

## Student Threat Assessment Associated With Safety in Middle Schools

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Authorities in law enforcement and education have recommended the use of threat assessment to prevent violence, but few studies have examined its usefulness in middle schools. This retrospective, quasi-experimental study compared middle schools that use the Virginia Student Threat Assessment Guidelines (Cornell & Sheras, 2006;  $N = 166$ ) with schools that either do not use threat assessment ( $N = 119$ ) or use an alternative model of threat assessment (school- or district-developed;  $N = 47$ ). Based on school records, schools using the Virginia Guidelines reported lower short-term suspension rates than both groups of schools. According to a statewide school climate survey, schools using the Virginia Guidelines also had fairer discipline and lower levels of student aggressive behaviors, as reported by students. Finally, teachers reported feeling safer in schools using the Virginia Guidelines, as opposed to both groups of schools. Additional analyses of school records found that the number of years a school used the Virginia Guidelines was associated with lower long-term suspension rates, student reports of fairer discipline, and lower levels of student aggressive behaviors. All analyses controlled for school size, minority composition, and socioeconomic status of the student body. These findings suggest that use of a threat assessment approach to violence prevention is associated with lower levels of student aggression and a more positive school climate.

**Keywords:** general victimization, school climate, school violence, threat assessment

After a series of shootings culminating in the tragic incident at Columbine High School, authorities in education and law enforcement rec-

ommended the use of threat assessment in schools (Fein et al., 2002; O'Toole, 2000). In their 2013 report on gun violence, the American Psychological Association (2013) recognized behavioral threat assessment as an effective violence prevention strategy. This article reports on the use of student threat assessment in a sample of middle schools<sup>1</sup> (typically Grades 6–8 and ages 11–13).

Threat assessment is a systematic approach to violence prevention in which threats are evaluated on a case-by-case basis to identify individuals who pose a serious threat of violence (Fein et al., 2002; O'Toole, 2000). A joint report of

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This project was supported by Grant 2012-JF-FX-0062 awarded by the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of the Department of Justice. Dewey G. Cornell is the principal developer of the Virginia Student Threat Assessment Guidelines. We thank Donna Michaelis and Jessica Smith of the Virginia Department of Criminal Justice Services and Cynthia Cave of the Virginia Department of Education for their support of the Virginia Secondary School Climate Study. We thank members of the project research team, including Juliette Berg, Anna Heilbrun, Francis Huang, Anna Lacey, and Patrick Meyer.

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<sup>1</sup> This article uses the United States educational system to describe child education up through eighteen years. The U.S. system includes elementary (i.e., primary school in other countries), middle, and high school (i.e., secondary school in other countries), grades kindergarten (or K) through 12, and ages 6 to 18. Generally, middle school encapsulates grades 6 to 8 and ages 11 to 13. An “alternative school” in the U.S. is an educational system that accommodates children whose academic, emotional, and/or physical needs are not addressed in traditional schooling.

the U.S. Department of Education and Secret Service, as well as a separate study of school shootings by the Federal Bureau of Investigation, concluded that a threat assessment approach ought to be part of a concerted effort by school authorities to promote a positive school climate where students feel safe and supported and discipline is consistent and fair (Fein et al., 2002; O'Toole, 2000).

Although the central purpose of threat assessment is to prevent targeted acts of violence like school shootings, these phenomena are rare (Nekvasil, Cornell, & Huang, 2015); in a study of multiple casualty homicides, only 0.8% occurred at schools, versus 47% at residences. At the same time, student threats of violence are relatively common at schools, but most often they are expressions of anger or challenges to fight, rather than indications of an imminent shooting. A national survey of school principals found that threats were officially recorded in 46% all U.S. public schools during the 2009–2010 school year (Neiman, 2011). However, many threats go unreported to school authorities. A survey of high school students found that approximately 12% of students reported being threatened at school in a 1-month period (Nekvasil & Cornell, 2012). Yet only 26% of these students reported the threat to someone, most often because they did not regard it as serious (Nekvasil & Cornell, 2012).

Although threats are rarely carried out (Cornell et al., 2004; Nekvasil & Cornell, 2012), one study found that threats are strongly associated with general aggression in school, such as fighting (Singer & Flannery, 2000), suggesting that school authorities cannot ignore threats when they occur. Aggressive behaviors such as fighting and bullying are common problems in schools, yet lethal attacks or more serious violence such as rape or aggravated assault are rare (Robers, Kemp, & Truman, 2013). In light of the low base rate for severe violence in schools and the much higher rate of fighting and bullying, a school threat assessment will most likely be concerned with a broad range of aggressive behaviors rather than shootings. Thus, an important aim of threat assessment is to resolve less severe acts of violence—like bullying and peer conflicts—which could escalate into more serious violence.

To address less serious yet more common violence, threat assessment in schools encour-

ages a problem-solving approach that helps to create a positive school climate where students and teachers feel safe and supported (Cornell & Heilbrun, 2015). A positive school climate, in turn, may help to prevent shootings by creating an environment with less stress and discord (Fein et al., 2002; Daniels et al., 2010). Such a climate may also encourage students to report when they are threatened, a prerequisite for a threat assessment to be initiated. A study of averted school shootings (Daniels et al., 2010) found that a critical factor was a positive school climate in which students reported concerns to school authorities that triggered an investigation.

