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What Can Be Done About School Shootings? A Review of the Evidence

Randy Borum, Dewey G. Cornell, William Modzeleski, and Shane R. Jimerson

School shootings have generated great public concern and fostered a widespread impression that schools are unsafe for many students; this article counters those misapprehensions by examining empirical evidence of school and community violence trends and reviewing evidence on best practices for preventing school shootings. Many of the school safety and security measures deployed in response to school shootings have little research support, and strategies such as zero-tolerance discipline and student profiling have been widely criticized as unsound practices. Threat assessment is identified as a promising strategy for violence prevention that merits further study. The article concludes with an overview of the need for schools to develop crisis response plans to prepare for and mitigate such rare events.

Keywords: at-risk students; school psychology; school shootings; student behavior/attitudes; threat assessment; violence

A series of high-profile school shootings in the 1990s focused America's attention on the problem of school violence. Public fear generated by these emblematic events drove a dramatic shift in security-related policies and procedures in our nation's schools. Many of those efforts proliferated in a desperate and well-intentioned effort to make schools safer, but they were often predicated on unrealistic appraisals of risk and misunderstanding about the nature of the actual threat. For example, after a man invaded a one-room Pennsylvania Amish school and killed five girls in 2006, there were renewed recommendations to arm teachers with guns (Associated Press, 2006b) and a call to issue Kevlar-coated textbooks to students for use as bullet shields (Associated Press, 2006a). A Texas school division hired a former military officer to train students to collectively attack and subdue an armed gunman ("Burlison Changes Stance," 2006). Implementation of new security and prevention-oriented initiatives—most notably, the nationwide proliferation of zero-tolerance discipline practices—outpaced evidence of their effectiveness (Brooks, Schiraldi, & Ziedenberg, 2000).

A major difficulty in identifying effective practices to maintain school safety and prevent serious acts of violence is that school shootings receive such intense publicity, and are such

inherently disturbing events, that they generate an inflated perception of danger (Cornell, 2006). For example, shortly after the Columbine shooting, a Gallup poll found that two thirds of Americans believed that a similar incident was "very likely" or "somewhat likely" to happen in their community (Saad, 1999). More than one third of high school students agreed that there were students at their school who were "potentially violent enough to cause a situation such as the one that occurred at Columbine High School" (Gallup, 1999).

The effects of Columbine did not quickly dissipate. One year later, another poll (Nagy & Danitz, 2000) found that 71% of parents felt that the Columbine shooting had changed their view of how safe their children were at school. Fewer than half (40%) of parents regarded their children as "very safe" at school, and 50% described their children as only "somewhat safe." Ironically, in the year of the Columbine shooting, 17 students were killed at school, but more than 2,500 young people (ages 5–19) were murdered outside of school, and more than 9,700 were killed in accidents (Anderson, 2001). The fear of school shootings is greatly exaggerated in comparison with other risks such as riding in a car.

News media speculations about emerging trends based on unusual cases exacerbate public fear. For example, the 2006 Pennsylvania Amish school shooting generated nationwide reports of a "new trend of adults killing children in schools" (Thomas, 2006) and "a pattern of rural school shootings" with "girls as targets" (Chaddock & Clayton, 2006). The large number of violent acts that occur every day in the United States can generate pseudotrends based on random patterns. In the U.S. population of 300 million people, there are approximately 30,000 shooting fatalities (suicide, homicide, and accident) each year (Minino, Anderson, Fingerhut, Boudreault, & Warner, 2006), which means an average of 82 fatalities each day.

Because the perception of school safety is easily influenced by frightening but isolated incidents like school shootings, it is instructive to consider some rough calculations concerning the likelihood of such events. In the 10-year period from 1996–1997 to 2005–2006, 207 student homicides occurred in U.S. schools, an average of 21 deaths per year. Dividing the nation's approximately 125,000 elementary and secondary schools (U.S. Department of Education, 2008) by 21, any given school can expect to experience a student homicide about once every 6,000 years.¹ And although 21 homicides per year is a distressingly large number, it represents less than 1% of the annual homicides of youth ages 5 to 18 in the United States (Modzeleski et al., 2008).

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America's long-term interests in school safety generally, and in preventing school shootings specifically, will best be served by relying on research evidence to guide a comprehensive, school-wide approach (Dwyer & Osher, 2000). Charting an effective and sustainable course will require that educational administrators and institutions understand the nature and scope of school shootings in the United States. We must discern the patterns and relationships among individual, school, and community factors contributing to these incidents and apply lessons from outcome and program evaluations that pertain to the prevention of school shootings. In this article, we review the progress that has been made and consider possible directions for additional research.

Efforts to Prevent School Shootings

Gun-Free Schools Act

The Gun-Free Schools Act (GFSA) was passed in 1994 as part of the Improving America's Schools Act. The act called for states to enact laws requiring that a student who brings a firearm to school or possesses a firearm at school be expelled for a period of not less than 1 year. The law (Section 4141 of No Child Left Behind) permits the chief administering officer of a local educational agency to modify such expulsion on a case-by-case basis. The act was passed when the rate of violent behavior in schools was near its peak of 13 incidents per 1,000 students, totaling 322,400 incidents of serious violent crimes (Dinkes, Cataldi, & Lin-Kelly, 2007).

