

Studying School Shootings: Challenges and Considerations for Research

H. Jaymi Elsass¹ · Jaclyn Schildkraut² ·
Mark C. Stafford¹

Received: 4 June 2015 / Accepted: 19 October 2015
© Southern Criminal Justice Association 2015

Abstract Studying school shootings can be both a fruitful and challenging endeavor. The random nature of these events provides a number of challenges for studying this phenomenon. This paper explores these concerns as they relate to developing and implementing studies, as well as interpreting related findings by drawing on previous research that examined the effects of the 1999 Columbine High School, the 2007 Virginia Tech, and the 2008 Northern Illinois University shootings. Ways in which these issues may be overcome and, more generally, the research can be moved forward also are discussed.

Keywords School shootings · Research methodologies · Theoretical orientation · Columbine

Beginning in the mid-1990s, culminating with the 1999 shooting at Columbine High School, and reiterated through more recent events, including Virginia Tech (2007) and Sandy Hook (2012), school shootings have become characterized by many as a social problem (Elsass et al. 2014; Schildkraut et al. 2015; see also “Washington Post-ABC News Poll” 2015). Each event is intentional, designed to cause numerous deaths, and is highly publicized, particularly through the media (Addington 2003; Elsass et al. 2014; Schildkraut 2014; Schildkraut and Muschert 2014). These events also have the potential to affect people who are both local and spatially distant from the shooting (Addington 2003). Given their vast reach, coupled with varied responses by groups within society (see, for example, Schildkraut and Hernandez 2014), understanding the associated impacts of school shootings is particularly important.

Researchers have made strides in examining the effects of specific school shooting events, including Columbine (Addington 2003; Brener et al. 2002; Stretesky and

✉ H. Jaymi Elsass
ht1060@txstate.edu

¹ Texas State University, 601 University Drive, San Marcos, TX 78666, USA

² State University of New York at Oswego, Oswego, NY, USA

Hogan 2001) and Virginia Tech and Northern Illinois University (NIU) in 2008 (Kaminski et al. 2010; see also Fallahi et al. 2009). Each of these studies makes an important contribution to the limited, yet growing, body of literature on school shootings. While each has yielded findings that prompt further inquiry, these studies also share a number of limitations that require caution in the interpretation of their results. Still, they provide an opportunity to advance the research on a rare phenomenon.

As such, this paper focuses on examining such challenges to studying school shootings, as well as offers considerations for how research designs can be improved in future studies. Specifically, these prior studies are examined, underscoring specific methodological challenges encountered during the research process. From there, additional considerations are offered with regards to the interpretation of specific findings, and methods through which these issues can be addressed. Finally, discussion is offered about approaches to moving the larger body of research in school shootings forward to provide a more comprehensive and robust analysis of these events.

Understanding the [Mediatized] Problem of School Shootings

Despite that crime rates in the United States are declining, and homicide specifically is especially rare, many people believe that school shootings are becoming epidemic, occurring more frequently than they actually are (Muschert and Ragnedda 2010; Newman 2006; Schildkraut et al. 2015). In reality, however, there are approximately 10 events per year, on average (Schildkraut 2012). One of the main factors that drives the disproportional beliefs about the frequency of school shootings is the amount of attention they garner in the media (Elsass et al. 2014). Despite that these events typically last for 10 min or less, media coverage often extends days, weeks, and, with the most salient cases, a month or more (Muschert 2002; Schildkraut 2012, 2014; Schildkraut and Muschert 2014).¹ As Kellner (2003, 2008a, 2008b) notes, these events become, at varying intensities, “media spectacles,” with every facet of the story splashed across headlines or permeating television and computer screens. These spectacles essentially take relatively uncommon events, sensationalize them, and make the events appear far more commonplace than they actually are (Kellner 2008a; Surette 1992).

When the story first broke of the Columbine High School shooting, for example, CNN aired six hours of uninterrupted live coverage (Muschert 2002). Three major news networks – ABC, CBS, and NBC – devoted more than half of their nightly news airtime to coverage of the shooting over the following month (Robinson 2011), with 53 stories in the first week alone (Maguire et al. 2002). In total, 319 stories were aired over all nightly news broadcasts throughout the remainder of 1999 (Robinson 2011). Coverage of other highly salient events, including the Virginia Tech and Sandy Hook shootings, have followed similar patterns.

In addition to television news, disproportional coverage of school shooting events also is evident through other media. In the year following Columbine, over 10,000

¹ The 1999 Columbine High School shooting is a notable exception. It has been estimated that the total event lasted just under 50 min (Columbine Review Commission 2001).

articles were published about the shooting in the nation's top 50 newspapers (Newman 2006), including 170 articles in *The New York Times* alone (Chyi and McCombs 2004; Muschert and Carr 2006). *The Times* also published over 130 articles about both Virginia Tech (Schildkraut 2012, 2014) and Sandy Hook (Schildkraut 2014; Schildkraut and Muschert 2014) in the first 30 days after each shooting. While other events, such as those at NIU in 2008 or Chardon High School in 2012, also have captured national attention, they did so with lower frequencies of coverage (Elsass et al. 2014; Schildkraut 2014). Thus, while school shootings have been overrepresented in the media, the disproportional coverage also is exacerbated by the focus on the most extreme (and deadly) examples (Burns and Crawford 1999; Elsass et al. 2014; Schildkraut and Muschert 2014; see also Maguire et al. 2002; Robinson 2011).

Cohen (1963) has noted that the media "may not be successful much of the time in telling people what to think, but it is stunningly successful in telling people what to think *about*" (p. 13). Such a sentiment is particularly relevant as the media serves as the main source of information for up to 95 % of the general public (Surette 1992). The agenda-setting function of the media often is achieved through story selection decisions and how they are framed (see, for example, McCombs 1997; McCombs and Shaw 1972). Specifically, researchers have found that up to 50 % of news coverage is dedicated to stories about crime, and despite that property-related offenses are considerably more common, a disproportionate amount of this attention is focused on the most serious and violent crimes (Chermak 1995; Gruenewald et al. 2009; Paulsen 2003; Schildkraut and Donley 2012). As such, the emphasis on "high amplitude" or sensational cases, such as school shootings, both in the amount and prominence of the coverage allocated, has the ability to shape public perceptions about a particular event or phenomenon (Johnstone et al. 1994; see also Chermak 1994).

Previous Research on School Shootings

Though the body of research examining school shootings is limited, several researchers have taken important first steps in studying the effects. At the time of the Columbine shooting, researchers at the Rochester Institute of Technology (RIT) were conducting a campus dating violence study (Stretesky and Hogan 2001). The researchers adapted their study in order to examine the effects of Columbine on students' perceptions of safety (Stretesky and Hogan 2001). The findings of the study indicated that, when compared to those surveyed prior to the shootings, respondents' perceived safety was significantly lower after Columbine (Stretesky and Hogan 2001). Despite methodological limitations, Stretesky and Hogan's (2001) work provides one of the earliest considerations of the impacts of such rare events.

