the time of writing of this literature review, there have already been 13 such incidents, indicating that 2018 may be an outlier year for the phenomenon. School shootings are a consistent fact of life in American PK-12 education which must be considered on those terms. Unless and until they can effectively be reduced in number and severity, policy must be created around how schools and communities can react to them to mitigate their effects.

The data suggest that such shootings happen at all grade levels, with elementary schools represented (e.g. Buell Elementary School in 2000, when a six-year-old targeted and killed an individual at his school with a handgun) as well as shootings in post-secondary education such as the Virginia Tech incident in April, 2007. The greatest number of these incidents are coded as *targeted* *killings* of other individuals within the school; however, the greatest number of casualties come from incidents coded as *indiscriminate* *killings* with no apparent targets other than the school community itself. As such, these school shootings can be considered to be a kind of *collective* or community trauma, impacting more than just those students who are physically victimized but also myriad school and community members who will experience varying levels of post-traumatic stress and psychological and mental health needs as a result of the incident. Nurmi et al. (2012) describes this kind of trauma as being created by a disaster that damages the bonds of the community, where the community itself is the victim. Mass shootings at schools are thus unique in two important ways: first, the target and by extension the victim is the community itself, and secondly, these incidents are an *acute* trauma rather than a *chronic* trauma. There is a large body of literature (e.g. Sharkey et al., 2014) on schooling in communities where violence is a quotidian problem, but mass shootings are a phenomenon with unique causes and effects, and policies must be considered which address them specifically.

It is on these terms that this paper will review the literature: it will engage with some literature on trauma and schooling in general but will focus on incidents of mass trauma with an emphasis on violence in and around schools. How much is known about the extent of psychological trauma experienced by those who survive incidents of school violence or crisis, and what programs and policies have been studied which attempt to lessen the impact of such events? Moreover, how do school districts attempt to resume normal operations of schooling and community functioning in the wake of such incidents?

2) What happens to kids (leave out disasters)

It is well-known that exposure to violence has numerous impacts on children’s wellbeing, both for their mental health and for their functioning within schools (Saltzman, 2001). Students who have been exposed to violence of any kind are more likely to exhibit behavioral and emotional difficulty such as oppositional behaviors or aggression (Ayer et al., 2017) and the effects of such violence tend to be more pronounced for groups who are already at risk: Males, African Americans, high school students, lower income students, and urban students are all at a greater than average risk for exposure to violence of any kind (Bowen & Bowen, 1999) and it has been shown that low-income students, racial minorities, or those with extant emotional and behavioral difficulties (Ayer et al., 2017, Sharkey et al., 2014) are more severely impacted by exposure to violence than other groups.

For schooling, the effects of exposure to violence go beyond conduct and behavior. For example, Jaycox et al. (2006) note that students who have been exposed to violence have been associated with decreased IQ and reading ability (Delaney-Black et al., 2002) and lower GPAs (Hurt et al., 2002), as well as more frequent absences and decreased likelihood of graduation (Beers and DeBellis, 2002; Grogger, 1997). Students can be exposed to violence in the home, but even unrelated violence in a students’ neighborhood can decrease test scores or likelihood of passing (Sharkey et al., 2014). Exposure to violence in the form of war and civil conflict has even larger impacts on students’ access, attainment, and achievement (Burde & Linden 2013; Dabalen & Paul 2012; Shemyakina, 2011; Swee, 2015).

Unsurprisingly, mass shootings have been found to impact students’ mental health, attention, and ultimately school achievement. Strøm et al. (2016) details these effects in a study of students who were present at a shooting at a summer camp in Norway. While not strictly a school shooting case, the conditions were similar in that a large group of adolescents were victims of a mass shooting at a youth-organizing event from which escape was difficult. These students’ grades dropped in the year following the attack but had begun to recover by the second year. Additionally, they were more likely to be absent from school following the event. Dyb et al., (2014a) interviewed the same population of victims and found that the prevalence of PTS-levels were six times higher among these adolescents than in the general population. They also found that gender, ethnic minority status, level of exposure, peritraumatic reactions, interpersonal loss, and current pain were all significantly associated with PTS symptomology[[2]](#footnote-2) for survivors of the shooting.