Another reason for using threat assessment is that it provides schools with an alternative to zero tolerance disciplinary practices. Zero tolerance is the disciplinary practice of using rigid and punitive responses to student misbehavior, typically out-of-school suspension (American Psychological Association Zero Tolerance Task Force, 2008). School suspension has been associated with a number of negative student outcomes, including disengagement from school (Arcia, 2006), further misbehavior and academic failure (Hemphill et al., 2006), and school dropout (Fabelo, Thompson, Plotkin, et al., 2011). Given these deleterious results, several national reports have called for U.S. schools to move away from zero tolerance policies (Morgan et al., 2014; U.S. Department of Education, 2014).

### Middle Schools and Threat Assessment

There is a special need to study middle schools because they face disciplinary challenges related to developmental changes in their students. As students become adolescents, they typically become more socially engaged and concerned with social status and popularity (Berndt, 1982; Nansel et al., 2001). Compared with other grade levels, middle school grades experience elevated rates of threats of violence (Cornell et al., 2004) and fighting and bullying (Nansel et al., 2001).

Furthermore, many U.S. middle schools employ zero tolerance disciplinary practices to address student misbehavior. A nationwide study of middle schools found a disproportionately high use of out-of-school suspensions compared to both elementary and high school grades

(Losen & Skiba, 2010). Another investigation found that out-of-school suspensions more than quadrupled from 2.4% of students in elementary school to 11% in middle school (Losen & Martinez, 2013).

### Virginia Student Threat Assessment Guidelines

The Virginia Student Threat Assessment Guidelines (Virginia Guidelines) was developed for schools based on the recommendations of the FBI and Secret Service (Cornell & Allen, 2011; Fein et al., 2002; O'Toole, 2000). The Virginia Guidelines discourage overly punitive responses to student misbehavior by encouraging administrative responses that are appropriate and measured, focused on correcting the student's misbehavior while keeping him or her engaged in school. The threat assessment guidelines include explicit training on the importance of moving away from zero tolerance approaches and school suspensions to respond to student threats and misbehaviors. Rather, threats are treated as an indication that a student is frustrated by a problem he or she cannot resolve. Thus the multidisciplinary team's effort to help the student resolve the problem is seen as both a violence prevention measure and a teaching opportunity, and disciplinary consequences are calibrated to the seriousness of the student's misbehavior. Furthermore, suspension from school is recommended only in the most serious cases when there are immediate safety concerns. Importantly, in almost all cases the student is able to return to school under conditions specified in a safety plan (Cornell et al., 2012).

A study of 351 school staff following training in the Virginia Guidelines found that they were less likely to endorse a zero tolerance approach and more open to using threat assessment principles to address student conflicts and other problematic behaviors (Allen, Cornell, Lorek, & Sheras, 2008). These results were consistent across principals, mental health providers, and law enforcement officers.

The Virginia Guidelines uses a decision tree to evaluate threats of violence. The threat is first classified as *transient* or *substantive* (Cornell & Sheras, 2006). If school personnel conclude that the threat was not serious, or *transient*, they resolve the case expeditiously. Generally, transient threats are figures of speech, hyperbole, or

expressions of anger that do not reflect a sustained intent to harm someone. Disciplinary actions may include a reprimand, brief counseling, or minor disciplinary action for the student.

Substantive threats are those that indicate that an individual or individuals intend to carry out a threat to harm someone. For such threats, which are often student fights, the threat assessment team determines the appropriate protective actions to take, including notifying the victim and victim's parents, notifying the student's parents, and strongly cautioning the student of potential consequences should he or she attempt to carry out the threat. Serious substantive threats may be resolved with separating the student from potential victims. The threat assessment team may also recommend counseling or some other mental health intervention. For very serious substantive threats (such as threats to kill, rape, or seriously harm another), the team not only notifies appropriate parties, but also initiates a safety evaluation that involves both a law enforcement investigation and mental health assessment of the student.

The final step involves a written safety plan based on the findings from the safety evaluation. The aim of the safety plan is twofold: (a) to take steps on behalf of the safety of potential victims, and (b) to determine the most appropriate educational provisions for the student. When the student is allowed to return to school, the safety plan includes specific instructions for the student's behavior and procedures to monitor him or her upon return (Cornell & Allen, 2011). A detailed description of the threat assessment procedure is found in the Virginia Guidelines manual (Cornell & Sheras, 2006).

### School Climate and Safety Conditions

Three studies found that schools using the Virginia Guidelines had lower long-term suspension (11–364 days) rates than control group schools (Cornell, Sheras, Gregory, & Fan, 2009; Cornell et al., 2012). The first study (Cornell et al., 2009) compared suspension rates in 95 high schools using Virginia Guidelines to 131 high schools with alternative threat assessment procedures and 54 high schools with no threat assessment program. The study demonstrated that high schools using the Virginia Guidelines had lower long-term suspension rates than both groups of schools. The current

study extends this retrospective examination of Virginia high schools to middle schools (Cornell et al., 2009).

A randomized control trial compared K–12 students who made a threat of violence in schools using the Virginia Guidelines with a control group of K–12 students in schools not using the Virginia Guidelines (Cornell et al., 2012). After one school year, students in the intervention group received significantly fewer long-term suspensions (25%) than students in the control group (49%; Cornell et al., 2012).

Schools using the Virginia Guidelines may have less peer aggression, as measured by three scales used in previous studies: prevalence of teasing and bullying, bullying victimization, and general victimization such as student fighting or threats. Compared with schools with no threat assessment program, students in schools using the Virginia Guidelines reported less aggression (Cornell et al., 2009). The retrospective study (Cornell et al., 2009) also found that students reported lower levels of teasing and bullying in school. This is important because pervasive student aggression undermines school safety and has been linked to student dropout rates in high school (Cornell, Huang, et al., 2013).