As a federal matter, the GFSA was designed to target the possession of firearms, but because the law directed states to pass their own legislation, many states enacted bills that required expulsion not only for bringing a firearm to school but also for such offenses as making threats, assaulting teachers, and selling drugs. As a result, many point to the passage of the GFSA as the beginning of the zero-tolerance movement ("We Need to Get Tough," 2000).

Zero Tolerance

The term *zero tolerance* describes a range of policies that seek to impose severe sanctions—in schools, typically suspension and expulsion—for minor offenses in hopes of preventing more serious ones. These initiatives are based on the theory of deterrence; however, after nearly a decade of widespread adoption (nearly 75% of schools report having such policies) and well-documented increases in school suspensions and expulsions, empirical evidence of any positive effect in deterring or reducing school violence remains lacking (American Psychological Association Zero Tolerance Task Force, 2008). Instead, zero-tolerance policies have been widely excoriated. Their legality has been questioned, they have been criticized as interventions contrary to principles of healthy child development, and they have been plagued by serious concerns about racially disproportionate application (Gregory, Skiba, & Noguera, this issue of *Educational Researcher*, pp. 59–68; Insley, 2001).

Persistently Dangerous Schools

Section 9532 of the Elementary and Secondary Education Act of 1965, as amended by the No Child Left Behind Act of 2001 (NCLB), required that states develop policies permitting a

student to choose to attend a safe school within the district if he or she attends a persistently dangerous school or becomes a victim of a violent crime (as defined by the state) while in school or on school grounds. This provision, called the Unsafe School Choice Option, did not provide criteria for how states should define a persistently dangerous school or a time frame for students to transfer to a safe school (Mayer & Leone, 2007). Although the U.S. Department of Education (2004) provided guidance on these matters, its recommendations were nonbinding.

The persistently dangerous schools initiative has met with several challenges. A substantial majority of states chose to use the number of suspensions and expulsions as the criterion for designating a school as "persistently dangerous." This metric makes use of readily available data, but the validity of this approach is not clear. Some state officials did not act on the persistently dangerous schools initiative, perhaps because of a lack of funding or the belief that such labeling would only damage those schools and not serve the interests of the community. During the 2003–2004 school year, only 52 schools nationally were labeled persistently dangerous (Snell, 2005), with 44 of 50 states and major cities such as Los Angeles, Chicago, Miami, Detroit, Cleveland, San Diego, Baltimore, and Washington, D.C., reporting that *no* schools met requirements for the persistently dangerous category. The net effect of the Unsafe School Choice Option of NCLB has been to discourage state education agencies and their local districts from dealing openly with schools that experience high rates of criminal violence (Mayer & Leone, 2007). In 2007, the Safe and Drug-Free Schools and Communities Advisory Committee (2007) recommended that this provision be revised when the NCLB is reauthorized.

Target Hardening and Security Measures

Schools have been engaged in target hardening and other security measures for decades. They began with the creation of school security agencies in urban schools (primarily high schools) during the era of desegregation and have evolved into widespread use of metal detectors and cameras to monitor and document behavior, and stationing police officers on premises (Redding & Shalf, 2001).

Today, schools across the country are combining basic security measures, such as searching lockers (53%), placing school staff in hallways (90%), locking entrances and/or exit doors during the school day (54%), and requiring visitors to sign in (93%; Dinkes et al., 2007), with more sophisticated measures. Analog cameras that were fixed on one site and monitored from one location have been replaced with digital cameras that can pan across an area and be monitored by multiple observers (Grant, 2003).

The effects of security cameras on behavior in schools has not been extensively studied. Studies of security surveillance in other settings have produced mixed results (Gill & Spriggs, 2005; Welsh & Farrington, 2002, 2004). However, whether the observed person is aware of the camera may influence its effects. Some research has found that conspicuous security cameras may reduce unruly public behavior (Priks, 2008) and increase prosocial or helping behaviors (van Rompay, Vonk, & Franssen, 2009).

To deter unauthorized school presence or access, some schools require that staff and students wear badges or picture IDs, and

they have controlled access monitored by school staff. Using surveillance systems, metal detectors, and access control devices, school administrators have made numerous attempts to enhance safety, although there is little empirical research available to evaluate these practices.

Profiling and Warning Signs

The use of profiles and warning signs to prevent school shootings is not supported by existing research. After the attack at Columbine High School, some authorities identified apparent similarities across the cases and suggested that there might be a profile of the typical school shooter (Band & Harpold, 1999; McGee & DeBernardo, 1999). The effort to profile students who are likely to become “school shooters” is a flawed endeavor (Heilbrun, Dvoskin, & Heilbrun, 2009). Because these shooting events are so rare, most students who fit the profile will not engage in a targeted school-based attack, and some students who are planning and preparing for an attack will be missed because they do not fit the expected profile (Sewell & Mendelsohn, 2000).

This use of profiling has been severely criticized because of its potential to unfairly label students as dangerous and consequently restrict their civil liberties (Morse, 2000; Sewell & Mendelsohn, 2000). Secretary of Education Richard W. Riley publicly opposed the use of profiling in schools to identify potentially violent students, saying that we “simply cannot put student behaviors into a formula to come up with the appropriate response” (Cooper, 2000, p. A11). A systematic review of targeted shooting incidents conducted by the U.S. Secret Service and the U.S. Department of Education revealed no accurate or useful demographic or social profile of school attackers (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002).

