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Student Threat Assessment as a Standard School Safety Practice: Results From a Statewide Implementation Study

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Threat assessment has been widely endorsed as a school safety practice, but there is little research on its implementation. In 2013, Virginia became the first state to mandate student threat assessment in its public schools. The purpose of this study was to examine the statewide implementation of threat assessment and to identify how threat assessment teams distinguish serious from nonserious threats. The sample consisted of 1,865 threat assessment cases reported by 785 elementary, middle, and high schools. Students ranged from pre-K to Grade 12, including 74.4% male, 34.6% receiving special education services, 51.2% White, 30.2% Black, 6.8% Hispanic, and 2.7% Asian. Survey data were collected from school-based teams to measure student demographics, threat characteristics, and assessment results. Logistic regression indicated that threat assessment teams were more likely to identify a threat as serious if it was made by a student above the elementary grades (odds ratio 0.57; 95% lower and upper bound 0.42–0.78), a student receiving special education services (1.27; 1.00–1.60), involved battery (1.61; 1.20–2.15), homicide (1.40; 1.07–1.82), or weapon possession (4.41; 2.80–6.96), or targeted an administrator (3.55; 1.73–7.30). Student race and gender were not significantly associated with a serious threat determination. The odds ratio that a student would attempt to carry out a threat classified as serious was 12.48 (5.15–30.22). These results provide new information on the nature and prevalence of threats in schools using threat assessment that can guide further work to develop this emerging school safety practice.

Impact and Implications

Virginia public schools are using threat assessment teams to prevent student violence. Based on a sample of 1,865 threat cases, this study found that teams were more likely to identify a threat as serious if the student was above the elementary grades and receiving special education services, if the threat involved battery, homicide, or weapon possession, or targeted an administrator. Although few threats were attempted, a threat judged to be serious was about 12 times more likely to be attempted than a threat not judged to be serious.

Keywords: school safety, threat assessment, school violence, serious and nonserious threats

In response to a series of school shootings in the 1990s, federal law enforcement and education authorities recommended that schools adopt a threat assessment approach to violence prevention (Fein et al., 2002; O'Toole, 2000). Over the next 15 years, many schools began to implement threat assessment programs (Cornell,

Sheras, Gregory, & Fan, 2009; Van Dreal, 2011; Van Dyke & Schroeder, 2006). Reports from the U.S. Department of Education (2013), the American Psychological Association (2013), and the National Association of School Psychologists (National Association of School Psychologists School Safety and Crisis Response

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Committee, 2014) recommended its use in schools. In 2015, the Sandy Hook Promise Foundation (2017) adopted threat assessment as one of its core violence prevention programs for national dissemination. However, there is little available information on this widespread school safety practice. The purpose of this study is to report on the statewide implementation of threat assessment in Virginia public schools and, in particular, how schools were able to distinguish serious from nonserious threats of violence by students.

Although threat assessment was originally developed as a law enforcement strategy to protect public figures, it has been widely applied to the prevention of workplace violence, terrorism, and domestic violence (Meloy & Hoffmann, 2014). Threat assessment is a systematic approach to violence prevention designed to distinguish serious threats, defined as behaviors or communications in which a person poses a threat of violence, from cases in which the threat is not serious (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002). Unlike a zero tolerance approach that applies a uniform consequence to all cases, threat assessment is a more flexible and responsive process. The goal of threat assessment is to prevent violence by planning a response to serious threats that considers the unique risk and protective factors associated with the circumstances of the case. Nonserious threats may be recognized as signs of frustration, unresolved conflict, or disputes that might be amenable to resolution.

Threat assessment is an especially appropriate strategy for schools because students frequently engage in aggressive and threatening behavior that ranges on a wide continuum from mild teasing and bantering to serious altercations, and in rare instances, severe acts of criminal violence (Borum, Cornell, Modzeleski, & Jimerson, 2010; Cornell, 2014). Youth Risk Behavior Survey results indicate approximately 20% of U.S. high school students reported being bullied, 7.8% reported being in a physical fight, and 6% reported being threatened or injured with a weapon on school property within the past 12 months (Kann et al., 2016). According to national statistics, 65% of public schools recorded one or more incidents of violent crime in the past year and approximately 3% of students ages 12–18 reported criminal victimization at school during the previous 6 months (Zhang, Musu-Gillette, & Oudekerk, 2016). In addition, 10% of public school teachers reported being threatened with injury and 6% reported being physically attacked by a student (Zhang et al., 2016).

Although threatening remarks or behaviors by students can raise strong concern, educators want to avoid overreacting to threats that are not serious (Cornell & Sheras, 2006; O'Toole, 2000). The frequency of threatening statements in student communications may be high. For example, a survey of high school students asked, "Has another student threatened to harm you in the past 30 days?" (Nekvasil & Cornell, 2012). Approximately 12% of students reported being threatened, but only 23% of the threatened students regarded the threat as serious and only 9% reported that the threat was carried out. When threats are reported to school authorities, the challenge is to determine whether or not a threat is serious and what appropriate action to take.