Several studies indicate that the Virginia Guidelines promotes two features of school climate: school-wide support of students—specifically student willingness to seek help from authorities—and the use of discipline that is strict but fair, which is described as having high disciplinary structure (Cornell et al., 2009, 2012; Cornell, Sheras, Kaplan, et al., 2004; Konold et al., 2014). Importantly, adolescents may be reluctant to seek help from adults at school following a threat of violence if they perceive that school authorities cannot or will not do anything to help (Nekvasil & Cornell, 2012). Thus it would be useful to examine student perceptions of school support and disciplinary practices in middle schools using the Virginia Guidelines.

One less often examined aspect of school climate is teachers' experience of school safety. Previous research has shown that teachers are affected by student aggression toward them; professional burnout has been linked to teachers perceiving that students are hostile toward them (Brouwers & Tomic, 1998). Student aggression may involve verbal threats, intimidation, or

physical attacks, and result in teachers feeling unsafe at school.

School-wide demographics of enrollment size, student socioeconomic status (SES), and racial composition have been associated with a wide range of factors affecting school climate. Some research suggests that aggressive behaviors such as bullying, threats, and fighting occur more frequently at larger schools (Stewart, 2003), although there are mixed results on whether large schools are inherently less safe because of their size (Klein & Cornell, 2010). Schools with lower student SES have been linked with higher rates of fighting and bullying victimization (Leithwood & Jantzi, 2009). Furthermore, previous research has found disproportionate suspension rates for minority students (Gregory et al., 2011). On the other hand, one study found that minority students in multiethnic schools perceive that they are safer than minority students in less diverse schools (Juvonen, Nishina, & Graham, 2006). Thus these potentially confounding factors are important to consider in analyses of school climate and safety conditions.

### The Current Study

The purpose of the present study was to investigate school climate and safety conditions of schools using the Virginia Guidelines in comparison with two other groups of schools: schools that developed their own models (or obtained training from another source), and schools that did not have a threat assessment program.

Our primary research question was, "Is use of the Virginia Guidelines associated with more favorable school climate and safety conditions than schools that do not use the Virginia Guidelines?" To address our first question, the study used data from a statewide school climate survey of Grades 7 and 8 conducted in 2013. School climate and safety conditions were examined across multiple variables. The study analyzed short-term and long-term suspension rates across the three groups of schools. School climate was then examined by measuring student perceptions that their schools were supportive of students, as well as strict but fair in their disciplinary practices (Konold et al., 2014). We analyzed teacher perceptions that schools were safe and student reports of bully-



ing victimization, general victimization, and prevalence of teasing and bullying. It was hypothesized that use of the Virginia Guidelines would be associated with more positive school climate and safety conditions, as compared with both groups of schools (Cornell et al., 2004, 2012; Cornell, Sheras, Gregory, & Fan, 2009).

One limitation of this study is that school climate data were available for only one year and so it was not possible to identify changes in school conditions before and after implementation of the Virginia Guidelines. Therefore, we measured how long schools used the Virginia Guidelines and examined a second question: "Is longer use of the Virginia Guidelines associated with more favorable school climate and safety conditions in schools?" It was hypothesized that longer use of this threat assessment model would improve student and teacher trust in school authorities, strengthen disciplinary structure, and increase student willingness to seek help for threats of violence. Previous research has found that school size, student socioeconomic status, and racial composition are associated with school climate and level of discipline problems in school (Gregory et al., 2011; Juvonen, Nishina, & Graham, 2006; Klein & Cornell, 2010; Leithwood & Jantzi, 2009; Stewart, 2003). Consequently, the current study controlled for school enrollment, the percentage of students eligible for free or reduced price meals (FRPM), and the proportion of minority students.

## Method

### Participants

**Schools.** The Virginia Secondary School Climate Survey (VSSCS, 2013) was administered in 423 schools with 7th-8th grade students, which included some schools that had younger or older grades. (In U.S. public education, some school systems choose to group their 7th and 8th grade with younger or older grades.) The study used two sources to create a sample of middle schools. First, University of Virginia (UVA) training records were used to identify schools that used the Virginia Guidelines. Second, the study used records from an annual safety audit survey conducted by the Virginia Department of Criminal Justice Services to determine schools that either had no formal threat

assessment program or used a program other than the Virginia Guidelines. The safety audit survey asked whether a school used "a formal threat assessment process to respond to student threats of violence" (response options yes or no) and "what kind of formal threat assessment model" the school used. Principals responded whether they used a school-created model, division-created model, or other model.

The study's final sample consisted of 332 schools. There were 166 schools in the Virginia Guidelines group, 119 that reported using another threat assessment program, and 47 schools that had no formal threat assessment program. A total of 91 schools had missing or ambiguous records: either they did not report their procedures, reported that they used the Virginia Guidelines when they had not been formally trained on them, or did not report that they used the Virginia Guidelines when UVA records indicated that they had been trained. Follow-up contacts with some of these schools indicated that some school administrators were not aware that they were using the Virginia Guidelines because it had been adopted before they came to the school. Because we lacked information on implementation fidelity, it seemed preferable to drop schools with missing or ambiguous information. Among the schools that reported using another threat assessment program, nearly all indicated that their model was created by staff from their school or the central office for their school division. Anecdotally, many school staff reported that they reviewed the reports on threat assessment by the U.S. Secret Service and FBI in developing their approach. A statewide study of the specific practices in Virginia schools is under way (Cornell et al., 2015).