Several large-scale studies by Furlong and colleagues demonstrate empirically the challenges inherent in making predictions of school behavior based on risk factors (Furlong, Bates, & Smith, 2001; Furlong, Sharkey, Bates, & Smith, 2004). These researchers used data from the Youth Risk Behavior Surveillance Survey, providing very large samples—in one study more than 40,000 students—to predict self-reported weapon carrying in school. Using the nine strongest predictors, the researchers were able to identify a statistically significant, moderate correlation with weapon carrying; nevertheless, they concluded that the level of accuracy was inadequate and impractical at the individual student level, in part because even the most accurate prediction formula would falsely identify a large number of students as weapon carriers. They also found that the most frequent weapon carriers were much more likely to have zero school risk factors than to have many (7–9) risk factors (Furlong et al., 2001).

School officials and law enforcement personnel have faced a similar challenge attempting to use checklists or warning signs to identify students at risk for more general behavior problems such as getting in fights at school or displaying anger (American Psychological Association, 1999; Dwyer, Osher, & Warger, 1998; International Association of Chiefs of Police, 1999). Although some of the warning sign checklists explicitly state that the list does not constitute a profile or predict violent behavior (see, e.g., Dwyer et al., 1998), it is not clear whether these cautions are heeded in practice (Sewell & Mendelsohn, 2000).

Understanding the School Shooting Problem

The diverse phenomena of school-related disruption, crime, violence, and shootings should not be regarded as a monolithic problem (National Center for Children Exposed to Violence, 2006). Although such events are not wholly unrelated, it is inaccurate and impractical to view them singularly with regard to their causes and solutions. More than a decade ago, Zimring and Hawkins (1997) argued that crime and violence in communities were separable problems and that understanding the differences between them was critical. They presented data showing that lethal violence occurs in the United States much more often than in other industrialized nations but that the overall rate of crime—including nonviolent crime—is very similar. They concluded that U.S. homicides were largely unconnected to most other criminal activity and, therefore, that “get tough” approaches targeting general crime were unlikely to reduce the murder rate. We recommend applying this analysis to distinguish school homicides from the overall school crime problem as well.

Additional information about school-associated homicides helps place them in perspective. As illustrated in Figure 1, the frequency of homicide and suicide for students is much lower at school than outside of school. For example, in 2004–2005, there were 21 homicides of youth ages 5 to 18 at school, but 1,513 homicides outside of school (Centers for Disease Control and Prevention, 2007). For the 1992–2006 period, student homicide victims ranged in age from 6 to 18, with a mean and median of 15 years. Victims tended to be males, students in senior high schools, and students in central cities. However, homicide rates did not differ significantly in rural versus urban areas or public versus private schools. These findings conflict with perceptions that school homicides are a rural or small-town phenomenon or that they afflict only public schools.

Ironically, the highly publicized series of school shootings in the late 1990s that culminated in the 1999 Columbine shooting occurred at a time when student victimization was declining. According to data from the National Crime Victimization Survey (Bureau of Justice Statistics, 2006), the annual victimization rate for students ages 12 through 18 declined approximately 60%, from 13 violent crimes at school per 1,000 students in 1994 to 5 violent crimes per 1,000 students in 2000. This decline was consistent with other indices of a downward trend in violent juvenile crime more generally throughout the United States. For example, arrests of persons under age 18 for homicide declined 74%, from 3,102 in 1994 to 806 in 2000 (Federal Bureau of Investigation, 1994–2000).

Most school-associated homicides, like other juvenile homicides, tend to be gang related, drug related, or otherwise linked to criminal activity or interpersonal disputes where the school is simply a site of opportunity for the attack. School shootings like those occurring at Columbine High School in Colorado, Pearl High School in Mississippi, and Heath High School in Kentucky, represent a particularly rare subset of school-related violent deaths. These incidents and the young people responsible for them have been labeled in a variety of ways, including “classroom avengers” and “rampage killers.” The U.S. Secret Service and Department of Education Safe School Initiative referred to these cases as “targeted school-based attacks,” where it was important