Studies of Threat Assessment in Schools

There are few empirical studies of school-based threat assessment. One of the first reports concerned the Dallas Threat of

Violence Risk Assessment, which is a structured approach that relies on scoring a checklist of 19 risk factors for violence. Each item is rated as low (1), medium (2), or high (3), then summed into a total risk score and divided by three. Scores below 9 are considered low risk and scores above 14 are considered high risk (Van Dyke & Schroeder, 2006). A summary of results for 639 cases collected during 2003–2004 found that 63% were classified as low risk, 34% medium risk, and 3% high risk. The overwhelming majority (85%) of cases were male students, approximately three-fourths (73%) were in elementary school, and one-fifth (20%) were receiving special education services.

The Virginia Student Threat Assessment Guidelines (VSTAG) was developed at the University of Virginia to integrate recommendations from Federal Bureau of Investigation (FBI) and Secret Service studies of school shootings (Fein et al., 2002; O'Toole, 2000) with field-test experiences gained from work with a group of public schools (Cornell & Sheras, 2006). Under this model, a multidisciplinary team uses a step-by-step procedure to gather information, assess the seriousness of a threat, and take appropriate action (such as referring a student for counseling or seeking law enforcement intervention).

A series of controlled studies have found that schools using this model experience lower rates of peer aggression, more favorable student and teacher perceptions of school climate, and lower use of out-of-school suspension (Cornell, Allen, & Fan, 2012; Cornell, Gregory, & Fan, 2011; Cornell et al., 2009; Nekvasil & Cornell, 2015). For example, a retrospective comparison found students in high schools using this model reported less bullying, greater willingness to seek help for bullying and threats of violence, and fewer long-term suspensions (Cornell et al., 2009). A quasi-experimental study found that in the 23 high schools adopting this model long term suspensions and bullying infractions decreased approximately 50% compared with the 26 control group schools (Cornell et al., 2011). A retrospective, quasi-experimental study compared 166 middle schools that used the VSTAG model to 166 schools that did not use threat assessment or that used another model of threat assessment (Nekvasil & Cornell, 2015). Students in schools using the VSTAG model reported lower student aggressive behavior and perceived discipline to be fairer. Finally, a randomized control trial of 201 K-12 students identified as making threats of violence found that students in schools using the VSTAG model were less likely to receive exclusionary discipline than students in the control group (Cornell et al., 2012). As a result of these studies, the VSTAG model was included in the *National Registry of Evidence-based Programs and Practices* (National Registry of Evidence-based Programs and Practices; n.d.).

Two studies using the VSTAG model have evaluated the distinction between transient and substantive classifications (Burnette, Datta, & Cornell, 2017; Cornell et al., 2004). Cornell and colleagues (2004) found that of 188 threat cases in 35 schools, the majority of cases (70%) were classified as transient and the remaining cases were determined to be substantive. The proportion of substantive threats was much higher among middle and high school students compared with elementary students. In addition, male students made the majority of both transient and substantive threats. The second study evaluated 844 threat cases in 339 schools and found that threats were more likely to be classified as substantive when made by older students and male students (Burnette et al., 2017). In this study, the odds that substantive threats were

attempted were 36 times greater than that a transient threat would be attempted. However, these studies have not investigated the characteristics distinguishing serious from nonserious threats across threat classification models.

Current Study

In response to the 2012 Sandy Hook shooting, Virginia became the first state to mandate the use of threat assessment teams in its K-12 public schools (*Code of Virginia*, § 9.1–184.A.10). The law authorized the state’s Department of Criminal Justice Services to collect data on threat cases as part of the state’s annual school safety audit (*Code of Virginia*, § 22.1–79.4). Survey questions were developed and piloted in the first school year after the law went into effect. However, it was recognized that some schools might not have been fully prepared in the first year; consequently, the present study examined data from the second school year (2014–2015), when all schools would have had more than one year to establish their threat assessment teams. Thus, the purpose of the present study was to examine threat assessment in a large, state-wide sample of schools and learn how schools distinguished serious from nonserious threat cases.

The present study investigated three research questions. The first question was “What are the demographic characteristics of students who threatened violence?” Based on previous studies, we expected that a disproportionate number of cases would involve students who were male (e.g., Losen, Hodson, Keith, Morrison, & Belway, 2015; Skiba, Michael, Nardo, & Peterson, 2002; Strong & Cornell, 2008), in elementary grades (e.g., Cornell et al., 2012; Strong & Cornell, 2008), and receiving special education services (e.g., Kaplan & Cornell, 2005; Strong & Cornell, 2008). We also investigated the racial/ethnic composition of the sample because of the disproportionately high rate of minority student referrals for disciplinary infractions in Virginia and nationwide (e.g., Losen et al., 2015; Rocque, 2010; Skiba et al., 2002, 2011).