Total school enrollment for the study sample ( $N = 332$ ) ranged from 109 to 4,033 students ( $M = 749$ ,  $SD = 435$ ). The proportion of students in each school who qualified for free or reduced price meals (FRPM) ranged from 2% to 99% ( $M = 44$ ,  $SD = 20.5$ ). The percentage of minority students in each school ranged from 0% to 99% ( $M = 40.1$ ,  $SD = 27.2$ ). The sample was distributed across urban, suburban, and rural regions.

For the 91 schools dropped from the sample, total school enrollment ranged from 61 to 1603 ( $M = 607$ ,  $SD = 312$ ). The proportion of students in each school who qualified for free or reduced price meals (FRPM) ranged from 6% to

96% ( $M = 49.4$ ,  $SD = 20.8$ ). The percentage of minority students in each school ranged from 0% to 99% ( $M = 33.8$ ,  $SD = 29$ ). When compared with schools included in the sample, schools that were dropped had a mean school enrollment size that was 19% lower than school retained in the sample. Schools dropped from the sample also had an 11% higher proportion of students who qualified for FRPM.

**Students.** Each school was given two options for administering the Virginia Secondary School Climate Survey: (a) invite every student in the 7th and 8th grade to take the survey (whole grade option) or (b) randomly select 25 seventh grade students and 25 eighth grade students from school rosters to take the survey (random sample option). If a school chose the random sample option, they were provided a random number list with instructions for selecting students. All students were eligible to participate unless they had limited English proficiency or intellectual disability. Parents of each student received a letter informing them of the survey. Reasons a student may not have taken the survey included parents declining their child's participation, school absence on the day of administration, cognitive or physical limitations precluding survey completion, or another reason such as technical difficulties at the school. Student participation was the total number of students who participated across all schools divided by the total number invited to participate. The student participation rate was 86%.

Of the 29,203 students who participated in the survey, approximately 52% were female. Their self-reported racial/ethnic breakdown was 51% White, 20% Black, 16% multiracial, 3% Asian, 2% American Indian/Alaskan, and 8% another race/ethnicity. Finally, 13% of students reported that they were Hispanic or Latino in a separate question.

**Teachers.** All 7th and 8th grade teachers were requested to participate in the survey. A total of 6,298 teachers completed the survey, with an 84% participation rate. Approximately 75% reported that they were female. Most teachers (53%) had more than 10 years of experience. Approximately 24% reported 6 to 10 years of experience, 13% reported 3 to 5 years, and 10% reported fewer than 3 years of experience. Other demographic variables were not requested to protect teacher identity.

## Procedure

School climate surveys were administered anonymously online in spring 2013. All participants were given standard instructions before taking the survey. Students completed surveys during school hours and were supervised by teachers or other school staff members. Teachers completed surveys independently. School principals completed the state's safety audit survey after the end of the school year.

## Validity Screening

Previous research suggests that screening survey responses for students who responded carelessly or dishonestly improves the quality of survey data (Cornell, Lovegrove, & Baly, 2014). Specifically, validity screening has been shown to reduce extreme responses to questions, lower rates of risky behaviors, and yield school climate results more consistent with independent criteria (Cornell, Klein, Konold, & Huang, 2012; Cornell, Lovegrove, & Baly, 2014).

Two validity screening items were included in the student survey: (a) "I am telling the truth on this survey" and (b) "How many of the questions on this survey did you answer truthfully?" For the first question, students responded 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, or 4 = *strongly agree*. Students who answered 1 = *strongly disagree* or 2 = *disagree* were removed from the sample. The second question response options included 1 = *all of them*, 2 = *all but 1 or 2 of them*, 3 = *most of them*, 4 = *some of them*, and 5 = *only a few or none of them*. Students who answered either 4 = *some of them* or 5 = *only a few or none of them* were removed from the sample. After screening, 2,871 (9% of the sample) were identified as invalid responders and removed from the sample. Additional information on validity screening in this sample is reported elsewhere (Cornell, Huang, et al., 2013).

## Measures

**Suspension rates.** Schools provided school-level discipline data to the Virginia Department of Education (VDOE). Principals were required to report the number of short-term (1 to 10 days) and long-term (11 to 364 days) out-of-school suspensions for their schools. All

schools used standard definitions of disciplinary infractions. Students who had both short- and long-term suspensions were coded into the more serious offense (i.e., long-term suspension).

Suspension counts were unduplicated, meaning that each student was counted only once in the records regardless of the number of times they were suspended. This practice is consistent with previous literature using suspension rates (Gregory et al., 2011; Hemphill et al., 2006; Suh et al., 2007; Wallace et al., 2008) and maintains independence of the observations. Suspension rates were determined by dividing unduplicated suspensions by the school's total enrollment.

**School climate measures.** School climate was measured on two domains of student-perceived support and disciplinary structure. These two scales measured student perceptions that teachers and adults support and listen to their students (support) and that their school's disciplinary practices are strict but fair (disciplinary structure; Cornell et al., 2009, 2012; Konold et al., 2014).

The Student Support scale consisted of eight items that measure student perceptions that adults at school are supportive of them (e.g., "There are adults at this school I could talk with if I had a personal problem"). Each student answered 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, or 4 = *strongly agree*. Multilevel exploratory and confirmatory factor analyses supported the use of eight items to assess overall school support (Konold et al., 2014). Cronbach's alpha for the scale was .93 in the present study.

The Disciplinary Structure scale consisted of seven items that measure student perceptions that their school is strict but fair (e.g., "The punishment for breaking school rules is the same for all student"). Each student answered 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, or 4 = *strongly agree*. Multilevel exploratory and confirmatory factor analyses demonstrated adequate model fit for the scale (RMSEA = .08, CFI = .93, TLI = .89, SRMR = .04; Konold et al., 2014). In the present study, Cronbach's alpha was .77.