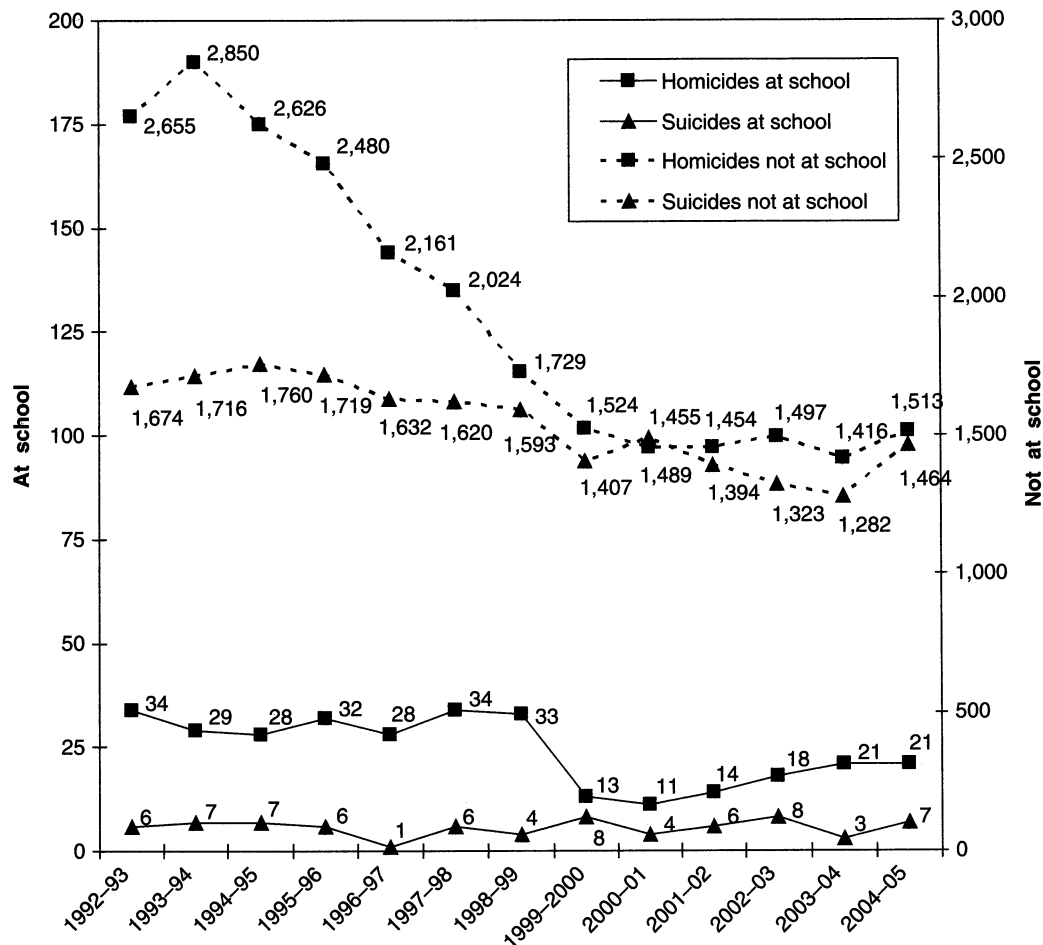


FIGURE 1. Student homicides and suicides at school and not at school. Cases refer to victims of homicide and suicide, ages 5 to 18. “At school” means on school property, at a school-sponsored event, or while traveling to or from school or a school-sponsored event. Data obtained from the School-Associated Violent Deaths Surveillance Study of the Centers for Disease Control and Prevention (Modzeleski et al., 2008).

to the attacker that the shooting occur at the school—not simply those where an intended target just happened to be at the school (Vossekuil et al., 2002).

There is probably no single feature that neatly divides all cases, but multiple victimization is probably the most distinctive feature of the spate of attacks that occurred in the 1990s. Data from the School-Associated Violent Deaths Surveillance Study show a decline in the rates of single-victim school-associated homicides occurring between 1992 and 2006, whereas multiple-victim homicide rates remained stable. Multiple-victim homicides at schools, however, occur very rarely. Of the last 109 incidents of school-associated student homicides studied, 101 involved one victim only (Centers for Disease Control and Prevention, 2008).

Research Evidence on School Shootings

Several reports have emerged since 1999 describing various individual, school, community, and contextual factors associated with targeted school-based attacks in the United States. Each of these reports typically draws from the same relatively small pool of historical U.S. school shootings, so there is substantial—unsystematic—overlap among them. The criteria for identifying cases, sources of information, methods, and findings vary considerably across these studies.

Information about these attacks, of course, is only as accurate as the source from which it is derived. Empirical study of primary source documents for targeted school attacks suggests that, when compared with investigative and court records, media depictions of school shootings are in many cases incomplete or inaccurate (Henry, 2000; Vossekuil et al., 2002).

Most studies have relied on qualitative or descriptive analysis of small samples of cases (McGee & DeBernardo, 1999; Meloy, Hempel, Mohandie, Shive, & Gray, 2001), some focusing on specific issues like the role of social rejection (Leary, Kowalski, Smith, & Phillips, 2003) or searching for distinctive features that might support a typology (Langman, 2009). In 2001, a committee of the National Research Council conducted case studies on six school shooting incidents and found it “impossible . . . to reach firm, scientific conclusions” (Moore, Petrie, Braga, & McLaughlin, 2003, p. 3). Such studies are vulnerable to selection factors that might bias findings and make generalizations difficult. Nevertheless, they can influence public perceptions and school security practices because they provide compelling case descriptions that suggest that it might be possible to prevent future shootings by identifying students who match certain profiles.

The two most extensive and influential studies of school shootings are those conducted by the Federal Bureau of

Investigation (FBI; O'Toole, 2000) and by the U.S. Secret Service and U.S. Department of Education (Vossekuil et al., 2002). These studies are notable—in part—because they rejected efforts to develop a profile of persons who commit school shootings, discouraged the simplistic use of lists of warning signs or checklists, and shifted the field toward threat assessment as a prevention strategy.

The FBI effort (O'Toole, 2000) was based on a 1999 conference attended by 160 invited experts and professionals in law enforcement, education, and mental health. Many of the participants were school staff members who had firsthand experience with a school shooting. Over a 5-day period, participants collectively reviewed and discussed 18 completed or foiled school shooting cases.