Suomalainen et al. (2010) found that large proportions of a student population—roughly half—exhibited symptoms of PTS four months after one of two recent school shootings in Finland in which students targeted and killed peers before committing suicide. Specifically, survival of mass shootings seems to engage two particular PTS symptoms—re-experiencing of the event, and hyperarousal symptoms (Haravuori et al., 2016). These symptoms include distressing recollections, dreams, physical and psychological reactivity, difficulty sleeping, irritability, difficulty concentrating, hypervigilance, and exaggerated startle response. Lowe and Galea (2017) note that research has linked these symptoms not just to risk factors associated with demographics and exposure, but also with individual and personality factors, such as beliefs about violence, beliefs about punishment, and coping styles and processing.

Nurmi (2011) used surveys and interviews to investigate community-level effects after one of these shootings. While the trauma did enhance feelings of solidarity with the community, students reported that their experiences with community *outsiders* were harmed. For example, one participant indicated that she believed that fewer students would seek to go on to the next level of schooling, which would require them to go to a nearby town, as she felt that her peers would wish to avoid exposure to students who may inquire about their experiences with the shooting. This finding is important, as it is known that processing and discussing traumatic events can be helpful; however, it appears to be important that such processing occurs within a community rather than with outsiders.

The effect of such incidents of violence in schools is not limited to mental health factors, but behavioral and academic ones as well. Liao et al. (2015) fit a two-piece growth-curve model to student disruptive behaviors and found that there was an increase in such behaviors in the time following a school shooting in their data set. Scrimin et al. (2009) found that students exposed to terrorist acts in school had decreased scores on attention, memory, and visual-spatial performance and that degree of exposure to violence, including traumatic loss, were associated with stronger effects on memory. There seem to be clear connections to PTS symptoms, particularly hyperarousal, wherein students experience difficulty sleeping and concentrating, which would seem to impair students’ ability to concentrate and attend to schoolwork.

Students who are exposed to mass school shootings are at increased risk for lower attendance in the wake of such incidents, which has obvious implications for attainment and achievement. As noted above, Nurmi et al. (2011) note that their participants avoided individuals from other communities as a method for avoiding discussing the incident, and thereby sought to avoid additional schooling, which might put them at risk of such conversations. Brener et al. (2002) found that students at Columbine high school reported occasionally being too fearful to attend school in the wake of the tragedy, an effect which was greatest for rural students.

To summarize, students who are exposed to mass school shootings are at increased risk for PTS symptoms; this increase is associated with gender, racial minority status, and most importantly with degree of exposure (Lowe & Galea, 2017; Smith et al., 2017). These are roughly consistent with prior research on what we might call quotidian community violence, though notably, Bowen & Bowen (1999) found that boys were at greater risk for psychological distress from this kind of violence. Lowe and Galea (2017) propose that the gender effect may result from a more “ruminative coping style” among women who are exposed to mass shootings.

The effects of such incidents are not limited solely to students who are injured or exposed to violence. As communities seem to be the target of mass shootings, communities also seem to suffer from them together.

After the Utøya shootings in Norway, researchers found that community residents beyond those in the immediate vicinity of the shootings (there was also a related bombing in Oslo) showed increased post-traumatic stress reactions, particularly among ethnic minorities (Thoresen et al., 2012). For most Norwegians, these effects were relatively short lived. For some, however, post-traumatic stress reactions lingered several months after the event. These effects underline the *community* aspect of the trauma and the importance for community-level interventions, as needed.

As sociology professors in the wake of the Virginia Tech shooting in 2007, Ryan and Hawdon (2008) provide an insider’s perspective on the process of framing an incident as a community tragedy beyond an individual tragedy. This message, they write, was inculcated quickly through media and university spokespersons, and was reinforced through ritualized event such as candlelight vigils and recitations that further reinforced the oneness of the community. Though a critical lens might question some of the narrative given around the causes of such incidents, they report that the process of framing the tragedy at a community-level allowed for students and other community members to fall back on social networks and use community ties to grieve and process. In this way, they write, tragedies can strengthen as well as damage communities. Similar observations were made in the wake of 9/11 and appear to be an important feature of community trauma. They observe that for communities to come together in this way, it must be the case that the community itself is perceived as an attack (rather than constituent members. They note that “when Henry Smith dies, we do not proclaim that, ‘Today, we are all Smiths’ (Ryan & Hawdon, 2008, p. 48).