Two other studies (Addington 2003; Brener et al. 2002) also examined the impact of the Columbine shootings, but did so using national data sources. Addington (2003) utilized the School Crime Supplement of the National Crime Victimization Survey (NCVS-SCS), while Brener et al. (2002) employed data from the 1999 Youth Risk Behavior Survey (YRBS). Aside from differences in study design and respective challenges, these studies found similar patterns related to the effects of the shooting. Addington (2003) found that students expressed greater fear while at school after Columbine as compared to those surveyed prior to it, though the effect size was small.

Similarly, Brener et al. (2002) found that following the shooting, many respondents expressed being too fearful to attend school, and consequently, were more likely to avoid school altogether.

Researchers also have examined the effects of shootings taking place on college campuses. Fallahi et al. (2009) researched the effect of the 2007 Virginia Tech shootings on students at Central Connecticut State University. They found that students who consumed more media coverage of the shooting both were more fearful and more likely to believe a similar event would happen again (Fallahi et al. 2009). These same respondents, however, were less inclined to express the belief that a similar attack would happen on their campus (Fallahi et al. 2009).

Similarly, Kaminski et al. (2010) examined the impact of both Virginia Tech and 2008 NIU shootings on students at the University of South Carolina (USC). They found that students reported greater fear of murder and of being attacked with a weapon following both shootings (Kaminski et al. 2010). Demographic variables, such as gender, age, and race/ethnicity, also were significantly correlated with changes in fear, with females reporting being more fearful than males (Kaminski et al. 2010; see also Fallahi et al. 2009). Additionally, Kaminski et al. (2010) also found that older students and non-whites expressed greater fear, as compared to younger respondents and whites, respectively. Further, students living on campus expressed greater fear following the shootings (Kaminski et al. 2010).

While each of these studies makes an important contribution to the growing body of research on school shootings, methodological issues present in each work, coupled with the complexities inherent in studying a phenomenon that is extremely (and statistically) rare in nature, produces a number of serious limitations. The careful examination of such limitations allows for discussion about how to minimize their effects. Such a discourse will assist school shootings researchers in better handling common methodological issues, thereby helping to propel the body of literature forward.

Defining the School Shootings Problem

Perhaps the biggest challenge in studying school shootings, particularly when trying to determine their prevalence, is the absence of a precise definition for the phenomenon. Both in the academic community and beyond, little agreement has arisen with regard to how best to define these events. Specifically, a number of different definitions, each with their own inherent limitations, have been put forth by various agencies and organizations. In a joint report between the U.S. Department of Education and the Secret Service, for example, the researchers define “incidents of targeted school violence,” as a category which includes (but is not limited to) school shootings, as.

Any incident where (i) a current student or recent former student attacked someone at his or her school with lethal means (e.g., a gun or knife); and, (ii) where the student attacker purposefully chose his or her school as the location of the attack. (Vossekuil et al. 2002, p. 7)

In the School-Associated Violent Death Study published by the Center for Disease Control (CDC), in conjunction with the U.S. Department of Education and the U.S. Department of Justice, criteria for inclusion in the report relies on defining events as.

A case is defined as a fatal injury (e.g., homicide, suicide, or legal intervention) that occurs on school property, on the way to/from school, or during or on the way to/from a school-sponsored event. Only violent deaths associated with U.S. elementary and secondary schools, both public and private, are included. (Centers for Disease Control 2014)

While the CDC does not claim that all events in the report are school shootings, statistics reported are given in aggregates of total incidents; when used to explain school shootings, they provide individuals with an overinflated perception of their prevalence. In the same vein, the overly broad crafting of their definition suggests that events such as a suicide at a bus stop involving a firearm essentially could be counted as a school shooting.

Following the attack at Sandy Hook Elementary School, Everytown for Gun Safety (2014), a national advocacy group, purported that “in the two years since the mass shooting in Newtown, Connecticut, there have been at least 94 school shootings including fatal and nonfatal assaults, suicides, and unintentional shootings – an average of nearly one a week.” This claim, however, was problematic based on the definition the organization used to identify events:

Incidents were classified as school shootings when a firearm was discharged inside a school building or on school or campus grounds, as documented by the press or confirmed through further inquiries with law enforcement. Incidents in which guns were brought into schools but not fired, or were fired off school grounds after having been possessed in schools, were not included. (Everytown for Gun Safety 2014)

As a result of this choice of wording, accidental weapons discharges were included in their count, as were events that differed in motivation from school shootings, such as those involving gangs. In sum, since there is no universally accepted definition, there is, in turn, disagreement regarding the number of events that are (or are not occurring) each year.

Theoretical Approaches to Studying School Shootings

For many researchers, utilizing a deductive approach to study a particular phenomenon is beneficial as it offers theoretical propositions to help guide the research hypotheses to be tested (Bryman 2012). For researchers studying school shootings, however, finding an appropriate, and more importantly, testable, theory can present a challenge. Specifically, the majority of criminological theories – including biological, psychological, strain, and learning– focus on understanding why individuals engage in delinquent or criminal activities. While a case study approach can be used to look for common attributes among school shooters, the majority commit suicide; therefore, the amount of

available data is limited, as is the sample size, to test specific theoretical propositions.² Similarly, understanding why people become victims of school shootings is limited by a lack of theoretical insight; only one group of theories – routine activities – underscore the opportunity for victimization to occur.

Instead, researchers commonly have focused on understanding individuals' responses to school shooting events (Addington 2003; Warr 2000). This broader examination is advantageous for several reasons. First, given the extensive reach of the media, a greater number of people may indirectly become victims of these events (Addington 2003; Skogan and Maxfield 1981; Warr 2000). As such, this provides the opportunity to examine the effects of these events on a larger sample. Additionally, it is these very responses that have one of the greatest abilities to influence policy decisions that stem from the events. Most commonly, responses to school shootings as they relate to fear of crime or perceived safety have been examined (Addington 2003; Brener et al. 2002; Fallahi et al. 2009; Kaminski et al. 2010; Stretesky and Hogan 2001). Other outcomes, such as the use of avoidance behaviors (Addington 2003; Brener et al. 2002), also have been examined.

Perceptions of Safety and Fear of Crime

One area of inquiry that has been focused on by researchers is fear of crime, coupled with associated perceptions of risk or safety, among the greater public. Although the body of literature on fear of crime is ample, spanning over 40 years, these studies focus on more ordinary crimes and, by design, are ill-suited to capture the effects of rare crimes, such as school shootings (Warr 2000). Addington (2003) acknowledges this challenge, noting that “no theoretical or empirical precedent is available to predict Columbine’s [or other similar events’] effect on fear [or perceived risk of victimization]” (p. 368). Therefore, studies examining the effects of Columbine and other school shootings have placed greater emphasis on understanding individual reactions to the event, rather than the causes of the event itself.

One issue that complicates this area of inquiry, however, stems from researchers' handling of these outcome measures. Perceived risk and fear of crime are related, yet distinct constructs, and, therefore, it is important to differentiate between them, as the former is hypothesized to cause the latter (Warr 2000; Warr and Stafford 1983). Highlighting this difference, Ferraro (1995) further contends that perceived risk is cognitive, while fear of crime is emotional.