One of the most surprising results of the conference was that the FBI's experts in criminal profiling concluded that profiling was not an appropriate method for preventing school shootings. There was unequivocal agreement that no single set of characteristics defined would-be student attackers with adequate specificity to be of practical value. They noted that "trying to draw up a catalogue or 'checklist' of warning signs to detect a potential school shooter can be shortsighted, even dangerous. Such lists, publicized by the media, can end up unfairly labeling many nonviolent students as potentially dangerous" (O'Toole, 2000, p. 2). Instead, they pointed out—quite importantly—that most of the attackers communicated or "leaked" their intentions in some way to others prior to their attacks. This kind of communication raised the possibility that shootings could be prevented by investigating situations in which a student was known to make a threat of violence, communicate intent, or otherwise engage in behavior suggesting plans or preparations for a school-based attack, a process known as threat assessment. The FBI report suggested that an assessment should include four prongs: personality traits and behaviors, family dynamics, school dynamics, and social dynamics. The report concluded by citing "a compelling need to field test, evaluate and further develop these threat assessment recommendations and to develop appropriate interventions designed to respond to the mental health needs of the students involved" (p. 30).

The Safe Schools Initiative was a separate study conducted jointly by the U.S. Secret Service and U.S. Department of Education, based on detailed case studies of 37 targeted school attacks over the past 25 years involving a total of 41 attackers (Vossekuil et al., 2002). A study codebook with several hundred operationally defined variables was developed, pilot tested, revised, and used in training the coders. Each case was independently coded from primary source material by a criminal investigator and a social science researcher who subsequently compared and reconciled any disparate ratings. Not surprising, all the attackers in the study were boys, and guns were nearly always the weapon of choice. The research found that the attacks were rarely, if ever, impulsive acts. The majority of the attackers had a plan at least 2 days prior to the incident, and, in some cases, the planning had gone on for up to a year. Often revenge was a motive for the attack; more than three quarters of the attackers held a grievance against particular individuals or the school itself at the time of the attack.

When these attacks occurred, some reports said that they came without any warning, yet the vast majority of attackers communicated their ideas or plans before the incident. In more

than three quarters of the incidents, attackers told someone about their interest in mounting an attack at the school. Typically, they told friends or other peer acquaintances. In more than half the cases, multiple people knew about the attack prior to its occurring. But although these school attackers typically told others about what was planned ahead of time, they rarely communicated a threat directly to the target of the attack.

Most of these boys who committed deadly violence in the schools showed signs of needing help prior to the incident. In almost every case, the attacker engaged in behavior that caused others to be concerned about him. In more than three quarters of the incidents, an adult had expressed concern about the attacker. The vast majority of these boys had difficulty coping with a major loss, and this was known to other individuals, such as parents, counselors, and peers. Nearly 75% of these adolescents had previously threatened or tried to commit suicide, and more than half had a history of feeling extremely depressed or desperate.

Bullying seemed to play a key role in motivation for some, but not all, of the attacks. In more than two thirds of the cases, the attackers felt persecuted, bullied, threatened, attacked, or injured by others prior to the incident. In fact, some of these boys had experienced bullying and harassment that was long-standing and severe. These observations helped spur increased nationwide interest in bullying prevention programs (Cornell, 2006).

Along with their report of research findings (Vossekuil et al., 2002), the U.S. Secret Service and Department of Education released a separate document, *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates* (Fein et al., 2002). This guide has been widely disseminated to U.S. schools through training programs conducted by the Secret Service and Department of Education. As reflected in the title, this approach emphasizes a broad prevention effort aimed at establishing a positive, caring school climate characterized by mutual respect between students and adults, as well as efforts to break the code of silence that prevents students from seeking help to resolve problems or report a threat of violence. The report also presents basic principles for multidisciplinary teams to use in conducting threat assessments and managing potentially dangerous situations. Together, the reports by the FBI and by the Secret Service and Department of Education laid the groundwork for developing threat assessment as a new approach to violence prevention in schools.

Threat Assessment

Both the FBI (O'Toole, 2000) and the U.S. Secret Service/U.S. Department of Education (Vossekuil et al., 2002) studies of school shootings recommended that schools use a threat assessment approach, but this was a new concept for the field of education. Student threat assessment can be distinguished from profiling in part because the investigation is triggered by the student's own threatening or concerning behavior rather than by some broader combination of student characteristics. Moreover, threat assessment does not attempt to match a suspect to a profile but to investigate whether the person has engaged in behavior suggesting he or she *poses* a threat (O'Toole, 2000; Randazzo et al., 2006). Any student can make a threat, but relatively few have a persisting violent intent that leads them to engage in the planning and preparation necessary to carry out an attack. If careful

Table 1
Eleven Key Investigative Questions for Assessing Threats of Targeted Violence in Schools

1. What are the student's motives and goals?
2. Have there been any communications suggesting ideas or intent to attack?
3. Has the student shown inappropriate interest in any of the following?
 - a. school attacks or attackers
 - b. weapons (including recent acquisition of any relevant weapon)
 - c. incidents of mass violence (terrorism, workplace violence, mass murderers)
4. Has the student engaged in attack-related behaviors?
5. Does the student have the *capacity* to carry out an act of targeted violence?
6. Is the student experiencing hopelessness, desperation, and/or despair?
7. Does the student have a trusting relationship with at least one responsible adult?
8. Does the student see violence as an acceptable—or desirable—or the only—way to solve problems?
9. Is the student's conversation and "story" consistent with his or her actions?
10. Are other people concerned about the student's potential for violence?
11. What circumstances might affect the likelihood of an attack?