The second research question was, “What student and case characteristics are associated with the team’s determination that a threat was serious?” It was hypothesized that threat assessment teams would regard a threat as more serious if it was made by an older student and if it involved a threat to kill and involved possession of a weapon. It was expected that teams would be more concerned about threats reported to third parties rather than directly to the intended target because the threat assessment literature indicates that school shooters were more likely to have made indirect rather than direct threats toward their intended target (Vossekuil et al., 2002). Finally, it was anticipated that teams would be more concerned about threats aimed at adults, such as teachers and administrators, rather than students. Student-to-student threats are much more common than student threats against school staff, which are regarded as serious disciplinary infractions (Virginia Department of Education, 2016).

The third research question was, “What student and case characteristics are associated with a threat that a student attempted to carry out?” Previous studies indicate that relatively few threats are attempted (Cornell et al., 2012, 2004; Strong & Cornell, 2008), but it was expected that attempted threats should have characteristics associated with a serious threat.

When the threat assessment law was enacted, many Virginia schools were already using threat assessment, having been trained

in the use of the VSTAG (Cornell & Sheras, 2006). The state law did not mandate the use of a specific threat assessment model, and instead directed the state’s Department of Criminal Justice Services (2016, p. 1) to provide schools with a “model policy for the establishment of threat assessment teams, including procedures for the assessment of and intervention with students whose behavior poses a threat to the safety of school staff or students.” The general guidance provided in the model policy explicitly recognized the VSTAG as meeting state requirements, but allowed schools to adopt or develop any model that met the general language of the state law. The guidance document presented general principles of threat assessment that originated with the U.S. Secret Service and U.S. Department of Education (Vossekuil et al., 2002) and are widely used in threat assessment models, including the VSTAG. Also consistent with general threat assessment practices, the state guidance required schools to use a multidisciplinary team, to assess the seriousness of student threats, and to take appropriate actions to prevent violence in serious cases. Hence, the present study is not an examination of a specific model of threat assessment, but is concerned with the results for a statewide sample of schools using varied threat assessment practices.

Method

Sample

The sample was obtained from a school safety survey completed at the end of the 2014–2015 school year by 1,746 administrators in the state’s 1,098 elementary, 337 middle, and 311 high schools. Schools that reported at least one case of a student threat to harm were asked to provide detailed information about each case. There were 922 schools reporting no cases, 689 reporting 1–5 cases, and 135 reporting more than five cases. To limit the reporting burden, schools with more than five cases were asked to report on their most serious case, least serious case, and three most recent cases. Of the 824 schools reporting at least one case of a student threat, 39 reported cases involving a threat of suicide or self-injury, but no case involving a student threat to harm someone else; consequently, the sample was reduced to 785 schools reporting cases of a student threatening to harm someone other than self.

The analytic sample included 785 schools (405 elementary, 197 middle, and 183 high) that reported 1,865 cases of threats to harm others (representing an average of 2.4 reported threats per school). The schools were distributed across urban (165), suburban (325), and rural/small town (295) settings. School enrollments ranged from 76 to 2,926 ($M = 818.7$, $SD = 480$). The demographics for these 785 schools were 51.4% male with a racial/ethnic distribution of 50.6% White, 22.6% Black, 15.0% Hispanic, 6.5% Asian, and 5.4% Other (e.g., two or more races, Native American, Pacific Islander). Approximately 39.3% of the students were free or reduced price meal (FRPM)-eligible and 12.4% of the students received special education services.

Measures

The survey was administered by the Virginia Department of Criminal Justice Services as part of the state’s mandated reporting process. The survey collected student gender, race/ethnicity, special education status, and grade level for each case. In addition, the

survey obtained ratings for a series of threat characteristics. Because threats varied so widely in what the student threatened to do, we selected three threat characteristics that seemed especially relevant and amenable to coding. Each case was rated for the presence (1) or absence (0) of the following characteristics: (a) threat of battery; (b) threat to kill; and (c) threat involved use of a weapon (either student had possession of a weapon or had a weapon on school property). The target(s) of the threat was identified as another student, faculty member, staff member, administrator, or someone else. Threats were classified as communicated directly to the target, indirectly to a third party, or implicitly expressed (behavior that raised concern without a communicated threat).

The survey asked how the teams classified the seriousness of their threat cases. Because schools used different classification systems with varying numbers of categories, cases classified under various systems as substantive, medium, high, severe, serious, or imminent were combined into a “serious” category and cases classified as transient or low were classified as “not serious.” We elected to use two broad categories because this seemed to be the most feasible way to combine data across schools using different systems and because the distinction between a threat considered serious and one considered not serious seemed to have the most practical value. One study has demonstrated coder reliability for the three-category system used in the Virginia Student Threat Assessment Guidelines (Burnette et al., 2017), but we are not aware of reliability for any of the other coding systems. In addition to classification, the survey asked whether the student attempted or did not attempt to carry out the threat.

This study was conducted in compliance with the University of Virginia Institutional Review Board. Surveys were collected by the state agency without student identifying information. Data were provided to the researchers in archival form.