A number of the studies examining fear and perceived risk related to school shootings assert that they are distinct constructs in their reviews of the literature, but fail to include measures of each. Addington (2003) discussed the role of perceived risk and social distance in her study of the effects of the Columbine High School shooting, but through no fault of her own, was unable to include measures of perceived risk, as they are not available in the NCVS-SCS. Stretesky and Hogan (2001) faced the opposite problem. Their survey instrument focused solely on perceived risk, which they referred to as “perceptions of safety” (Stretesky and Hogan 2001, p. 430). This forced the researchers to forgo an examination of the prospective effects on fear of crime post-Columbine and instead focus on the potential

² In a study examining the broader category of rampage shooters following Columbine, Schildkraut (2014) found that 55 % of perpetrators in the study committed suicide.

impact of the event on perceived risk. Since these constructs are measuring two different outcomes, the results from Addington's (2003) and Stretesky and Hogan's (2001) studies are not readily comparable. Instead, when possible, measures of both fear and perceived risk should be included in order for researchers to glean a more complete understanding of individuals' responses to such events.

The issue of understanding the impact of school shootings on fear of crime or perceptions of risk further is exacerbated by the way in which these outcomes are measured. Both are multifaceted constructs, and this complexity must be acknowledged in its measurement to ensure validity. Addington (2003), for example, utilized two questions from the NCVS-SCS to measure fear of crime, which in itself is problematic. Stretesky and Hogan (2001) also used two dependent variables, but were able to address the multidimensional nature of safety perceptions by using composite measures rather than single questions. Still, as different studies have measured fear of crime, or some other related aspect such as perceived risk, in different ways, it begs the question: What constitutes the best way to measure fear of crime?

Routine Activities and Avoidance Behaviors

According to Warr (2000), fear also may be assessed by examining avoidance behaviors. When an individual is fearful, they may change or limit their routine activities or employ avoidance behaviors in an attempt to combat the perceived threat (Hindelang et al. 1978). The use of avoidance behaviors is not solely limited to how unsafe one perceives their environment to be; impressions of safety also may be influenced by associating, either directly or indirectly (via the media in some instances), with victims who share similar demographic characteristics to the individual (Hindelang et al. 1978; see also Stretesky and Hogan 2001). Thus, the use of avoidance behaviors, such as avoiding certain areas of campus, not being out at night, or not traveling alone, serves to minimize exposure to potential victimization (Hindelang et al. 1978).

Two studies (Addington 2003; Brener et al. 2002) specifically examined changes in self-reported avoidance behaviors following the Columbine shooting. Brener et al. (2002) found that students were more likely to report missing at least one day of school following Columbine as compared to those surveyed before the shooting. Additionally, Addington (2003) utilized questions from the NCVS-SCS that focused on avoiding specific areas of school. This supplementary analysis was included as an alternate examination of the impact of the shooting on students' fear (Addington 2003; see also Warr 2000). Unlike Brener et al. (2002), however, Addington (2003) did not find a significant difference in the use of avoidance behaviors between the pre- and post-Columbine groups. In their examination of the impact of the Virginia Tech and NIU shootings on college students, Kaminski et al. (2010) found that respondents expressed being more fearful of routine activities, such as walking alone on campus, but did not assess whether they employed any form of avoidance behaviors to combat these beliefs.

Methodological Complexities

When studying school shootings, researchers are faced with a number of unique methodological concerns that can affect studies' findings. Due to the rarity of these

events, each decision made has the potential to greatly limit confidence in the findings regarding the phenomena. Specifically, careful contemplation must be given to decisions related to data collection, sampling sizes, and timing, as well as potential spatial and temporal effects that may influence outcome measures. Beyond these decisions' impacts on the findings, such issues also are imperative in shaping the research from its inception.

Data Collection Concerns

Data collection perhaps is the most difficult facet of a research study to plan when attempting to study events of episodic violent crime. Due to the unanticipated nature of school shootings, researchers are presented with a number of study design options to investigate an event's effect. The first option is to utilize national surveys, such as the NCVS-SCS or the YRBS (see Addington 2003; Brener et al. 2002). Alternatively, researchers may be conducting a survey at the time an incident takes place, and can adapt their data collection around the event (see generally, Kaminski et al. 2010; Stretesky and Hogan 2001).

Primary Data Collection It sometimes is the case when studying this kind of phenomenon that after data collection has begun, a school shooting takes place, thereby changing the purpose and focus of the original research endeavor. While the ideal research design would be to utilize the same group of respondents for both pre- and post-event samples, it is rare that researchers are able to survey the same individuals before and after. This is especially relevant if IRB regulations require anonymity, thereby thwarting the possibility of resurveying pre-event respondents or if the shooting occurs at a time that makes data collection particularly difficult, like during a change in semesters. Therefore, once an event occurs, investigators are likely to be faced with the task of limiting differences between pre- and post-event samples, thus necessarily increasing one's reliance on convenience or purposive sampling techniques.

Stretesky and Hogan (2001) encountered this challenge in their examination of changes in fear of crime as a result of the Columbine High School shooting. They originally were studying campus dating violence at RIT through the dissemination of separate surveys to male and female respondents, with only the female survey containing questions about perceived safety (Stretesky and Hogan 2001). After the shootings at Columbine, the researchers adapted their original research design to focus on changes in perceptions of safety as a result of the event; however, because only the female survey contained such questions, they only were able to investigate the one group's changes in perceptions of safety, thereby reducing the generalizability of the findings (Stretesky and Hogan 2001). The impact of reduced representativeness can be diminished through a few different methods, however, including the use of internal comparison groups (Shadish et al. 2002). Accordingly, Stretesky and Hogan (2001) instituted random selection from a designated sampling frame that included only open enrollment liberal arts classes to achieve this end.

Analysis of Secondary Data One way in which representativeness can be increased is through the analysis of secondary data sources. Brener et al. (2002) used the YRBS and employed "a three-stage cluster-sample design to obtain a national representative

sample of students in grades 9 through 12” (p. 147). Additionally, increased representativeness was achieved in Addington’s (2003) study by capitalizing on the NCVS-SCS’ random allocation design, which is attained through the survey’s rotating panel design and interview schedule (p. 372).

Yet, the analysis of secondary data in these instances is not without its disadvantages. Though large sample sizes may be more representative of the population, they can also cause statistics to appear significant when they are not (Shadish et al. 2002). In the case of large samples, t-tests have so much power that even a very small difference can produce results reaching statistical significance (Shadish et al. 2002). The likelihood of a Type I error can be reduced though a number of methods, including the Bonferroni correction, the use of conservative multiple comparison follow-up tests in analysis of variance, and the use of a multivariate analysis of variance if multiple dependent variables are tested (Shadish et al. 2002).

Still, the tradeoff for using national-level secondary data can be considerable. When studying possible changes in attitudes as a result of a rare violent crime, such as a school shooting, Warr (2000) notes that capturing the full effects of the phenomenon is difficult without a pretest measure. This information, in most instances, is lacking in annual or national surveys because the temporal or spatial effects of such events typically have only a short-term impact at the local level. This is an obvious limitation of using national survey data to study this phenomenon, as they are unlikely to contain all of the necessary measures.

