All Threats Are Not Equal:

Distinguishing Student Threats by Severity, Target, and Grade Level

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A Dissertation

Presented to

The Faculty of Curry School of Education

University of Virginia

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

By

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August 2020

Curry Programs in Clinical and School Psychology
Curry School of Education
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Charlottesville, Virginia

APPROVAL OF THE DISSERTATION DEFENSE

This dissertation ("All Threats Are Not Equal: Distinguishing Student Threats by Severity, Target, and Grade Level") has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the Degree of Philosophy.

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Dissertation Abstract

In 2013, Virginia became the first state to mandate public schools establish threat assessment teams to assess and manage threats of violence. This three-paper dissertation examined three key issues in student threat assessment: how student threats of violence differ in 1) seriousness, 2) target, and 3) grade level. Principals reported information regarding threat assessment cases through the annual School Safety Audit Survey, which provided data for all three studies.

The first paper examined the reliability and validity of the substantive/transient classification of student threats as a means to distinguish serious from non-serious threats. The sample consisted of 844 cases obtained from 339 schools that used the Virginia Student Threat Assessment Guidelines (VSTAG). The inter-rater reliability of the substantive/transient distinction was adequate at 70% (Kappa = .53). Although schools classified some cases as substantive that were likely transient, these results indicate that school-based teams made reliable distinctions between substantive and transient threats. Six logistic regression models were used to investigate the validity of the substantive/transient classification with threat characteristics and outcomes. As hypothesized, threats were more likely to be classified as substantive when they involved a higher number of risk factors. Moreover, substantive threats were 36 times more likely to be attempted than transient threats. Substantive threats were also more likely to result in suspensions, school placement change, and legal action, whereas transient threats were less likely to result in punitive or protective action. Overall, these results support use of the substantive/transient classification to distinguish serious threats with a higher risk of aggression from less serious threats that are more easily resolved.

The second paper examined the controversial issue of using threat assessment teams for student threats to harm oneself. The study identified distinctions between threats to harm oneself and threats to harm others in a sample of 2,861 cases from 926 schools. The majority of the student threats were to harm others (60%) rather than self (35%). Only a fraction of the student threats (5%) involved threats to both self and others. Logistic regression analyses indicated that girls were more likely than boys to make a threat to self. Although threats to self were more likely to be attempted compared to threats to others, they were less likely to result in disciplinary action and more likely to result in mental health services. Suicidal threats require a much different response from school-based teams than homicidal threats. School-based teams should refer a suicidal student for a threat assessment in the relatively infrequent case when the student also makes a threat to others.

The third paper investigated how threats differed across k-12 grades in a sample of 3,282 cases from 1,021 schools. The frequency of student threats peaked in the 4th and 5th grades, but decreased following the 9th grade. Logistic regression analyses indicated, as grade level increased, girls were more likely than boys to threaten to physically assault someone, but less likely to make a threat involving weapons. Compared to White students, Black and Hispanic students were less likely to make a bomb threat, as grade level increased. Special education status was not distinguishable by threat characteristics or outcome. As grade increased, older students were more likely than younger students to threaten to physically assault someone, but less likely to make a threat involving weapons or threaten to kill. Bomb threats were not distinguishable by grade level. Notably, 9th grade students were two times more likely to threaten physical assault and to attempt to carry out their threat compared to younger students. These

findings support the general assumption that school-based teams should take threats by students in higher grades more seriously than threats by students in lower grades.

Although these studies were correlational and cannot establish a causal effect, the results suggest that school-based teams differentiate threats and respond differently based on the judged seriousness of the threat, whether it involves a threat to self or other, and student grade level. Threat assessment is not a disciplinary consequence that follows a zero-tolerance approach in treating all threats the same. In contrast, student threat assessment is a violence prevention strategy that takes a differentiated and individualized approach to assessment and management of student threats of violence.