Data Analysis

To investigate the first research question, the sample was compared with the state fall enrollment database, which reports demo-

graphic characteristics (e.g., school size, number of students by race/ethnicity) for each school. Chi-square tests evaluated whether the gender and special education status of students referred for threat assessment differed from the overall school enrollment of the schools contributing cases to the study. For race/ethnicity, risk ratios were calculated as the proportion of students of a particular demographic (i.e., Black, Hispanic, and Asian) referred for threat assessment across all schools in the sample divided by the proportion of White students referred for threat assessment across all schools in the sample. This allowed for comparison of Black, Hispanic, and Asian students with White students as the reference group.

To investigate the second research question, logistic regression tested the associations between case characteristics and the school threat assessment team’s determination of threat seriousness. To assess the third research question, logistic regression tested the association between case characteristics and whether the threat was attempted. In this analysis, the team’s assessment of the threat as serious was included as an additional case characteristic. The analyses were conducted using clustered adjusted standard errors using the type = complex option in Mplus to account for the nesting of cases within schools, with full information maximum likelihood (FIML) estimation to accommodate missing data.

Results

Research Question 1: What Are the Characteristics of Students Who Threatened Violence?

In the 1,865 cases, students were most often in elementary grades (46.1%) with a clear increase across the youngest grades and decreasing in the high school grades. The greatest number of threats (11.0%) were made by 4th graders, followed by 5th graders (10.9%; Figure 1). (In 10 cases, the student’s grade was not reported.)

The 785 schools in the sample enrolled 641,858 students. Of these, 330,065 (51.4%) were male students; however, male

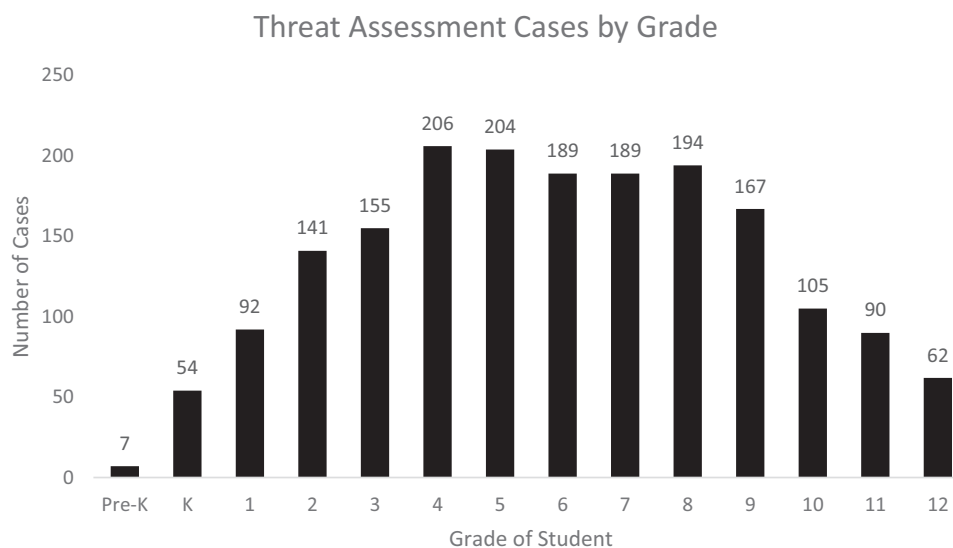


Figure 1. Grade breakdown of threat cases in sample.

students made up 74.4% of the students referred for threat assessment, $\chi^2(1) = 553.8, p < .001$. Based on a risk ratio, male students were 3.7 times more likely (.42/.11) to receive a threat assessment than female students. Students receiving special education services made up approximately 12.4% of the sample student population ($n = 79,337$), but accounted for 34.6% of the threat cases, $\chi^2(1) = 900.7, p < .001$. Students receiving special education services were 3.9 times more likely to be referred for threat assessment than those not receiving special education services.

More White students (51.2%) were referred for threat assessment than Black (30.2%), Hispanic (6.8%), and Asian (2.7%) students (see Table 1). The proportion of Black students referred for threat assessment was 1.3 times higher than the proportion of White students, $\chi^2(1) = 82.7, p < .001$. The Hispanic-White risk ratio was 0.45, $\chi^2(1) = 75.5, p < .001$ and the Asian-White risk ratio was 0.41, $\chi^2(1) = 40.0, p < .001$.

Research Question 2: What Student and Case Characteristics Are Associated With the Team's Determination That a Threat Was Serious?

Across all cases (see Table 2), the most common threats made by students were threats of homicide (22.5%) followed by threats of battery (18.2%). There were 101 cases (5.4%) in which a student had a weapon in their possession or on school property at the time of the threat. Only 30.5% of cases were determined to be serious by the threat assessment team.

Logistic regression analysis was used to identify characteristics of serious threats, taking into consideration the nesting of cases within schools as previously described. Serious threats were more likely to involve possession of a weapon (Odds ratio [OR] = 4.41, $p < .001$), target an administrator ($OR = 3.55, p < .01$), threat of battery ($OR = 1.61, p < .01$), threat of homicide ($OR = 1.40, p < .05$), or involve a student identified as receiving special education services ($OR = 1.27, p < .05$; Table 3). Serious threats were less likely to involve elementary ($OR = 0.57, p < .001$) than middle school students.