Note. Adapted from Fein, Vossekuil, Pollack, Borum, Modzeleski, and Reddy (2002).

consideration of the evidence (including the answers to 11 guiding investigative questions; see Table 1) suggests the student may pose a threat, the next step is to take action to prevent the threat from being carried out. Prevention efforts range from immediate security measures, such as notifying law enforcement and warning potential victims, to the development of an intervention plan designed to resolve the conflict or problem that precipitated the threat.

The Virginia Threat Assessment Model

In response to the FBI and Secret Service reports, researchers at the University of Virginia developed a set of guidelines for school administrators to use in responding to a reported student threat of violence (Cornell, 2003; Cornell & Sheras, 2006). These guidelines steer school authorities through a decision-tree process of investigation accompanied by efforts to resolve the conflict or problem that led the student to make a threat (see Figure 2). After a preliminary assessment of the reported threat, school administrators determine whether the case can be easily resolved as a transient threat (such as a remark made in jest or in a brief state of anger) or will require more extensive assessment and protective action as a substantive threat. In the most serious cases, a multi-disciplinary team will conduct a comprehensive safety evaluation that would include both a law enforcement investigation and a mental health assessment of the student.

The Virginia threat assessment guidelines were field tested for 1 year in 35 schools spanning Grades K–12 (Cornell et al., 2004). Across 188 cases, most (70%) were resolved as transient threats through an explanation or apology, although often with some

disciplinary consequences and counseling. The remaining 30% were substantive threats that required protective action and the development of a plan to address the underlying conflict or problem that drove the student to make a threat. Follow-up interviews with school principals did not identify any cases in which the threats were carried out. Only three students (each with a lengthy record of disciplinary violations) were given long-term suspensions. Approximately half of the students received short-term suspensions (typically 1–3 days), and nearly all students were able to return to their original schools.

A second field test of the Virginia threat assessment guidelines was conducted in Memphis City Schools (Strong & Cornell, 2008). Some details of this study illustrate the challenging nature of cases referred for threat assessment as well as the capacity to reach resolutions that do not require zero-tolerance expulsion. The Memphis evaluation examined 209 cases that were referred to a centralized threat assessment team because the principal deemed them to merit long-term suspension. At least 110 of the cases involved explicit threats to shoot, stab, or kill someone, as well as other threats to attack someone, commit a sexual assault, burn down or blow up the school, and so on. Approximately 38% of the students were receiving special education services (compared with a 12% baseline for the school system), and nearly three fourths (71%) had been academically retained at least 1 year.

In each case, the threat assessment team took a systematic approach to evaluating the seriousness of the threat and identifying the student's need for interventions and services, including referrals for in-school support services (41 cases), mental health counseling (37 cases), and psychiatric treatment (15 cases). In 61% of the cases, the student was able to return to his or her previous school, and in the remaining cases there was a change in school placement, including transfer to an alternative school or a different regular school, or some other form of services, such as day treatment or homebound instruction. Only five students were not recommended for placement during their suspension periods, and just three students were incarcerated. Across all sources of information, there was no report of any of the threats being carried out.

The two field test studies suggest that a threat assessment approach can be carried out with seemingly positive outcomes, but both are limited by the absence of comparison groups, and there is a need for studies with a more rigorous, randomized controlled design. Nevertheless, many schools across the country have adopted a threat assessment approach, often devising their own methods and procedures. A 2007 survey of Virginia public high schools found that 95 high schools (approximately one third of all public high schools) had adopted the Virginia threat assessment guidelines, 131 schools used locally developed threat assessment procedures, and 54 reported not using a threat assessment approach. Also in 2007, the three groups were compared retrospectively using a statewide school climate survey that had been administered to randomly selected samples of ninth-grade students in each high school as part of the Virginia High School Safety Study (Cornell, Sheras, Gregory, & Fan, 2009). Students in schools using the Virginia threat assessment guidelines reported less bullying in the past 30 days, greater willingness to seek help for bullying and threats of violence, and more positive perceptions of the school climate than students in either of the other