Project Overview

Threat assessment originated as a law enforcement strategy to prevent serious incidents of targeted violence, such as terrorism, stalking, public figure assassination, and workplace violence (Fein & Vossekuil, 1999; Meloy, Hart, & Hoffmann, 2014; Rugala & Isaacs, 2003). A series of school shootings led educational and law enforcement authorities to recommend threat assessment for primary and secondary schools (Fein et al., 2002; O'Toole, 2000). However, school-based threat assessment requires different standards of practice and management strategies compared to law enforcement based threat assessment. Specifically, threat assessment in schools involves children and adolescents rather than potential assassins of judges or the U.S. President. School-based teams must take a developmental approach when assessing student threats, recognizing that many threats are just expressions of emotions and vary by age.

Moreover, law enforcement authorities cautioned schools not to rely on a single profile or a presumed type of student (Amman et al., 2017; O'Toole, 2000). Although retrospective studies identified common behavioral patterns among school shooters prior to the violent act (O'Toole, 2000; Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002; Meloy, Hoffmann, Guldimann, & James, 2012), the Federal Bureau of Investigation emphasizes that "there is no demographic profile of a targeted violent offender" (Amman et al., 2017, p. 21). Consequently, school-based threat assessment is an objective analysis of case-specific factors that are dynamic (Cornell & Datta, 2017; Meloy et al., 2014). The practice recognizes that certain factors and management strategies could mitigate or aggravate a threat (Amman et al., 2017). School-based teams must consider these individual points of distinction, as well as the context in which the threat occurred, to avoid an overreaction to a non-serious threat or an inaccurate assessment of an imminent act of violence (Cornell & Sheras, 2006).

Threat assessment is becoming an effective violence prevention strategy in schools (APA, 2013; NASP School Safety and Crisis Response Committee, 2014). Despite the widespread endorsement (Woitaszewski, Crepeau-Hobson, Conolly, & Cruz, 2018) and implementation of threat assessment, many aspects of school-based threat assessment have not been studied (Cornell et al., 2018; O'Toole, 2000). The purpose of this dissertation is to explore how student threats differ in seriousness, target, and grade level. Results will assist schools to appropriately assess and respond to all potential acts of student violence.

Threat assessment is defined as a systematic approach to violence prevention intended to assess whether an individual poses a serious risk of violence and to respond with appropriate prevention steps (Cornell, 2015; Vossekuil et al., 2002). Virginia became the first state to mandate the establishment of threat assessment teams for all public schools (Code of Virginia, §22.1–79.4), creating a unique opportunity to examine the implementation of school-based threat assessment. Preliminary statewide results of Virginia threat assessment procedures indicated that schools need a better understanding of how to differentiate student threats by seriousness of intent, target of the threat, and grade level of the student making the threat of violence (Cornell et al., 2016). This three-paper dissertation explores these differences by first distinguishing between serious and non-serious threats of violence that were classified using the Virginia Student Threat Assessment Guidelines (VSTAG). The second paper distinguishes between threats to self and threats to others to encourage schools to conduct threat assessments for threats of violence to others, rather than for students who are suicidal. The third paper investigates grade-level distinctions among student threats of violence and their associations with certain threat characteristics and outcome.

Paper one. Threat assessment teams assess the level of risk associated with each threat. School-based teams should recognize that threats are common among youths, but usually not serious and not carried out (Cornell & Sheras, 2006; Nekvasil & Cornell, 2012). Consequently, a key question is whether a threat is serious, meaning that it is credible and increases concern of a violent act, or not serious, indicating that there is an explanation and straightforward resolution (Cornell & Sheras, 2006). But how do teams differentiate serious and non-serious threats of violence? This distinction is a critical issue regarding the application of threat assessment and recognized by the Virginia Student Threat Assessment Guidelines (VSTAG; Cornell & Sheras, 2006; Fein et al., 2002; O'Toole, 2000). This study examined the reliability and validity of the classification distinction between serious and non-serious threats in 339 schools using VSTAG.