Table 1
School and Case Demographics and Prevalence Rates

Characteristic	School level ($n = 641,858$)	Case level ^a ($n = 1,865$)	Prevalence rate
Male	330,065 (51.4%)	1388 (74.4%)	.42
Female	311,793 (48.6%)	355 (19.0%)	.11
SPED identified	79,377 (12.4%)	645 (34.6%)	.81
Non-SPED	562,481 (87.6%)	1162 (62.3%)	.21
Race			
White	324,867 (50.6%)	954 (51.2%)	.29
Black	144,999 (22.6%)	563 (30.2%)	.39
Hispanic	96,234 (15.0%)	127 (6.8%)	.13
Asian	41,400 (6.2%)	50 (2.7%)	.12

^a Gender not reported for 122 cases, special education (SPED) status not reported for 58 cases, race not reported for 47 cases.

Table 2
Threat Case Descriptive Statistics

Characteristic	Nonserious ($n = 1,309$)	Serious ($n = 552$)	Total cases ^a ($n = 1,865$)
School type			
Elementary	669 (51.1%)	194 (35.1%)	863 (46.3%)
Middle	378 (28.9%)	191 (34.6%)	573 (30.7%)
High	262 (20.0%)	167 (30.3%)	429 (23.0%)
Threat type			
Battery	211 (16.1%)	128 (23.2%)	339 (18.2%)
Homicide	286 (21.8%)	133 (24.1%)	420 (22.5%)
Weapon in possession	46 (3.5%)	54 (9.8%)	101 (5.4%)
Communication method ^b			
Direct	777 (59.4%)	323 (58.5%)	1,102 (59.1%)
Indirect	339 (25.9%)	157 (28.4%)	496 (26.6%)
Implicit	190 (14.5%)	72 (13.0%)	264 (14.2%)
Target			
Student	914 (69.8%)	355 (64.3%)	1,272 (68.2%)
Faculty	182 (13.9%)	87 (15.8%)	270 (14.5%)
Staff	38 (2.9%)	42 (7.6%)	80 (4.3%)
Administrator	23 (1.8%)	41 (7.4%)	64 (3.4%)
Multiple targets	37 (2.8%)	42 (7.6%)	80 (4.3%)
Attempted	11 (.8%)	50 (9.1%)	62 (3.3%)

Note. Column percentages may exceed 100% because multiple categories could be selected.

^a Seriousness was not indicated for four cases. ^b Communication method not indicated in three cases.

Research Question 3: What Student and Case Characteristics Are Associated With a Threat That a Student Attempted to Carry Out?

Schools reported that students attempted to carry out their threat in only 3.3% ($n = 62$) of cases. Logistic regression analysis, taking into consideration the nesting of cases within schools, indicated that attempted threats were more likely to have been categorized as serious by the team ($OR = 12.48, p < .001$) and involve a threat of battery ($OR = 3.33, p < .001$). Attempted threats were less likely to involve homicide ($OR = 0.22, p < .05$) and to be communicated indirectly ($OR = 0.06, p < .001$; Table 3).

The classification of threats as serious was of special interest since it represents the culmination of the team's assessment. The attempt rate for serious threats was 9.1% (50 of 552 cases) whereas the attempt rate for nonserious threats was 0.8% (11 of 1309 cases). Thus the odds that a threat classified as serious would be attempted were approximately 12.5 times greater than those classified as not serious.

One potential concern is that the selection of five cases from each school might have biased the sample in some way (i.e., the schools that reported five cases might differ from schools that reported fewer than five cases in school demographics). Regression results using schools that had five or fewer cases were compared with regression results using only those schools that reported five cases and results were comparable. Moreover, independent sample t tests indicated that schools with more than five TA cases ($n = 130$) were statistically indistinguishable from schools with five or fewer TA cases ($n = 655$) in terms of the percent of enrolled minority students and school size ($ps > .05$). Schools with more than five TA cases had a higher percentage of students receiving FRPM ($M = 51.0%$) than those from schools

Table 3
Logistic Regression Odds Ratios for Statewide Sample

Predictors	Serious classification ^a			Threat attempted		
	OR	95% LB	95% UB	OR	95% LB	95% UB
Grade: Elementary ^b	.57***	.42	.78	2.10	.91	4.87
Grade: High ^b	1.10	.99	1.24	1.29	.96	1.73
Female ^c	.92	.69	1.23	1.48	.77	2.86
SPED ^d	1.27*	1.00	1.60	1.47	.82	2.64
Race: Black ^e	.97	.75	1.26	1.62	.91	2.89
Race: Hispanic ^e	.83	.53	1.31	.77	.19	3.06
Race: Asian ^{e,g}	.52	.23	1.14	—	—	—
Race: Other ^e	1.04	.71	1.52	.57	.14	2.36
Threat nature: Battery	1.61**	1.20	2.15	3.33***	1.77	6.25
Threat nature: Homicide	1.40*	1.07	1.82	.22*	.07	.73
Weapon in possession	4.41***	2.80	6.96	1.15	.38	3.45
Threat communicated: Indirectly ^f	1.39	.91	2.11	.06***	.01	.28
Threat communicated: Directly ^f	1.28	.87	1.90	.58	.23	1.44
Target: Student	.89	.64	1.23	2.17	.77	6.14
Target: Faculty	.84	.54	1.32	2.34	.67	8.15
Target: Staff	1.70	.93	3.09	.98	.26	3.75
Target: Administrator	3.55***	1.73	7.30	2.21	.60	8.12
Target: Multiple persons	1.75	.81	3.77	.72	.16	3.30
Serious threat				12.48***	5.51	30.22

Note. OR = Odds ratio; LB = lower bound; UB = upper bound; SPED = special education.