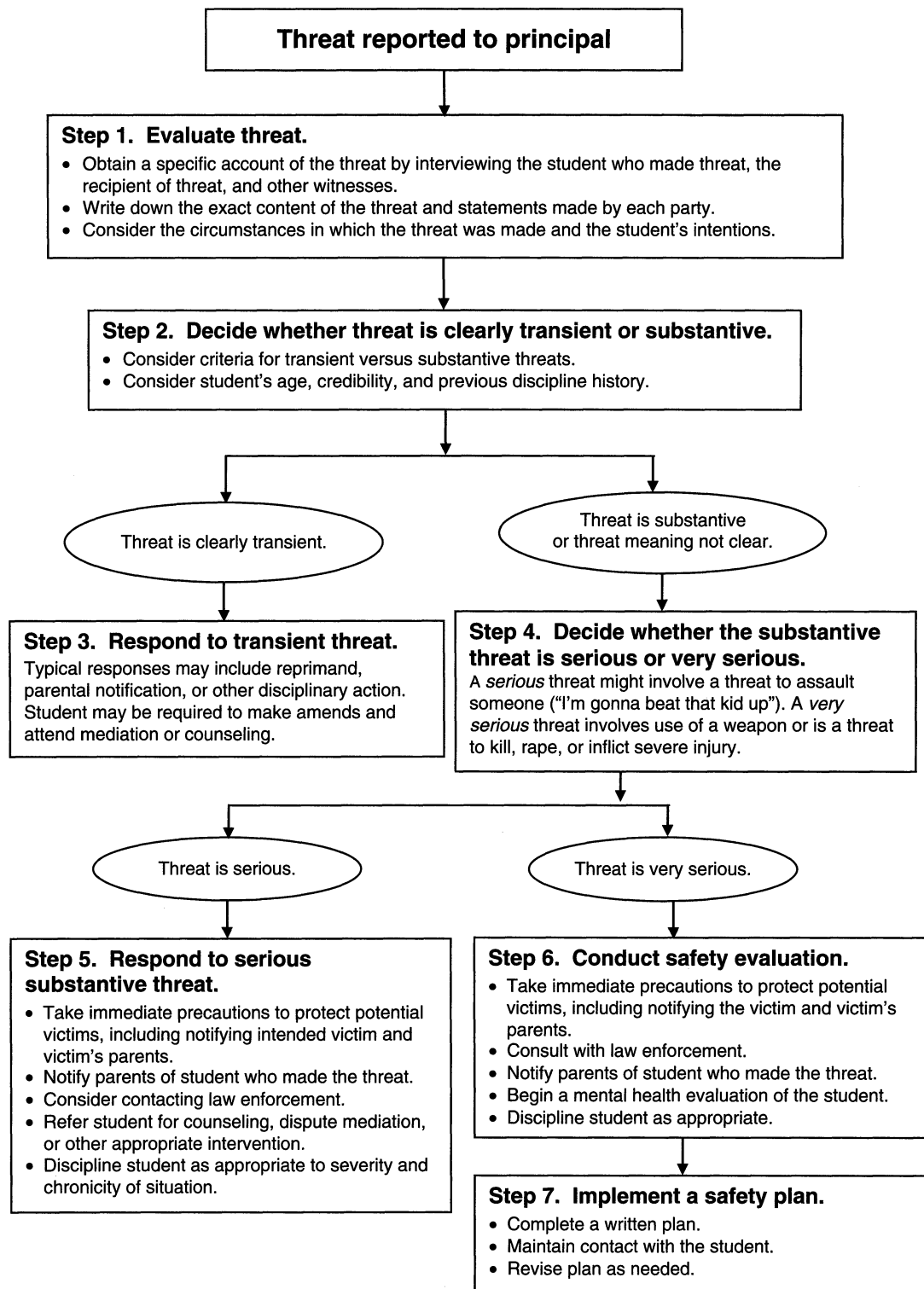


FIGURE 2. *Decision tree for Virginia threat assessment guidelines. Adapted from Cornell and Sheras (2006), with permission from Sopris West Educational Services.*

two groups of schools. In addition, schools using the Virginia guidelines had fewer long-term suspensions during the 2006–2007 school year than schools using other threat assessment approaches. Group differences could not be attributed to school size, minority composition or socioeconomic status of the student body, neighborhood violent crime, or the extent of security measures in the schools, which were statistically controlled.

Other Threat Assessment Approaches

Another example of a threat assessment approach is the Dallas Threat of Violence Risk Assessment (DTVRA), which was developed by staff of the Dallas Independent School District (Van Dyke, Ryan-Arredondo, Rakowitz, & Torres, 2004). The DTVRA consists of 19 risk factors (such as whether the student has a record

of discipline violations, aggressive behavior, academic difficulties, etc.) that are scored and summed into a weighted total score with rationally selected cutoff scores to classify the student as low, medium, or high risk. The DTVRA has been used for at least 6 years, but no research on the validity of the scoring system has been conducted (Van Dyke & Schroeder, 2006).

Threat assessment is intended to help schools avoid the pitfalls of both overreacting and underreacting to student misbehavior, which can have important implications for school discipline practice and the prevention of violence. Because threat assessment is designed to distinguish serious threats from ones that are not serious, school authorities do not need to resort to automatic long-term suspension or expulsion of every student who violates the school's rules against some kind of threatening behavior. As a result, with further validating research, threat assessment has the potential to provide schools with an effective, practical, and less punitive alternative to zero tolerance.

Threat assessment can help schools to react appropriately to more serious cases, provided that threats of violence are reported. Stueve and colleagues (2006) have pointed out that students are often reluctant to come forward to authorities when they are aware that a classmate has engaged in dangerous or threatening behavior. Research is needed on ways to help students overcome the code of silence, bystander passivity, and other psychological barriers that can prevent them from seeking help in appropriate situations.

Postshooting Crisis Response Approaches

There is a paucity of empirical evidence to guide school administrators in developing emergency preparedness and crisis response plans for school shootings. School personnel presently must rely on insights from emergency management strategies used in workplace settings and lessons learned in the aftermath of school shootings and other traumatic events.

Best Practices Regarding School Crisis Preparation and Response

Schools vary considerably in the support services they provide for students, staff, and families following a shooting incident. The PREPaRE Model of School Crisis Prevention and Intervention was developed specifically for school-based mental health professionals and incorporates recommendations for crisis teams offered by the U.S. Department of Education (2003) and the U.S. Department of Homeland Security (2004), as well as relevant research and scholarship informing school crisis preparation and response (Brock et al., 2009).