Spatial Event Proximity Spatial proximity to a school shooting presents an important challenge, as the effects of the event may be diffused the further the respondent is from an incident’s location (Warr 2000). Researchers (e.g., Heath 1984; Liska and Baccaglini 1990) have found that people respond differently when crime is local (see also Addington 2003). As Heath (1984) noted, “the worse things are elsewhere, the better we feel about our immediate environment” (p. 270). Since both Addington (2003) and Brener et al. (2002) opted to use national data in their examinations of Columbine, the majority of respondents surveyed were from areas outside of Littleton, the Denver metropolitan area, or even the state of Colorado. Therefore, it is possible that the event did not strongly affect respondents who were spatially distant from the shooting (Addington 2003). One potential way to make such a determination regarding respondents’ spatial proximity to a school shooting would be to include a control measure for the location of the respondent (e.g., city, state, or region, based on data availability).

Temporal Event Proximity Temporal proximity to a school shooting also provides a challenge for researchers. While it is unknown specifically how long the aftermath of these events lasts, it is likely to be short (Warr 2000; see also Addington 2003; Stretesky and Hogan 2001). For example, researchers who have examined this phenomenon have found that coverage in the media typically lasts around 30 days (Chyi and McCombs 2004; Muschert and Carr 2006; Schildkraut 2012; Schildkraut and Muschert 2014). By comparison, topics that take more time to develop, such as politics, have an average lifespan of 18.5 months (McCombs and Zhu 1995). Thus, given the volatile nature of school shootings, as well as the subsequent reactions to them, it is possible that with the passage of time, any effects or changes in outcome measures may be diminished. At the same time, however, it is possible that, particularly with highly

salient events, the effects may increase over time, thus not being able to be captured in cross-sectional surveys.

Even when studies are able to collect data immediately prior to and after an event, there still are potential limitations in assessing changes in the outcome measures. Surveying respondents directly after an event in order to capture its immediate impact may not only fail to find significant effects due to a possible delay, as may have been a problem with Kaminski et al. (2010) study, but also is unable to assess any long-term developing effects. The data collection period for Stretesky and Hogan (2001) was 5 days prior to Columbine and 15 days after the shooting. Given this shortened time frame, the authors note that it was impossible to determine the length of the effects of Columbine (Stretesky and Hogan 2001). The issue of seasonality, as highlighted by Addington (2003), is a supplementary confounding factor that must be considered with regard to the timing of data collection. Perhaps then, it would be most fruitful to survey respondents as quickly as possible after a school shooting takes place and incorporate into the study design multiple post-event collection periods to track the progression of event effects over time.

Similarly, when surveys are designed for a purpose other than capturing the effects of school shootings, questions included may present challenges for disentangling the actual impact of the event. In Brener et al. (2002) study, for example, the researchers utilized a measure assessing whether students had missed school in the 30 days prior to taking the survey because of feeling unsafe. Such a question is problematic, however, based on when a respondent actually completed the survey. If the survey was completed on April 21 (the shooting occurred on April 20), the question arises as to whether the reported avoidance is attributable to Columbine, which would likely be freshest in the respondent's mind, rather than other events that took place during the preceding 29 days. Conversely, if the survey was completed on May 19, and similar changes in the avoidance of school were found, it is equally difficult to determine if the change is a result of the shooting, or if some other event occurring after Columbine caused a respondent's absence. One potential way to address this issue, as is employed by Addington (2003), is to include controls for interview month and day. This, however, requires the information to be available in the dataset used; it is unclear if this information was available to Brener et al. (2002).

Finally, when considering the temporally-associated issues related to data collection, one also must consider the possibility of other events occurring during the same period (Kaminski et al. 2010). Though Columbine often is regarded as the archetypal school shooting to which all other events are measured (Altheide 2009; Larkin 2007, 2009; Muschert 2007b; Muschert and Larkin 2007), it is not the only event that occurred during the data collection period of several of the studies mentioned thus far. Addington (2003) utilized data from the first six months of 1999, during which time, besides Columbine, another shooting occurred on May 20 in Conyers, Georgia at Heritage High School. Brener et al. (2002) data collection period also encompassed this shooting. While Columbine is considerably more noteworthy than the Conyers shooting, it is possible that the latter event still had an effect, particularly if any of the respondents surveyed were in the vicinity of the shooting. As such, including control measures, such as the day and month (Addington 2003) or the occurrence of another event, can be helpful.

Sampling Considerations

A supplementary concern involves the investigation of a school shooting directly impacting one population, like high school students, but its effect being studied on a separate population, such as college students. Why should a shooting at a high school affect college students' fear, as was investigated by Stretesky and Hogan (2001)? While demographic overlap between victims and study respondents beyond age partially may account for why these kinds of comparisons are valid, researchers still must consider who to sample in the first place.

Yet, regardless of sampling method, and even when employing techniques to minimize the impact of separate pre- and post-event samples, differences often remain on a number of characteristics. Brener et al. (2002) and Stretesky and Hogan (2001) faced opposite ends of a similar problem regarding pre- and post-Columbine sample sizes. In the study conducted by Brener et al. (2002), approximately 78.4 % of the surveys had been collected prior to the shooting at Columbine High School. This resulted in the pre-Columbine sample including 12,049 cases and the post-Columbine sample including 3137 cases (Brener et al. 2002). The effect of the difference in sample size pre- and post-event is minimized however, because both samples were so large, as in essence, large sample sizes limit the influence of outliers as they are more representative of the population (Tabachnick and Fidell 2006). In the same vein, Stretesky and Hogan's (2001) study utilized drastically different pre- and post-Columbine sample sizes, with only 20 respondents in the before-event sample and 113 respondents in the after-event sample. They opted to utilize a qualitative research technique – incorporating the use of focus groups – to increase confidence in their quantitative findings.

The timing of drawing samples in relation to event occurrence also can impact a study. Kaminski et al. (2010) employed a research design that utilized four distinct sampling intervals – prior to and following the shooting on April 16, 2007 at Virginia Tech and the same with the February 14, 2008 shooting at NIU. Since the post-Virginia Tech sample of respondents and the pre-NIU sample of respondents were surveyed in close temporal proximity to one another – only a 7 month difference between the two sample-collection periods – it is possible that there was some carryover of fear in the pre-NIU sample due to the commission of the Virginia Tech shooting. As Kaminski et al. (2010) note,

The pre-NIU coefficient was statistically significant and larger than that for the post-VT estimate. Taken at face value, this suggests that not only was there no decay in fear following the VT shooting incident, but that fear of walking alone on campus during the day actually increased between Survey 2 (post-VT) and Survey 3 (pre-NIU). (p. 94)

It is possible, then, that it the effects of the shooting at Virginia Tech on fear was delayed. In fact, Kaminski et al. (2010) point out that if delayed effects did occur, it could be caused by a wide array of factors that affected their study, including a possible desensitization of respondents to similar repeated events, increased campus safety measures employed after the Virginia Tech shooting, and the timing of the survey administration, among others.

Understanding The Findings

Fear, Risk, and Non-Normal Events

Though several studies (Addington 2003; Brener et al. 2002; Kaminski et al. 2010; Stretesky and Hogan 2001) reported finding effects, albeit minimal, of their respective school shootings on measures of fear of crime or perceptions of safety, these results must be interpreted with caution for two key reasons. First, respondents systematically may be excluded from the study, the extent of which can be difficult, if not impossible, to determine. Addington's (2003) research on changes in fear of crime highlights this issue by finding that "after Columbine, students were more likely to avoid school entirely" (p. 371). Moreover, of the students who do return to school after a shooting incident, those who are fearful may refuse to answer certain survey questions that make them feel afraid or uncomfortable during post-event data collection. This plausibly can result in missing data from some subsection of the respondents, thereby reducing the variability of the sample, and possibly biasing results.