As much as communities suffer in unison, the community aspect of mass trauma may be an inborn resilience factor, as well. Many studies in this review have noted that part of the process of recovery from community trauma is discussion with ingroup members (Lowe & Galea, 2017; Nurmi et al., 2011; Ryan & Hawdon, 2008). This process has two important caveats: first, individuals with lower social capital are therefore more at risk in the aftermath of a community trauma (Lowe & Galea, 2017). Secondly, Nurmi et al. (2011) indicate that processing with peers was not as effective for students in the wake of a shooting as processing with teachers and parents; nevertheless, they note, this was the main source for students to begin the work of coping with the tragedy.

3) Define the scope of this review (more thorough than in introduction – include blockquote on community trauma here)

4) what we can do with community level trauma and what do we know about fixing it?

In terms of psychosocial resources, research has focused on personality characteristics, beliefs and attitudes, coping styles, and social relationships as predictors of mental health outcomes. (Lowe & Galea, 2017, p. 77)

1) a sense of safety, 2) calming, 3) a sense of self– and community efficacy, 4) connectedness, and 5) hope (Hobfoll et al 2007)

5) implications for policy?

In addition to preventing mass shootings, it would be important to develop interventions to address mental health problems in their wake. Trained crisis response teams that establish safety, evaluate the psychological needs of victims, connect survivors with a range of services to meet their needs, and evaluate response efforts have been proposed to mitigate the effects of school violence (Crepeau-Hobson, Sievering, Armstrong, & Stonis, 2012). Hobfoll and colleagues (2007) have also identified five empirically supported principles for mental health responses to mass trauma—promoting a sense of safety, calming, a sense of self- and community-efficacy, connectedness, and hope. The empirical research also lends support for approaches that identify survivors most at risk of adverse outcomes, including women, persons of lower socioeconomic status, those who faced higher levels of exposure, and persons lacking strong social support networks. Furthermore, extant studies suggest interventions that enhance emotion regulation and active coping skills and that encourage engagement with and acceptance of emotions, thoughts, memories, and sensory experiences (e.g., Metz et al., 2013). These skill-building interventions could be part of the standard curriculum and could promote resilience after a range of traumatic events and stressors. (Lowe & Galea, 2017, p. 77)

. (Ryan & Hawdon, 2008, p. 45): grade weight in student favor? Multiple options, Students immediately returned to class, more or less, then dropped off and left campus.

5a) research on it?

5b) How would I use the project SERV dollars?

5c) suggestions for future program of research?

IRB problems (Lowe & Galea, 2017) propsed

Structutral equation model of violence, PTS, academic factors

The theory contends this causal model: school violence increases the likelihood that students will experience negative emotional and behavior states, such as disruptive behaviors. These cognitions and behaviors then function to decrease student achievement. With appropriate data, it may someday be possible to fully trace this structural model to determine more precisely the ways in which violence, mental health, conduct, attendance, and achievement interact.

The key components seemed to be: 1. This was an isolated incident carried out by a social deviant (i.e., a mentally ill individual). 2. This act could not have been foreseen or reasonably prevented. 3. We (the surviving members of the university community) were therefore not responsible for this event. 4. This was an attack not just on the victims, but also on our whole community. 5. Thus, we were all victims. 6. As victims, the effects on us would undoubtedly be devastating and long lasting. 7. This was more than just about us, the whole country—and indeed the whole world—was watching and supporting us in our grief. (Ryan & Hawdon, 2008, p. 45)

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1. These data are available at https://github.com/washingtonpost/data-school-shootings [↑](#footnote-ref-1)
2. PTSD is a clinical diagnosis; in this case and in many other research projects, researchers did not diagnose participants but only sought to identify symptoms that are commonly associated with such a diagnosis. [↑](#footnote-ref-2)