^a $n = 1,865$ cases in 758 schools. ^b middle as reference group. ^c male as reference group. ^d identified as non-SPED as reference group. ^e White as reference group. ^f implicit as reference group. ^g only one Asian student attempted a threat, therefore they were omitted from this analysis.

* $p < .05$. ** $p < .01$. *** $p < .001$.

with five or fewer TA cases ($M = 43.8\%$), $t(774) = 3.05$, $p < .01$. Complete results of these analyses are available upon request.

Discussion

This study provides the first statewide examination of student threat assessment, a widely advocated violence prevention strategy for schools. We conducted a systematic analysis of the determinations that school threat assessment teams made about the seriousness of threats and examined how those determinations are associated with student demographic backgrounds and characteristics of their threats. We then extended this line of analysis to show how student demographic backgrounds, threat characteristics, and the team's classification of threat seriousness could distinguish the small proportion of threats that students attempted to carry out from other threats.

Characteristics of Students Making Threats

Threat assessments were conducted on students at all grade levels, with the highest frequencies in the upper elementary and middle school grades. These findings could reflect in part the impulsivity of young children who are prone to make reckless and exaggerated statements. Notably, threats to kill were more common in elementary than secondary school, but were most often not considered serious by the threat assessment teams. Anecdotally, there were many cases in which a frustrated young student shouted a threat to "kill" someone that the team determined was not a serious threat to commit a homicide but instead an expression of anger.

The disproportionate number of threat cases in the upper elementary and middle school grades is consistent with the higher rate

of aggressive behavior observed in preteen boys (Espelage & Holt, 2012; Nansel et al., 2001) and the generally elevated rate of disciplinary infractions observed in those grades (Losen & Martinez, 2013). Consistent with previous reports that male students have disciplinary infractions at 2 to 4 times the rate of female students (Skiba et al., 2014), male students in the present study were almost four times more likely to be referred for threat assessment than female students. It is not surprising that male students accounted for nearly 75% of threat cases, since they are generally more aggressive and more likely to engage in fighting than female students (Nansel et al., 2001).

A disproportionate number of cases involved students receiving special education services. This is consistent with a previous study that found a similarly elevated frequency of threats made by students in the special education population (Kaplan & Cornell, 2005). However, Kaplan and Cornell (2005) found that the high rate was not uniform across special education categories. They reported that students classified with emotional disturbance (ED) exhibited the highest threat rates, followed by students with other health impairments (OHI) and then students receiving services for a learning disability (LD). The elevated frequencies for ED and OHI categories are consistent with the observation that threats are often a result of frustration and poor coping skills. Students identified for special education services are more likely to have difficulties in social interactions, as well as learning disabilities that lead to frustration (Bowman-Perrott, Benz, Hsu, Kwok, Eisterhold, & Zhang, 2013).

The racial/ethnic breakdown of students referred for threat assessment differed from the overall enrollment of the sample schools. Black students were disproportionately more likely to be referred for threat assessment while Hispanic and Asian students

were less likely to be referred. This finding is consistent with well-established trends for Black students to receive discipline referrals at higher rates than their White peers (e.g., Losen & Martinez, 2013; Skiba et al., 2011). These findings suggest that referrals for threat assessment might be subject to the same influences that lead to the higher rates of disciplinary referrals for Black students. However, it is important to distinguish between racial/ethnic differences in student referrals for threat assessment and disciplinary consequences for those students. In an investigation of disciplinary consequences for students receiving a threat assessment, we found no disparities among Black, Hispanic, and White students in out-of-school suspensions, expulsions, or changes in school placement (Cornell, Maeng, Huang, Shukla, & Konold, in press). Across the three racial/ethnic groups, approximately 47% were given an out-of-school suspension, 0.9% were expelled, and 16% received an alternative school placement. Although there were differences in referral for threat assessment, there were not disparities in disciplinary outcomes.

Characteristics of Threats Determined to Be Serious

Threat assessment is intended to allow schools to distinguish serious threats that pose a danger of violence from threats that are not serious. When threats are determined to be serious, school authorities must take appropriate protective action to prevent violence, which could range from increased supervision of a student to law enforcement intervention. In addition, teams might refer the student for counseling or mental health services. If a student is receiving special education services, there may be a need to review their Individualized Education Plan. Finally, school authorities must consider what kind of disciplinary consequences are appropriate.