Perhaps more problematic, however, is the way in which measures of fear of crime or perceived risk of victimization, have been constructed. The outcome measures in these studies, similar to the larger body of fear of crime (see, for instance, Ferraro 1995; LaGrange and Ferraro 1989), focus on assessing perceptions as they relate to more commonly occurring crimes. Addington (2003), for example, assessed respondents' level of fear while at school, as well as while traveling to and from school. This begs the question of why respondents' fear of crime while traveling to or from school should be impacted by the Columbine shooting, which occurred solely on the campus itself. Similarly, in their examination of perceptions of safety, Stretesky and Hogan (2001) incorporated questions related to routine activities, including walking alone, being home alone, or taking public transportation, each at night.³

School shootings, however, cannot be said to be normally occurring in any sense; thus, the construct validity of the fear or risk measures is reduced. As Addington (2003) points out,

The theoretical models utilizing perceived risk were developed to explain fear of victimization arising from *daily experiences* as opposed to a particular event like Columbine. It is not clear how analogous Columbine is to *more common recurring experiences*. Prior research also operationalized indirect victimization as fairly minor or routine crimes occurring in the neighborhood or involving one's friends or family. In contrast, Columbine was an *unusually violent crime* that for the vast majority of Americans occurred in a distant place to strangers. (p. 369, emphasis added)

As such, the lack of, or minimal significant findings about the effects of a non-normally occurring crime may best be attributed to trying to capture its impact using measures related to more routine events.

In order to better assess the full impact of school shooting events on both fear of crime and perceptions of risk, researchers must reconceptualize the way in which these

³ For a complete list of questions included, see Stretesky and Hogan (2001, p. 437).

outcomes are measured. First, measures of both fear and risk must be multidimensional in composition, as a single measure of either will be insufficient to capture such a complex issue. Additionally, these questions specifically must be consistent with school shootings, as opposed to routine crimes, such as burglary, robbery, or even homicide more generally. As Kaminski et al. (2010) note,

Although campus shootings may increase student fear of walking alone on campus or fear of crime on campus generally, they may more strongly increase fear of being threatened with a gun or fear of being murdered on campus, since guns and murder were characteristics specific to the Virginia Tech and NIU events. (p. 91)

The panel of questions proposed by Ferraro (1995), which has been validated through a number of subsequent studies, provides a good starting point to design such a survey. This panel, however, merely provides a template, as it is was designed to assess more routine crimes. Thus, researchers could benefit from adapting this panel to maintain questions about fear or perceived risk of murder while incorporating measures specific to school shootings, such as being shot while on campus, being threatened with a gun (and perhaps disaggregating further to identify fear or risk of being threatened with a handgun, shotgun, or rifle), or being targeted indiscriminately by disgruntled classmates.

Mediatized Outcomes

As most people never will be a direct victim of a school shooting, nor spatially proximate to the site of an event, media attention has the potential to close these gaps (Addington 2003; Kaminski et al. 2010; Stretesky and Hogan 2001). More specifically, increased media coverage provides a way by which the public can identify with both the victims and the event as a whole (Addington 2003). As such, the media can have the ability to lead to the indirect victimization for millions of news consumers (Addington 2003; Skogan and Maxfield 1981; Warr 2000). Understanding this potential effect, then, must be a consideration for researchers.

Both Addington (2003) and Stretesky and Hogan (2001), for example, posit a potential media effect in their studies, due in part to the heightened media attention the Columbine shooting received. While Addington (2003) contextualizes the link as indirect, Stretesky and Hogan (2001) propose a direct relationship. In fact, their study is focused around the research question, “Does the media depiction of the Columbine shooting change perceptions of safety and risk on the part of [RIT] students during the time period in question?” (Stretesky and Hogan 2001, p. 430). Despite these propositions, neither study included media-related variables.

Even if media variables are included, consideration must be given to the differences between consumption and content. In order to adequately assess the impact of the media, both should be considered. Further, measures assessing the different modes of media (e.g., television, newspaper, or social media) are needed, as often, different categories of news consumers frequent specific sources (see, for example, Pew Research Center for the People and the Press 2008). In sum, researchers not only must account for how much media people consume, but also what they are taking in and

through what mode in order to understand the potential effects of indirect victimization via the media on study outcome measures.

The Role of Prior Victimization

As noted, the media may act as a form of indirect victimization for the general public who tune in when a school shooting occurs. Direct prior victimization also has the ability to influence people's perceptions about school shootings, and as such, must be considered. Stretesky and Hogan (2001) included some measure of previous victimization in their studies, recognizing that respondents' past victimization could affect their fear of crime, perceived risk of victimization, and avoidance behaviors, irrespective of the occurrence of a school shooting. As Stretesky and Hogan (2001) note, individuals who previously have been victimized are more likely to report feeling unsafe. The majority of the studies examined here, however, did not incorporate controls for prior victimization, which also could confound the results.

Additionally, the influence of time with regard to respondents' past victimization must be taken into account. More recent victimization may have stronger effects on fear of crime, perceived risk of victimization, and avoidance behaviors than victimization experiences occurring in the more distant past. Furthermore, it is unknown how prior personal victimization may affect fear and perceived risk of crime as they relate specifically to school shootings. Similar to the aforementioned concerns related to fear of normally occurring crime, past personal victimization, such as individuals having had their house broken into while they were home, may have little relation to fear of being shot in a classroom. Therefore, it is imperative that researchers studying school shootings also incorporate questions with similar situational characteristics of these events, such as bullying or being confronted with a firearm, in addition to more general measures of prior victimization.

Combating The Challenges Of Studying School Shootings

Each of these studies has made an important contribution to the available body of literature on school shootings. Though we have highlighted areas for consideration within each study that warrant caution in understanding their methodologies and interpreting their findings, these limitations simultaneously provide a considerable opportunity to continue to advance the research. Drawing on these, a series of "best practices" can be offered that researchers may use in future studies to overcome prior constraints. Table 1 provides a summary of these recommendations for moving the research forward.

Employ a Universally Accepted Definition

While various definitions of school shootings (or other closely associated identifiers) exist, the absence of a precise, universally accepted definition is problematic for several reasons. First, without clearly defined parameters of what constitutes such an event, some incidents may be labeled incorrectly as a school shooting, despite that they do not align with other attacks. For instance, under the broadly constructed definition put forth

Table 1 Best practices for studying school shootings

1. Employ a universally accepted definition of the phenomenon.
2. Ensure that the data being used is accurate and that it is collected in accordance with the agreed upon definition.
3. Utilize theoretical perspectives to support the findings.
4. Ground the findings in the context of homicide in the U.S. and relevant statistical risk of victimization.
5. Expand the resource focus to explore new avenues and unanswered research questions.
6. Combine quantitative and qualitative methodologies to increase the robustness of the body of literature and individual studies.

by Everytown for Gun Safety (2014), a gang shooting at an Orlando, Florida area high school is identified as a school shooting (Stableford 2014; Weiner 2013). Not only does this confuse the definitional understanding of these events, it also inflates the statistics, giving the public the perception that such attacks are occurring more frequently than they actually are. Further, since many of these definitions are proposed by government agencies or national organizations, such definitions and related statistics are believed to be accurate, though they may not be.