**Teacher perceptions of school safety.** Teacher perceptions of safety consisted of three items: (a) I feel physically safe at this school, (b) I feel that there is adequate safety and security at this school, and (c) I worry about some-

one committing a shooting at this school. Teachers responded 1 = *strongly disagree*, 2 = *disagree*, 3 = *somewhat disagree*, 4 = *somewhat agree*, 5 = *agree*, or 6 = *strongly agree*. Because there were only three questions and each was of substantive interest, they were not combined into a scale.

**Peer victimization.** To obtain a comprehensive assessment of safety conditions from student perspectives, the survey included three measures of peer victimization (Cornell, Shukla, & Konold, in press). One scale asked students about their experiences of being bullied using a standard definition of bullying, a second scale asked about general victimization, such as fighting, and a third scale asked about perceptions of bullying and teasing observed among other students.

**Bullying victimization.** The Bullying Victimization scale consisted of five items that measured personal experiences of being bullied. First, students were provided with the following definition of bullying:

Bullying is the repeated use of one's strength or popularity to injure, threaten, or embarrass another person on purpose. Bullying can be physical, verbal, or social. It is not bullying when two students who are about the same in strength or popularity have a fight or argument.

Students then responded 0 = *never*, 1 = *once or twice*, 2 = *about once per week*, or 3 = *more than once per week* to (a) whether they had been bullied at school in the past year, and then whether they had been (b) physically, (c) verbally, (d) socially, and (e) cyber bullied at school in the past year.

Previous research on this measure has demonstrated consistency with teacher and peer nominations of bully victims, as well as stability over middle school grades (Baly, Cornell, & Lovegrove, 2014). Bullying victimization using this measure was linked to negative school outcomes, such as lower grade point average, and mental health problems like feelings of sadness or thoughts of suicide (Baly et al., 2014). Cronbach's alpha was .87.

**General victimization.** The General Victimization scale consisted of five items that measured student experiences of verbal or physical aggression by peers (e.g., "A student threatened to hurt me" and "A student physically attacked, pushed, or hit me"). Students responded 0 = *no*, 1 = *once*, or 2 = *more than*

once, and higher scores on the scale indicate greater victimization. The scale has been used in other studies of peer victimization in schools (Cornell, Gregory, Huang, & Fan, 2013; Klein & Cornell, 2010). Prior literature on this scale of general victimization has shown a link between higher rates of aggression and poorer school climate (Cornell, Shukla, & Konold, in press). For the present study, Cronbach's alpha was .76.

**Prevalence of teasing and bullying (PTB).** Students answered five questions about their perceptions of the extent of teasing and bullying in their school (e.g., "Bullying is a problem at this school" and "Students here often get teased about their clothing or physical appearance"). Each student responded 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, or 4 = *strongly agree*.

Previous exploratory and factor analyses indicated adequate model fit and supported the five-item PTB scale at the school level (Konold et al., 2014). Two studies supported the criterion validity of the PTB scale by showing that higher scores predicted lower student engagement (Mehta, Cornell, Fan, & Gregory, 2013), and lower school-wide passing rates on state-mandated testing (Lacey & Cornell, 2013). Cronbach's alpha was .87.

### Analysis Plan

The study used data available for one year only, limiting the study to a cross-sectional design. Ten dependent measures of school climate and safety conditions were examined across three groups of schools. School-level measures derived from the school climate survey were determined by summing items and determining the average for all students (or all teachers) within the same school.

To address the first research question, multivariate analysis of covariance (MANCOVA) was used to compare school climate and safety conditions among three groups of schools: those that used the Virginia Guidelines, those that reported an alternate method of threat assessment, and those that did not have any threat assessment program. Least Significant Difference (LSD) was used to adjust for multiple comparisons (Williams & Abdi, 2010; Hayter, 1986). The analyses controlled for percentage of students eligible for free or reduced price

meals (FRPM), proportion of minority students, and school enrollment.

To address the second question, hierarchical linear regressions were used to examine the associations between how long a school had used the Virginia Guidelines and their school climate and safety conditions.

### Results

Table 1 includes demographic characteristics and dependent measures for the three groups of schools. The MANCOVA test for overall group differences was significant (Wilks's  $\lambda = 0.84$ ;  $F(20, 574) = 2.65, p < .001$ ). Partial  $\eta^2$  was used as a measure of effect size, which was 0.08 and considered a small effect size (Cohen, 1988).

Seven of the 10 outcome variables were statistically significant (see Table 1). Post hoc pairwise comparisons demonstrated that schools using the Virginia Guidelines had lower short-term suspension rates and lower levels of student-reported teasing and bullying, bullying victimization, and general victimization, compared to both groups of schools. Teachers in schools using the Virginia Guidelines reported feeling safer at school for all three variables. Effect sizes using partial  $\eta^2$  ranged from 0.03 to 0.05, which are considered small effects. Notably, comparisons between schools using another model and schools without a formal threat assessment program were not significant.

The second question examined the length of time that schools have used the Virginia Guidelines. School demographic variables were entered at step 1 and length of time using the Virginia Guidelines at step 2. Only step 2 of the regressions is summarized here (see Table 2).