Threats made by elementary school students were less likely to be considered serious than threats made by middle school students. This finding is consistent with previous studies of the characteristics of students making threats in schools using the VSTAG model, which found that threats by older students are more likely to be classified as substantive (Burnette et al., 2017; Cornell et al., 2004). The findings of the present investigation extend the previous work by using a statewide sample of schools that use a variety of threat assessment practices rather than a specific model of threat assessment. Future studies might consider whether there are sufficient differences across schools to identify and compare distinct models of threat assessment.

Notably, determinations that a threat was serious did not differ as a function student race/ethnicity; however, threats made by students receiving special education services were more likely to be considered serious. Multiple studies have documented disproportionate use of disciplinary sanctions for minority students and students receiving special education services (e.g., Losen & Martinez, 2013; Losen & Skiba, 2010; Miller & Meyers, 2015; Skiba et al., 2011, 2014; Sullivan, Klingbeil, & Van Norman, 2013). Although threat assessment is not a disciplinary consequence, there is concern that implicit biases, which may play a role in disciplinary disproportionality (Gregory, Skiba, & Noguera, 2010; Staats, 2014; U.S. Department of Justice and Department of Education, 2014), could similarly influence determinations about the seriousness of a student's threats. Dear Colleague letters by the U.S. Department of Education have advised school authorities to

investigate disciplinary disproportionality as an indication of possible bias (U.S. Department of Justice and Department of Education, 2014; U.S. Department of Education, 2016).

Certain kinds of threats were more likely to be classified as serious by threat assessment teams. Understandably, threats to kill and threats involving a weapon were more likely to be considered serious than other kinds of threats. Threats of battery were also more likely to be determined serious. One interpretation of this finding is that threats that communicated a more specific intent to harm someone were judged to be more credible, which is consistent with the threat assessment literature (Turner & Gelles, 2003). Threats that were more ambiguous or nonspecific are generally regarded as less serious than more specific threats, which is also consistent with threat assessment literature (O'Toole, 2000). Threats of battery might be of particular concern for early adolescents, since rates of fighting are higher in this age group (Nansel et al., 2001).

While a few studies have investigated the prevalence and negative impact of threats of violence toward teachers (e.g., Gregory, Cornell, & Fan, 2011); to our knowledge, no studies have investigated threats of violence directed toward school administrators. In the present study, only 3.4% of threats were made toward administrators; however, these threats were more likely to be classified as serious ($OR = 3.55, p < .01$) than threats against nonadministrators. Because students are most likely to threaten their peers, a threat aimed at an authority figure may seem unusual and indicative of serious intent. The characteristics of these threats should be investigated in future research, especially because school administrators often have the final say in the disciplinary consequences a student receives and might be inclined to impose more serious penalties. In addition, it will be important to determine whether threats toward administrators have a similar negative impact on mental health, job satisfaction, and retention as they do for teachers.

Characteristics of Attempted Threats

The ultimate purpose of threat assessment is to prevent violence, but a large body of research indicates that predictions of violence have only modest accuracy above chance levels (Fazel, Singh, Doll, & Grann, 2012). One reason for the low accuracy of violence prediction efforts is that violent behavior has a low base rate, even in a population of individuals who have made threats. Another reason is that a person might have the intent to commit a violent act, but be stopped by circumstantial or situational factors before the threat can be carried out. In light of these considerations, threat assessment is concerned with identifying persons who have a serious intent to commit violence rather than specifically predicting violence. Consistent with previous studies (Nekvasil & Cornell, 2012), only a small percentage of threats (3.3%) in this sample were attempted.

A core assumption of threat assessment is that interventions should maximize the potential to prevent violence for a student with a serious intent to harm. However, this assumption rests on the ability of threat assessment teams to identify students who are most likely to attempt to carry out their threat. Our analyses indicate that team determinations that a threat is serious have some validity. Threats classified as serious were approximately 11 times more likely to be attempted than nonserious threats. When other

threat characteristics were statistically controlled for, the *OR* for a serious classification was 12.48.

These results do not fully represent the accuracy of the determination process and may underestimate the team's success. In threat assessment, false negative cases (attempted cases that were not determined to be serious) have much more practical significance than false positives (serious cases that were not attempted). False negatives are of special concern because they indicate a missed opportunity to prevent violence. In contrast, false positives could represent successful efforts by the threat assessment team to intervene with a student who was appropriately recognized as serious.

In addition to the team's classification of a threat as serious, several other variables were associated with an increased risk of attempted violence. Threats of battery were significantly more likely to be attempted than other threats (*OR* = 3.33). This finding might reflect the relatively high rate of fighting observed in early adolescent males (Nansel et al., 2001). In contrast, threats of homicide, while more likely to be classified as serious, were significantly less likely (*OR* = .22) to be attempted. Threat assessment teams may tend to give too much weight to threats of homicide because of their disturbing nature, and out of an abundance of caution, classify them as serious.