In order to overcome this limitation, we propose that Katherine Newman and colleagues' definition in their book, *Rampage: The Social Roots of School Shootings*, should be used as the universally accepted definition through which to study these events. Specifically, Newman et al. (2004) define rampage school shootings as events that

...Take place on a school-related *public stage* before an *audience*; involve multiple victims, some of whom are shot simply for their symbolic significance or at random; and involve one or more shooters who are students or former students of the school. (p. 50, emphasis added)

Newman et al. (2004) definition has been widely accepted and typically serves as the basis among researchers in the academic community (e.g., Fox and Harding 2005; Kalish and Kimmel 2010; Langman 2009; Muschert 2007b; Muschert and Ragnedda 2010; Tonso 2009; Wike and Fraser 2009) who study such events. Given its validation through these works, it can be considered the most ideal definition presented to understand school shootings.

Ensure the Accuracy of the Data

Data associated with mass shootings is predicated on a precise definition. When inaccuracy exists, however, the data itself will be impacted. Most commonly, definitions have been crafted in a way that leads to an inflation in the statistics, indicating that there is a greater number of events occurring than actually are. Based on Everytown for Gun Safety's aforementioned definition, the organization claims that 142 school shootings occurred in the 22 months after Sandy Hook, despite that other researchers (e.g., Schildkraut and Elsass 2016) found fewer events occurred in 134 years based on a more precise classification.

It is important to note, however, that even the most accurate definition does not guarantee inclusion of all events. The heavy reliance of researchers on media accounts to identify these events can be problematic based on the continual changing of terminology used in the discourse (e.g., school shooting, active shooter, rampage, etc.). Further, despite the highly sensational nature of these events, not all events are covered and of those that are, the number of stories and amount of information released may vary (Schildkraut 2014). Despite such cautions, improving the overall accuracy of the data will benefit researchers in being able to offer more insight and possible generalizability of their findings related to these events.

Utilize Theoretical Perspectives to Support the Findings

Like all research, findings from these studies should be supported by theory in order to increase their validity. As identified earlier, the way in which theoretical concepts are measured is important, as many theories have clearly defined constructs that are instrumental in their application. Deviation in how such constructs are measured, however, may reduce confidence in researchers' findings. Instead, future studies should emphasize measurement in accordance with specific theoretical propositions substantiated in previous literature.

Further, a broader range of theories should be used to study these events. Rather than anecdote or speculation, for example, theories from the biological or psychological perspectives may be used to further assess why school shooters engage in such crimes. Similarly, learning theories also may be employed to better understand how they come to engage in these behaviors. Routine activities theory, as proposed by Cohen and Felson (1979), also can provide a strong foundation not only for identifying how the opportunity arises for these events to occur, but potential ways in which future school shootings may be prevented. While there is no "one size fits all" theory through which to understand these events, the broad range of criminological explanations, steeped in rich, academic history, can provide different opportunities to strengthen the findings of future research.

It may be necessary to develop a new theoretical paradigm through whose lens school shootings may be examined, apart from the traditional criminological approaches. Due to the rarity of this phenomenon, it is likely that criminological theories developed for the purpose of explaining more normally occurring crimes are ill-equipped to be applied to school shootings. It then is vital that researchers begin to consider theory construction with rare violent events, specifically school shootings, as the focus.

Ground the Findings in the Bigger Picture of Homicide and Relative Risk of Victimization

The employment of a precise definition and accurate statistics can provide a greater understanding about these events and their prevalence. As it has been found that individuals believe that school shootings are happening more frequently and that they have a high statistical likelihood of becoming victims (e.g., Elsass et al. 2014; Schildkraut et al. 2015), findings from research on these events must be contextualized in terms of homicide in the U.S., an already statistically rare

occurrence compared to other types of crimes. This also will enable researchers to translate their findings in terms of a person's actual risk of becoming the victim of a school shooting.

This context is particularly important, given the reliance of media accounts. Schildkraut (2014), for example, found in her examination of all mass shootings between 2000 and 2014 that of 1930 statistical references coded in 564 articles, just 3 mentions of the U.S. violent crime rate were made. The absence of this information, however, is critical as it is likely a main contributing factor to the disproportional beliefs about these events that have been found in other studies (e.g., Elsass et al. 2014; Schildkraut et al. 2015). Therefore, in order to potentially reshape perceptions about these events' occurrence and people's likelihood of victimization, context must be offered as it relates to crime in the U.S. more broadly.

Expand the Research Focus

The studies examined here are important to the body of literature on school shootings as they focus on understanding how members of society respond to these events in the form of fear of crime or heightened perceptions of risk victimization. Beyond these, however, the majority of research on school shootings focuses most heavily on understanding the way in which these stories are framed in the media. For example, a study by Chyi and McCombs (2004) examined the way in which coverage of the Columbine shooting was framed in *The New York Times*, and how these patterns shifted over the life of the story. These findings later were compared with 13 other shootings occurring in a similar time period (Muschert and Carr 2006) and the Sandy Hook shooting (Schildkraut and Muschert 2014). Others have examined how specific narratives about these events, perpetrators, or victims are constructed within the media (e.g., Frymer 2009; Kupchik and Bracy 2009; Lawrence and Mueller 2003; Schildkraut 2012). Each study is a worthwhile endeavor, given that the media acts as the main source of information for up to 95 % of the general public (Graber 1980; Surette 1992) and the manner in which stories are framed can have a considerable impact on the attitudes examined in the studies by Addington (2003); Brener et al. (2002); Fallahi et al. (2009); Kaminski et al. (2010), and Stretesky and Hogan (2001). Still, this limited focus creates the opportunity to expand the research in future studies.

Moving forward, scholars may wish to consider other aspects of the school shootings phenomenon that largely has been absent from the literature. One such opportunity would be to examine the perpetrators themselves more in depth. Both Langman (2009) and Muschert (2007a) have offered typologies through which to understand the shooters. Langman (2009), for example, presented three different categories of school shooters – the traumatized, the psychotic, and the psychopathic. Muschert (2007a), on the other hand, offered a different typology through which to analyze school shootings. Specifically, he differentiated rampage shootings, as defined by Newman et al. (2004), from mass murders, terrorist attacks, targeted shootings, and government shootings (Muschert 2007a). These studies each were limited by a small sample size (e.g., Langman had only 10 shooters from 8 different events in his study); therefore, a renewed application to a broader group of perpetrators may provide additional insights

about these events. From there, a greater understanding about why these events occur and how they may either be predicted or prevented (e.g., through the identification of warning signs) may be gleaned.

Combine Both Qualitative and Quantitative Methodologies

In order to continue to advance this important body of literature, new methodological approaches must be employed. One possible way in which this can be accomplished is by employing a multi-stage research design that utilizes both quantitative and qualitative methodologies. While the studies reviewed here have illustrated the benefits of quantitative survey research, such information can benefit from being supplemented with qualitative data to provide a more robust and rich understanding of responses. With studies such as those by Addington (2003) and Brener et al. (2002), which found through quantitative analysis that students were more fearful after the Columbine shooting, supplementing the research with qualitative follow-up will allow for researchers to understand the “why” behind the data.