The U.S. Department of Education (2003) delineates four phases of crisis management: prevention, preparedness, response, and recovery. The PREPaRE model acronym represents a specific hierarchical and sequential set of activities, which corresponds to these phases: *Preventing and preparing for psychological trauma*, *Reaffirming physical health and perceptions of security and safety*, *Evaluating psychological trauma risk*, *Providing interventions and Responding to psychological needs*, and *Examining the effectiveness of crisis prevention and intervention*. Furthermore, the PREPaRE model articulates how to align the structure of school crisis teams, plans, and response efforts within the National Incident Management System's Incident Command System (NIMS/ICS; U.S. Department of Homeland Security,

2004), which was designed to provide comprehensive preparation, prevention, response, and recovery efforts for domestic incidents or emergencies.

First and foremost in responding to a school shooting, there will be an immediate need to communicate and collaborate with local emergency responders. Thus, the PREPaRE model emphasizes planning with local police and emergency medical personnel to establish a clear understanding of the NIMS/ICS roles of each group during a crisis (U.S. Department of Education, 2003; U.S. Department of Homeland Security, 2004).

Second, the PREPaRE model details specific response activities to support students and staff immediately following a crisis event, including (a) reaffirming physical health and perceptions of safety; (b) evaluating factors that increase the risk of psychological trauma (i.e., crisis exposure, threat perceptions, personal vulnerabilities) and those that are traumatic stress warning signs (i.e., crisis reactions and coping behaviors); and (c) providing crisis interventions that respond to the psychological needs of students and staff, such as reestablishing social support systems, providing psychological education and empowering survivors and their caregivers, providing immediate psychological first-aid intervention, and providing and/or referring to long-term professional mental health support services (see Brock et al., 2009, for a more extensive discussion). Following these activities, it is important to evaluate their effectiveness and discern what additional support services may be needed.

Developing and maintaining crisis response capacity is an important topic for schools because 92% of states require schools or districts to have a crisis response plan (School Health Policy and Programs Study, 2007). It is essential to have a cadre of trained and experienced professionals who can come to crisis sites and assist in recovery efforts. The American Red Cross and other professional organizations provide training for mental health professionals who volunteer after a crisis or disaster occurs. Because more research and infrastructure development has been aimed at mental health responses to natural disasters than to school shootings, it might be useful to examine best practices in disaster mental health and identify principles that might be transferred to postshooting response. Fundamentally, however, further empirical research is needed to examine all facets of contemporary crisis response activities.

Conclusion

Exaggerated perceptions of risk can lead to inefficient or ineffective policies such as zero tolerance that do little to create a sustainably safe and secure learning environment. Research on school homicides is needed to educate policy makers and the public alike in order to counter misperceptions and quell unrealistic fears and to guide the development and dissemination of effective violence prevention strategies. There is also a need for research on crisis response plans and methods for facilitating recovery after a traumatic event such as a school shooting as well as after a potentially catastrophic event has been averted.

However, the familiar conclusion that "more research is needed" poses special challenges when it comes to school shootings. At the outset, there are problems in defining what kinds of cases should be studied. The term *school shooting* may evoke images of an attack committed by a student at school, but there are cases involving

attackers who are not students, locations off school property, and weapons other than firearms. And for every homicide, there may be numerous cases of attempted homicide or aggravated assault that also should be studied. The cases that receive the greatest publicity are likely to be the most unusual and extreme cases that do not provide a good basis for making generalizations.

There are also important differences in the motives or purposes of attacks. Persons who target a single specific victim differ from those whose intention is to shoot as many people as possible. Persons seeking revenge can be distinguished from those pursuing an instrumental motive such as robbery, and perhaps further differentiated from those who act under the influence of a severe mental illness (Cornell, 2006). These distinctions make it evident that the search for a single set of warning signs or a psychological profile of a school shooter is futile.

Threat assessment represents an alternative to profiling and a promising approach to violence prevention because it focuses on determining whether the individual (or group) actually poses a threat or is engaged in threatening behavior for some other reason. Research on threat assessment, like other efforts to study violence, is complicated by the practical and ethical necessity of intervening in dangerous situations. One cannot allow threatening individuals in a control group to act freely without intervention. Nevertheless, it is possible to show that schools using a threat assessment approach, in comparison with other methods, can achieve desirable outcomes such as resolving student conflicts, identifying needed services, reducing subsequent misbehavior, and retaining students in school (Strong & Cornell, 2008). There is also a need for research on encouraging students to come forward when they know that a classmate has expressed a threat or engaged in threatening behavior, such as bringing a firearm to school (Brank et al., 2007; Williams & Cornell, 2006).

Despite its advantages, threat assessment is limited to cases in which the subject communicates a threat or is otherwise identified as posing a threat in advance of carrying out a violent act. Other forms of aggressive and disruptive behavior, such as chronically disruptive classroom behavior or bullying and peer conflicts that erupt more or less spontaneously in unsupervised settings such as playgrounds or locker rooms, must be addressed with other methods. Comprehensive violence prevention will require a range of strategies and interventions in addition to threat assessment.

The goal for educators is to develop an integrated approach that spans the range from minor misbehavior to life-threatening situations and focuses on maintaining safety and order. The key challenge is how best to achieve a balanced and reasonable set of policies that maintain appropriate vigilance and disciplinary structure and minimize risk of serious harm, yet facilitate a fair and interpersonally supportive climate in the school. The accompanying articles in this special issue suggest some strategies for achieving these objectives.

NOTE

¹These are crude approximations intended only to give a general sense of the rarity of school homicides. More precise calculations would consider the changes in school enrollment and number of schools over time, as well as the differential risk according to student age and school grade level. Moreover, the average of 21 homicides per year ignores multivictim cases.

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