### Short and Long-Term Suspension Rates

At Step 2, length of time using Virginia Guidelines was not significant for short-term suspension rates. The total variance accounted for by the model was  $R^2 = 0.50, p < .001$ . In contrast, length of time was a significant predictor for long-term suspension rates ( $\beta = -0.37, p < .01$ ); in other words, schools that used the Virginia Guidelines for more years had lower long-term suspension rates after controlling for school demographic variables. The total variance accounted for by the model was  $R^2 =$



Table 1  
Group Comparisons on School Climate and Safety Condition Measures

Variable	(1) Virginia model <i>n</i> = 166		(2) No model <i>n</i> = 47		(3) Other model <i>n</i> = 119		Group comparison effect size and statistical test result	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	1 vs. 2	1 vs. 3
School enrollment	887	499	608	293	610	309	n/a	n/a
Percent minority student	42.5	25.3	37.2	26.7	49.5	18.1	n/a	n/a
Percent free/reduced priced meals	38.7	21.5	47.8	17.9	38.0	29.9	n/a	n/a
Short-term suspension rate <sup>a</sup>	.08	.07	.12	.09	.12	.09	-.03*	-.02*
Long-term suspension rate	.004	.01	.003	.001	.004	.001	.00	.00
Bullying victimization*	7.12	.53	7.51	.58	7.36	.67	-.033*	-.19*
General victimization*	7.61	.56	7.87	.51	7.81	.49	-.021*	-.14*
Prevalence of teasing and bullying*	12.4	1.27	12.9	.99	12.8	1.04	-.47*	-.32*
Teacher perception of safety <sup>a</sup> (1)*	5.02	.43	4.90	.05	4.20	.03	.06	.20*
Teacher perception of safety (2)*	4.31	.59	3.89	.58	3.91	.79	.32*	.30*
Teacher perception of safety (3)*	2.47	.50	2.71	.57	2.73	.65	-.19*	-.20*
School structure	19.0	1.34	18.6	.18	18.7	.11	.38	.25
School support	24.0	1.34	23.9	.19	23.8	.12	.11	.18

<sup>a</sup> Teacher perception of safety items were the following: (1) I feel physically safe at this school, (2) I feel that there is adequate safety and security at this school, and (3) I worry about someone committing a shooting at this school.

\* $p < .05$ .

0.22,  $p < .001$ . The increase in  $R^2$  was = 0.12,  $p < .001$ .

### Structure Scale

At step 2, length of time was significantly associated with student reports of school structure ( $\beta = 0.16$ ,  $p < .05$ ). Student-reported school structure was higher in schools that used the Virginia Guidelines for more years. The total variance accounted for by the model was  $R^2 = 0.22$ ,  $p < .001$ ; the increase in  $R^2$  was 0.02,  $p < .05$ .

### Support Scale

At step 2, FRPM significantly contributed to the model. Length of time did not predict student-reported support.

### Teacher Perceptions of Safety

At step 2, only one safety item ("I feel physically safe at this school") was significantly associated with length of time ( $\beta = 0.18$ ,  $p < .01$ ). Teachers reported greater feelings of safety in schools that had been using the Virginia Guidelines for more years. The total variance attributable to the model was  $R^2 = 0.28$ ,

$p < .001$ . The variance accounted for by Virginia Guidelines duration was  $R^2 = 0.03$ ,  $p < .05$ .

### Bullying Victimization Scale

At step 2, length of time was inversely associated with bullying victimization ( $\beta = -0.17$ ,  $p < .05$ ). In other words, students in schools using the Virginia Guidelines for a longer duration reported lower levels of bullying victimization. The total variance accounted for by the model was  $R^2 = 0.04$ ,  $p < .05$ ; the portion of variance attributable to Virginia Guidelines duration was  $R^2 = 0.03$ ,  $p < .05$ .

### General Victimization Scale

At step 2, length of time was inversely associated with general victimization ( $\beta = -0.18$ ,  $p < .05$ ). Schools using the Virginia Guidelines for a longer duration had lower levels of general victimization, as reported by students. The total variance accounted for by the model was  $R^2 = 0.18$ ,  $p < .001$ ; the portion of the variance accounted for by Virginia Guidelines duration was  $R^2 = 0.03$ ,  $p < .05$ .

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Table 2  
Multiple Regressions on School Safety and Climate Measures

Step	Short-term suspensions			Long-term suspensions			School support			School structure			PTB			Teacher perception of safety <sup>a</sup>			Bullying victimization			General victimization		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Step 1																								
School enrollment		.50*	.50*		.09*	.09*		.12*	.12*		.19*	.19*		.21*	.19*		.25*	.25*		.06	.01		.15*	.15*
% Minority	.07			.17			-.04			.12			.21*			-.06			-.06			.01		
% FRPM	.26*			.14			.04			-.34*			.08			-.09			-.02			.20*		
Step 2																								
School enrollment	.58*			.22*	.12*	.12*	-.37*	.12	.002	-.17	.22*	.02*	.43*	.21*	.02*	-.48*	.28*	.03*	.08	.04*	.03*	.28*	.18*	.03*
% minority	.06			.15			-.04			.12			.20*			-.06			-.06			.002		
% FRPM	.27*			.16			.05			-.34*			.09			-.10			-.02			.21*		
Virginia guidelines duration	.54*			.08			-.36*			-.11			.37*			-.42*			.02			.21*		
	1.84			-.37*			.04			.16*			-.17*			.18*			-.17*			-.18*		

<sup>a</sup> Only one perception of safety, "I feel physically safe at this school," was significant. The other two items had the following values at step 2: "I feel that there is adequate safety and security at this school" ( $R^2 = .18$ ;  $\Delta R^2 = .02$ ), and "I worry about someone committing a shooting at this school" ( $R^2 = .12$ ;  $\Delta R^2 = 0$ ), all  $ps > .05$ .