Unexpectedly, threats that were communicated indirectly were less likely to be attempted than implicit threats. Indirect threats are expressions of intent to harm someone that are communicated to a third party rather than directly to the target. Implicit threats are those that are not overtly communicated but implied by concerning behaviors and actions. Studies of school shootings indicated that indirect threats were especially concerning (O'Toole, 2000; Vossekul et al., 2002). It appears that the universe of indirect threats contains large proportions that are not attempted, which makes it challenging for teams to know how to evaluate them. It is likely that other characteristics of the threat, or a more refined classification of how the threat is communicated, will be needed.

Student race was generally not associated with attempting a threat for Black and Hispanic students in comparison to White students. However, Asian students were much less likely to attempt a threat than White students. Among the subgroup of 50 Asian students who received a threat assessment, only one attempted a threat. These findings are consistent with the relatively low rate of disciplinary infractions observed in Asian students (Wallace, Goodkind, Wallace, & Bachman, 2008).

Although students receiving special education services made threats at a comparatively high rate, and their threats were classified as more serious by teams, they were not significantly more likely to attempt their threats than students receiving regular education. These findings are consistent with the view that many students receiving special education services have difficulties tolerating frustration and may impulsively express their distress in a hostile manner, but without intent to carry out their threat. Another contributing factor may be that many students in special education programs have a higher level of staff monitoring and benefit from educational programs that could address their frustration and hostility before it escalates into violent behavior.

Threat assessment is not an effort to predict violence, but to prevent violence by promptly directing resources to help students and resolve threatening situations. Violence may be too rare to predict individual cases with sufficient accuracy, but by devoting

more time and effort to higher risk cases, as indicated by serious threats, it may be possible to prevent violence on a schoolwide level. To accomplish prevention efficiently and avoid over reacting to threats that are not serious, teams must be able to distinguish serious threats from threats that are not serious. These results show that a team's assessment of a threat as serious has some typical characteristics and that the designation of a threat as serious is associated with a higher rate of attempts. Attempts are more appropriate to measure than carried out threats because the difference between a threat that is attempted and one that is carried out are essentially circumstantial and therefore not likely to be predicted. The attempted and carried out cases involve similar background and motives, but may differ in execution and in the fortuitous presence of authorities who intervene.

Limitations, Future Research, and Practice Implications

Although few threats were attempted, these results cannot be attributed to the threat assessment per se, and should be interpreted with caution because there was no control group of schools that did not use threat assessment. Because all Virginia schools were mandated to use threat assessment, such a comparison was not possible. There are obvious practical and ethical problems with allowing threats to go without intervention, although a future study might compare different threat assessment models.

Another limitation is that these analyses are based on school reports of their threat assessment cases, which might not be as complete or accurate as independent observations. It would also be useful to obtain contemporaneous data about cases as they occur rather than retrospective reports at the end of the school year. Team determinations of threat seriousness might be influenced by knowledge of the outcome of the threat.

An important qualification is that these results apply to threats identified for assessment and not the larger pool of all threats students make. In addition, there were many schools that reported no threat cases. Future research should be conducted to better understand what leads some threats to be reported and how to increase student and staff willingness to report threats. In addition, future studies should investigate whether unreported threats differ in important ways from reported threats.

This study does not examine differences in how schools conducted threat assessments. It is possible that some school teams were more proficient at threat assessment, or used practices that were more effective. Teams might differ in important ways in how they gather data for an assessment, how they conceptualize and evaluate case data, and how they respond to students with prevention strategies. These are important areas for future investigation and are included in plans for additional statewide training.

Threat assessment is a violence prevention strategy but it also has implications for discipline. The present study focused on student and threat characteristics and threat outcomes, but did not investigate disciplinary consequences such as school suspension or expulsion, or legal outcomes such as arrest or incarceration, that might follow a threat assessment. A separate report examined the disciplinary and legal consequences assigned to students who received a threat assessment (Cornell et al., in press). However, threat assessment can be regarded as a more flexible alternative to zero tolerance discipline because it encourages school authorities

to consider the circumstances and seriousness of the student's behavior rather than apply a uniform and punitive consequence (Borum et al., 2010). Because of its focus on helping students to resolve conflicts and problems without resorting to violence, threat assessment is compatible with positive behavioral approaches to school discipline (Horner, Sugai, & Anderson, 2010) and restorative justice practices (Gregory, Clawson, Davis, & Gerewitz, 2016).

A final limitation is that the present investigation is retrospective and used threat case report data from the threat assessment team. There is a need for prospective studies that examine the entirety of the process from threat report to assessment to interventions and outcomes. Such research should examine how interventions are associated with student outcomes, as well as how the process affects school climate and safety. There is a need to compare outcomes in schools with and without threat assessment teams and to compare schools that use different threat assessment practices.

In summary, this study contributes new information regarding the prevalence and characteristics of student threats of violence toward others. These findings indicate that schools typically classified threats as serious threats if they were made by students in the middle grades, students who received special education services, involved battery, homicide, or weapon possession, and targeted an administrator. The results of this investigation suggest appropriate distinction of threats as serious or nonserious by threat assessment teams has the potential to support school threat assessment teams in identifying students who may attempt to carry out a threat of violence.

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