One way in which this could be accomplished would be for researchers to conduct interviews or focus groups with individuals and gather information about reactions to school shootings, either individual events or the collective phenomenon (see, for example, Stretesky and Hogan 2001). Likewise, observational research could be conducted with individuals or groups, looking for cues as participants read news stories or watch coverage of the events. Regardless of the specific methodology chosen, the use of a multi-stage, mixed-method design will allow researchers to significantly advance the breadth of the literature on school shootings.

Conclusion

The studies examined throughout the current work have taken important first steps in developing the research on school shootings, particularly as the phenomenon has become a highly prevalent issue in the public discourse. Despite inherent challenges arising from methodological issues, these studies provide an important glimpse into how these events can impact people’s attitudes about school shootings. At the same time, recognizing these roadblocks enables future researchers to reconceptualize the way in which these events are studied, creating the opportunity to develop a more robust examination of school shootings, from the moment the story breaks to how information is processed and received by the public, and in turn, how these beliefs influence related public policy. Only then can researchers continue to advance this limited, yet vital, body of literature forward.

Acknowledgments The authors wish to thank the reviewers for their invaluable feedback on this manuscript. An earlier version of this paper was presented at the 2014 annual meeting of the American Society of Criminology.

References

- Addington, L. A. (2003). Students' fear after columbine: Findings from a randomized experiment. *Journal of Quantitative Criminology*, *19*(4), 367–387.
- Altheide, D. L. (2009). The columbine shooting and the discourse of fear. *American Behavioral Scientist*, *52*(10), 1354–1370.
- Brener, N. D., Simon, T. R., Anderson, M., Barrios, L. C., & Small, M. L. (2002). Effect of the incident at columbine on students' violence- and suicide-related behaviors. *American Journal of Preventive Medicine*, *22*(3), 146–150.
- Bryman, A. (2012). *Social research methods* (4th ed.,). New York: Oxford University Press.
- Burns, R., & Crawford, C. (1999). School shootings, the media, and public fear: Ingredients for a moral panic. *Crime, Law & Social Change*, *32*, 147–168.
- Centers for Disease Control. (2014). School-assisted violent death study. Retrieved from <http://www.cdc.gov/ViolencePrevention/youthviolence/schoolviolence/SAVD.html>
- Chermak, S. (1994). Body count news: How crime is presented in the news media. *Justice Quarterly*, *11*(4), 561–582.
- Chermak, S. (1995). *Victims in the news: Crime and the American news media*. Boulder, CO: Westview Press.
- Chyi, H. I., & McCombs, M. E. (2004). Media salience and the process of framing: Coverage of the Columbine school shootings. *Journalism and Mass Communication Quarterly*, *81*(1), 22–35.
- Cohen, B. C. (1963). *The press and foreign policy*. Princeton, NJ: Princeton University Press.
- Cohen, L. E., & Felson, M. K. (1979). Social change and crime rate trends: A routine activities approach. *American Sociological Review*, *44*(4), 588–608.
- Columbine Review Commission (2001). *The report of governor Bill Owens' Columbine Review Commission*. Denver, CO: State of Colorado. Retrieved from <http://www.state.co.us/columbine/>.
- Elsass, H. J., Schildkraut, J., & Stafford, M. C. (2014). Breaking news of social problems: Examining media consumption and student beliefs about school shootings. *Criminology, Criminal Justice, Law and Society*, *15*(2).
- Everytown for Gun Safety. (2014). Analysis of school shootings: December 15, 2012 – December 9, 2014. Retrieved from <http://everytown.org/documents/2014/10/analysis-of-school-shootings.pdf>
- Fallahi, C. R., Austad, C. S., Fallon, M., & Leishman, L. (2009). A survey of the perceptions of the Virginia Tech tragedy. *Journal of School Violence*, *8*(2), 120–135.
- Ferraro, K. F. (1995). *Fear of crime: Interpreting victimization risk*. New York: SUNY Press.
- Fox, C., & Harding, D. (2005). School shootings as organizational deviance. *Sociology of Education*, *78*(1), 69–97.
- Frymer, B. (2009). The media spectacle of Columbine: Alienated youth as an object of fear. *American Behavioral Scientist*, *52*(10), 1387–1404.
- Graber, D. A. (1980). *Crime news and the public*. Chicago, IL: University of Chicago Press.
- Gruenewald, J., Pizarro, J., & Chermak, S. (2009). Race, gender, and the newsworthiness of homicide incidents. *Journal of Criminal Justice*, *37*(3), 262–272.
- Heath, L. (1984). Impact of newspaper crime reports on fear of crime: Multimethodological investigation. *Journal of Personality and Social Psychology*, *47*(2), 263–276.
- Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Cambridge, MA: Ballinger Publishing Company.
- Johnstone, J., Hawkins, D., & Michener, A. (1994). Homicide reporting in Chicago dailies. *Journalism Quarterly*, *71*(4), 860–872.
- Kalish, R., & Kimmel, M. (2010). Suicide by mass murder: Masculinity, aggrieved entitlement, and rampage school shootings. *Health Sociology Review*, *19*(4), 451–464.
- Kaminski, R. J., Koons-Witt, B. A., Thompson, N. S., & Weiss, D. (2010). The impacts of Virginia Tech and Northern Illinois University shootings on the fear of crime on campus. *Journal of Criminal Justice*, *38*(1), 88–98.
- Kellner, D. (2003). *Media spectacle*. London: Routledge.
- Kellner, D. (2008a). *Guys and guns amok: Domestic terrorism and school shootings from the Oklahoma City bombing to the Virginia Tech massacre*. Boulder, CO: Paradigm Publishers.
- Kellner, D. (2008b). Media spectacle and the “massacre at Virginia Tech”. In B. Agger, & T. W. Luke (Eds.), *There is a gunman on campus* (pp. 29–54). Lanham, MD: Rowan & Littlefield Publishers, Inc.