## Prevalence of Teasing and Bullying Scale

At step 2, length of time was inversely associated with student-reported PTB ( $\beta = -0.17$ ,  $p < .05$ ). Schools using the Virginia Guidelines for a longer duration had lower levels of student-reported PTB. The total variance accounted for by the model was  $R^2 = 0.21$ ,  $p < .001$ ; the portion of the variance accounted for by Virginia Guidelines duration was  $R^2 = 0.02$ ,  $p < .05$ .

## Discussion

The present study demonstrated that middle schools using the Virginia Guidelines reported more favorable school safety conditions and climate compared with two comparison groups, schools that used an alternate threat assessment program and those that reported having no program. Although a retrospective study of school conditions, there were positive findings across three sources of information, including school suspension records, student reports, and teacher reports.

Middle schools using the Virginia Guidelines had significantly fewer short-term suspensions (a rate of 8 per 100 students) than both comparison groups. The latter two groups had rates that were 50% higher, each averaging approximately 12 short-term suspensions per 100 students. These findings are consistent with several studies, including a retrospective investigation, longitudinal study, and randomized controlled trial. Whereas the previous studies examined high schools (Cornell et al., 2009, 2011) or a group of K–12 schools (Cornell et al., 2012), this was the first study concerned specifically with middle school grades, where discipline infractions and school suspensions are high (Nansel et al., 2001).

These findings are noteworthy in light of the deleterious impact that zero tolerance policies and out-of-school suspensions have on student academic performance and success (APA Zero Tolerance Task Force, 2008; Raffaele Mendez, 2003; Seal v. Morgan, 2000). Moreover, there is evidence that suspension of students does not improve student behavior or increase school safety, and the U.S. Department of Education (2014) has called on schools to review their discipline practices and reduce their use of school suspension. The Virginia Guidelines

stress threat assessment as an alternative to zero tolerance policies and school authorities are trained to minimize the use of school suspensions. They are discouraged from using a single sanction for all student misbehaviors and from treating all infractions the same regardless of severity. Suspensions are advised primarily when there is an imminent threat of harm to others (Cornell & Sheras, 2006).

Two aspects of school climate that were not associated with the Virginia Guidelines were student perception that discipline is strict but fair, and that schools are supportive of their students. This conflicts with a previous finding that threat assessment was associated with school support in high schools (Cornell et al., 2009). One explanation may be that students do not readily perceive fairer discipline or school support in schools with fewer suspensions and decreased aggressive behaviors, which are more direct targets of the Virginia Guidelines.

Notably, our three distinct measures of student-reported aggressive behaviors—bullying victimization, general victimization, and prevalence of teasing and bullying—were lower in schools in which the Virginia Guidelines was used, as compared with both groups of schools. This is supported by a previous quasi-experimental study that found a 79% reduction in bullying infractions the year after high schools began to use the Virginia Guidelines (Cornell, Gregory, & Fan, 2011). The present study's findings about student aggression are also consistent with the Virginia Guidelines and threat assessment approach generally, which endeavor to train teams to address grievances and conflicts before they escalate into more serious violence (Cornell & Sheras, 2006; Randazzo et al., 2006).

Teachers reported feeling safer from violence in schools that used the Virginia Guidelines. Previous research on guidelines training has shown immediate changes in school team member beliefs about school violence, threat assessment, and zero tolerance policies (Allen et al., 2008). Specifically, staff members who received training were less worried about school shootings and felt prepared to use the Virginia Guidelines as a violence prevention measure. These staff members were primarily administrators and mental health professionals, and did not include a group of teachers. To date, however, there has been no examination of teacher

perceptions of safety in relation to the Virginia Guidelines. One possible explanation for this finding is that teams gain increased confidence from their training that can affect school climate and be communicated to teachers. Future studies should examine what teachers knew about threat assessment in their schools and what factors they identify as making them feel safer.

Finally, these results generalized across schools with diverse demographics, suggesting that the findings were not an artifact of schools with less poverty, differing racial composition, or smaller enrollments. Furthermore, previous research suggests that use of threat assessment may be associated with decreased racial disparities in disciplinary practices, although an investigation of racial differences was beyond the scope of the present study (Cornell, Gregory, & Fan, 2011; Wallace et al., 2008). Future research investigating the association between disparities among demographics and threat assessment practices would be useful.

Taken together, our results suggest that disciplinary methods in schools that use the Virginia Guidelines are less punitive, as evidenced by lower suspension rates. Students reported less aggression on three measures of bullying and peer conflict. Moreover, teachers reported feeling safer at school across three variables measuring feelings of safety. These findings are consistent with the goals of the Virginia Guidelines to improve school safety and climate by responding to student aggressive behaviors with appropriate, in-school disciplinary actions rather than school exclusion. Such disciplinary measures, in turn, help to ensure safety and correct misbehaviors while keeping students in school to learn.

### **Length of Time Using the Virginia Guidelines**

The present study did not have longitudinal data that could be used to make a stronger test of the association between using the Virginia Guidelines and positive school climate and safety outcomes. Therefore, associations between length of time using the Virginia Guidelines and school conditions were examined. Analyses demonstrated that longer use of the Virginia Guidelines was associated with more favorable school climate and safety conditions. Schools that used the Virginia Guidelines for

two years or less ( $n = 22$ ) averaged 10 suspensions per 1,000 students, whereas schools that used the guidelines for 10 or more years ( $n = 65$ ) averaged two long-term suspensions per 1,000 students. These results may be attributable to a combination of change in policy and improvement in student behaviors so that long-term suspensions are no longer as frequent. Administrators may play a pivotal role in the consistent application of disciplinary policies, such that, over time, organizational infrastructure is in place to perpetuate such practices. Moreover, teachers who perceive that their administrators support them may be more likely to practice administrators' policies. Such hypotheses should be investigated in future studies.