- Kupchik, A., & Bracy, N. L. (2009). The news media on school crime and violence: Constructing dangerousness and fueling fear. *Youth Violence and Juvenile Justice*, 7(2), 136–155.
- LaGrange, R. L., & Ferraro, K. F. (1989). Assessing age and gender differences in perceived risk and fear of crime. *Criminology*, 27(4), 697–719.
- Langman, P. (2009). Rampage school shooters: A typology. *Aggression and Violent Behavior*, 14(1), 79–86.
- Larkin, R. W. (2007). *Comprehending Columbine*. Philadelphia, PA: Temple University Press.
- Larkin, R. W. (2009). The Columbine legacy: Rampage shootings as political acts. *American Behavioral Scientist*, 52(9), 1309–1326.
- Lawrence, R., & Mueller, D. (2003). School shootings and the man-bites-dog criterion of newsworthiness. *Youth Violence and Juvenile Justice*, 1(4), 330–345.
- Liska, A. E., & Baccaglioni, W. (1990). Feeling safe by comparison: Crime in the newspapers. *Social Problems*, 37(3), 360–374.
- Maguire, B., Weatherby, G. A., & Mathers, R. A. (2002). Network news coverage of school shootings. *The Social Science Journal*, 39(3), 465–470.
- McCombs, M. E. (1997). Building consensus: The news media's agenda-setting roles. *Polymer Composites*, 14(4), 433–443.
- McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of the mass media. *The Public Opinion Quarterly*, 36(2), 176–187.
- McCombs, M. E., & Zhu, J. (1995). Capacity, diversity, and volatility of the public agenda: Trends from 1954 to 1994. *The Public Opinion Quarterly*, 59(4), 495–525.
- Muschert, G. W. (2002). *Media and massacre: The social construction of the columbine story*, Unpublished doctoral dissertation. Boulder, CO.: University of Colorado at Boulder.
- Muschert, G. W. (2007a). Research in school shootings. *Sociology Compass*, 1(1), 60–80.
- Muschert, G. W. (2007b). The Columbine victims and the myth of the juvenile superpredator. *Youth Violence and Juvenile Justice*, 5(4), 351–366.
- Muschert, G. W., & Carr, D. (2006). Media salience and frame changing across events: Coverage of nine school shootings, 1997–2001. *Journalism and Mass Communication Quarterly*, 83(4), 747–766.
- Muschert, G. W., & Larkin, R. W. (2007). The Columbine High School shootings. In S. Chermak, & F. Y. Bailey (Eds.), *Crimes and trials of the century* (pp. 253–266). Westport, CT: Praeger.
- Muschert, G. W., & Ragnedda, M. (2010). Media and violence control: The framing of school shootings. In W. Heitmeyer, H. G. Haupt, S. Malthaner, & A. Kirschner (Eds.), *The control of violence in modern society: Multidisciplinary perspectives, from school shootings to ethnic violence* (pp. 345–361). New York: Springer Publishing.
- Newman, K. S. (2006). School shootings are a serious problem. In S. Hunnicutt (Ed.), *School shootings* (pp. 10–17). Farmington Hills, MI: Greenhaven Press.
- Newman, K. S., Fox, C., Harding, D. J., Mehta, J., & Roth, W. (2004). *Rampage: The social roots of school shootings*. New York: Basic Books.
- Paulsen, D. (2003). Murder in black and white: The newspaper coverage of homicide in Houston. *Homicide Studies*, 7(3), 289–317.
- Pew Research Center for the People & the Press. (2008). Audience segments in a changing news environment: Key audiences now blend online and traditional sources. Retrieved from <http://www.people-press.org/files/legacy-pdf/444.pdf>.
- Robinson, M. B. (2011). *Media coverage of crime and criminal justice*. Durham, NC: Carolina Academic Press.
- Schildkraut, J. (2012). Media and massacre: A comparative analysis of the reporting of the 2007 Virginia Tech shootings. *Fast Capitalism*, 9(1) Retrieved from http://www.uta.edu/huma/agger/fastcapitalism/9_1/schildkraut9_1.html.
- Schildkraut, J. (2014). *Mass murder and the mass media: An examination of the media discourse on U.S. rampage shootings, 2000–2012*. (Unpublished doctoral dissertation). San Marcos, TX: Texas State University.
- Schildkraut, J., & Donley, A. M. (2012). Murder in black: A media distortion analysis of homicides in Baltimore in 2010. *Homicide Studies*, 16(2), 175–196.
- Schildkraut, J., & Elsass, H. J. (2016). *Mass shootings: Media, myths, and realities*. Santa Barbara, CA: Praeger.
- Schildkraut, J., & Hernandez, T. C. (2014). Laws that bit the bullet: A review of legislative responses to school shootings. *American Journal of Criminal Justice*, 39(2), 358–374.
- Schildkraut, J., & Muschert, G. W. (2014). Media salience and the framing of mass murder in schools: A comparison of the Columbine and Sandy Hook massacres. *Homicide Studies*, 18(1), 23–43.

- Schildkraut, J., Elsass, H. J., & Stafford, M. C. (2015). Could it happen here? Moral panics, school shootings, and fear of crime among college students. *Crime, Law and Social Change*, 63(1), 91–110.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin Company.
- Skogan, W. G., & Maxfield, M. G. (1981). *Coping with crime: Individual and neighborhood reactions*. Beverly Hills, CA: Sage Publications.
- Stableford, D. (2014). What is a 'school shooting'? It depends who you ask. *Yahoo News*. Retrieved from <http://news.yahoo.com/how-many-school-shootings-since-sandy-hook-150152463.html>
- Stretesky, P. B., & Hogan, M. J. (2001). Columbine and student perceptions of safety: A quasi-experimental study. *Journal of Criminal Justice*, 29(5), 429–443.
- Surette, R. (1992). *Media, crime, & criminal justice: Images and reality*. Pacific Grove, CA: Brooks/Cole Publishing Company.
- Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (5th ed.). Needham Heights, MA: Pearson.
- Tonso, K. L. (2009). Violent masculinities as tropes for school shooters: The Montréal massacre, the Columbine attack, and rethinking schools. *American Behavioral Scientist*, 52(9), 1266–1285.
- Vossekuil, B., Fein, R. A., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and findings of the safe school initiative: Implications for the prevention of school attacks in the United States*. Washington, D.C.: United States Secret Service and United States Department of Education.
- Warr, M. (2000). Fear of crime in the United States: Avenues for research and policy. In D. Duffee (Ed.), *Criminal justice 2000, Measurement and analysis of crime and justice* (vol. 4, pp. 451–489). Washington, DC: National Institute of Justice.
- Warr, M., & Stafford, M. (1983). Fear of victimization: A look at the proximate causes. *Social Forces*, 61(4), 1033–1043.
- Washington Post-ABC News Poll. (2015). The Washington post. Retrieved from http://www.washingtonpost.com/wp-srv/politics/polls/postabcpoll_20121216.html
- Weiner, J. (2013). West Orange High shooter a “documented gang member,” cops say. *Orlando Sentinel*. Retrieved from http://articles.orlandosentinel.com/2013-12-06/news/os-west-orange-high-shooting-gang-20131206_1_gang-member-gang-affiliation-west-orange-high-school
- Wike, T. L., & Fraser, M. W. (2009). School shootings: Making sense of the senseless. *Aggression and Violent Behavior*, 14(3), 162–169.

H. Jaymi Elsass is a doctoral candidate in the School of Criminal Justice at Texas State University. Her primary research interests include episodic violent crime, moral panics, fear of crime, and juvenile crime. She has published in *Criminology*, *Criminal Justice*, *Law & Society*, *Crime, Law & Social Change*, and an edited volume.

Jaclyn Schildkraut is an Assistant Professor of Public Justice at the State University of New York at Oswego. Her research interests include school shootings, homicide trends, mediatization effects, and crime theories. She has published in *American Journal of Criminal Justice*, *Homicide Studies*, *Fast Capitalism*, *Crime, Law & Social Change*, and *Criminal Justice Studies*, as well as several edited volumes

Mark C. Stafford is a Professor and the Doctoral Program Director in the School of Criminal Justice at Texas State University. He also has held faculty positions at the University of Texas at Austin and Washington State University. He has published in *Criminology*, *Journal of Research in Crime and Delinquency*, *Quantitative Criminology*, and *Journal of Criminal Justice*.