The current study showed that middle schools that used the Virginia Guidelines longer also had more positive student perceptions of school climate. As with suspension rates, full program effects may not be immediate. Improved student and teacher perceptions would not occur immediately, but would follow the sustained implementation of the Virginia Guidelines and threat assessment team actions. Over time, threat assessment cases would accumulate and there would be more opportunities for intervention. For example, assessing and intervening for bullying would take time to have school-wide effects.

Finally, the length of time that schools used the Virginia Guidelines was positively associated with school safety, as measured by both positive teacher observations of safety and lower levels of student teasing and aggression. This finding provides evidence that it takes time for a threat assessment program to have full impact in a school. One mechanism that may explain the changes in school conditions is the school's response to the student making a violent threat. Over time, school personnel perceive that they are safer, whereas students who misbehave are both corrected and supported at school.

### Limitations and Future Research

The study was cross-sectional and correlational, and thus cannot provide definitive evidence of causal relations between use of the Virginia Guidelines and school climate and safety variables. A longitudinal, prospective study with a randomized, experimental design

could control for baseline levels of the study's outcome measures and would be useful to determine causal links between the Virginia Guidelines and school climate outcomes. Furthermore, the study relies on student and teacher perceptions that may introduce additional error and limit what can be concluded from our findings. Students and/or teachers may perceive their schools to be safe or unsafe, or to have more or less positive climates, based on their internal biases or limited observations that do not reflect school-wide conditions. However, the study used aggregate data across three sources of information (i.e., students, teachers, and suspension records), minimizing error resulting from self-report. Furthermore, there is no reason to assume that self-report error would result in favorable results for schools using the Virginia Guidelines.

Uncontrolled self-selection factors may have contributed to study findings. For example, a school that used the Virginia Guidelines may have already had safe conditions and a positive school climate. It is important to note, however, that the decision to incorporate the Virginia Guidelines was not made by individual schools but rather school divisions, lessening the likelihood of school-level selection bias. The problem of self-selection is mitigated in part by the finding that schools using the guidelines longer showed more positive school safety conditions and climate.

There were no available measures of implementation fidelity in order to assess whether effects were larger in schools with better implementation, as the randomized controlled trial found (Cornell et al., 2012). Findings may have been diminished by the inclusion of schools with poor implementation of the Virginia Guidelines (Cornell et al., 2012). Furthermore, some schools were dropped from the study because their use of threat assessment procedures was not clear, and these schools tended to be smaller schools with slightly higher proportions of low-income students. It will be useful for future studies to gather more information about the implementation fidelity of the Virginia Guidelines and other programs and how it is associated with school climate and safety outcomes. A statewide assessment of threat assessment practices in Virginia public schools was initiated in 2015 (Cornell et al., 2015).



There remains a need to define, differentiate, and examine alternative threat assessment models. In the present study, it was not possible to define specific alternative threat assessment practices, and most schools reported developing their own model. Thus there was no group of schools identified that used specific programs, such as the Salem Keizer (Van Dreal, 2011) or Dallas (Van Dyke & Schroeder, 2006) models. To assess schools that use other programs, it would be useful to develop a taxonomy or set of standards for classifying different models of threat assessment.

Further research is needed to identify best practices across programs. Particularly, it would be useful to identify practices among threat assessment models that are linked to positive school climate and safety outcomes. Mechanisms within threat assessment models may include specific responses to student violence (e.g., the use of in-school discipline vs. suspensions in responding to threats). Such research would enable threat assessment researchers to design the most useful programs for schools.

It was expected that results on length of time using the guidelines would be similar to those from the first research question. But there were discrepancies between the results for the two research questions regarding suspensions and school disciplinary structure. Specifically, short-term suspensions were lower in schools using the Virginia Guidelines, as compared with the other two groups of schools, whereas long-term suspensions were lower in schools that had used the guidelines for a longer duration. Long-term suspension rates are much lower than short-term rates (short-term suspension rates were per 100 students and long-term suspension rates were per 1,000 students). Because of their low base rate, reductions in long-term suspensions might develop more slowly.

Moreover, although school disciplinary structure was no different in schools using the guidelines as opposed to the other groups of schools, schools that had used the Virginia Guidelines for longer had higher structure compared to schools that had used the guidelines for a shorter duration. These differences suggest that some changes may be slower to develop than others. It would be useful to assess schools for differences in implementation fidelity, as well as changes in fidelity over time. Fidelity of implementation is a special concern in schools

because there will be turnover in school administrators and other school staff (counselors, psychologists, resource officers, and social workers) that make up the school threat assessment team.

The available research on threat assessment has focused primarily on school level effects. More study is needed on individual student effects, including controlled studies on students who threaten others with violence, their targeted victims, and school responses to such threats. Specifically, it would be useful to know long-term academic and disciplinary outcomes of students who make threats or who have been threatened with violence.

In summary, future research on threat assessment would benefit from developing standards for threat assessment programs in schools and identifying best practices that are associated with the most positive outcomes at both the school and individual levels. These results would inform current knowledge about aspects of the threat assessment approach that are most useful for school personnel. They would also assist researchers and administrators in implementing the best approach to violence prevention—one that not only provides students with safety, but also encourages a positive climate that promotes educational success.

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Received March 1, 2015

Revision received September 27, 2015

Accepted November 4, 2015 ■