VSTAG is a threat assessment model that was developed to assess and manage student threats (Cornell & Sheras, 2006; O'Toole, 2000). Similar to the broadly recognized serious/non-serious distinction in the clinical practice of threat assessment, the model guides teams to assess and manage threats according to the transient/substantive distinction using a seven-step decision tree (Cornell & Sheras, 2006). Transient or non-serious threats are expressions of emotions (e.g., jokes, anger, humor, fear) with no genuine intent to harm someone. This type of emotional expression is typical when children have exhausted their problem-solving strategies, resulting in a threat of violence to acquire a desired outcome. These threats are easily resolved with an explanation or apology and do not require protective or punitive action. Substantive or serious threats are behaviors or statements that represent an increased risk of harm to others. Substantive threats require protective and/or punitive action to ensure the threat is not carried out.

According to the VSTAG model, the transient/substantive distinction is discerned from student characteristics, the nature of the threat, and the context of the threat (Cornell & Sheras,

2006). Contextual factors include the student's intention (e.g., to joke, to scare, to warn) and the situation in which the threat arose. Consequently, this paper investigated the classification distinction within different threat natures (e.g., threat to kill, to bomb the school, to harm self and others), modes of communication (e.g., directed to the intended target or a third party), and types of weapons (e.g., firearm, knife) threatened or possessed by the student.

School shooters displayed warning behaviors that indicated a serious threat to harm (Meloy et al., 2012; Monahan & Steadman, 1994; Vossekuil et al., 2002). This paper assessed warning behaviors to further distinguish the transient and substantive classifications and included the student's history of violence, leakage of violent intentions, weapon involvement, preoccupation with violence or the target prior to the threat, recruitment of others to participate in the threatened act of violence, preparation for an attack, and other disturbing behaviors. Leakage is defined as verbal or written communicate regarding an individual's intent to harm the intended target (Meloy & O'Toole, 2011; O'Toole, 2011). Due to the increased risk of a student possessing a weapon at the time of the threat (Meloy et al., 2012; Vossekuil et al., 2002), the mention and possession of a weapon at school were considered to be more dangerous and a higher risk factor for a student to carry out an act of violence. A student preparing for an attack would parallel other acts of targeted violence in adult populations and involve completing trial runs, such as carrying a weapon to school to test the boundaries for school security and discipline action (O'Toole, 2000; Vossekuil et al., 2002). Other disturbing behaviors involved suicidal ideation, auditory/visual hallucinations, and/or detailed manifestos of the planned attack (Hoffmann & Roshdi, 2013; Meloy et al., 2012). It was hypothesized that substantive threats would be more likely to involve an older student, the possession of a weapon, a higher number of warning behaviors compared to transient threats.

According to the VSTAG's seven-step decision tree, threat assessment teams must respond accordingly to the threat based on its classification (Cornell & Sheras, 2006). To ensure school management strategies corresponded with the threat classifications, several threat outcomes were measured, such as whether the student attempted to carry out the threat, received an out-of-school suspension, changed school placements, and/or received legal action. Compared to transient threats, it was hypothesized that substantive threats would be more likely to result in more serious threat outcomes (i.e., attempts, out-of-school suspensions, legal action, and changes in school placement).

The sample consisted of 844 student threat cases reported by school principals from the state's annual school safety audit survey. To examine the reliability of the VSTAG transient/substantive distinction, team classifications were compared to research coder classifications. It was hypothesized that there would be high agreement between research coders and threat assessment teams. Results indicated that reliability was adequate at 70% (Kappa =.53) and comparable to diagnostic field trials for mental disorders (Regier et al., 2013). However, a pattern of disagreement occurred, indicating that schools classified some cases as substantive that were likely transient. Training implications are noted in the manuscript.

To examine the validity of the classification distinction, six logistic regression models investigated the association of the transient or substantive classification with threat characteristics and outcomes. As hypothesized, threats were more likely to be classified as substantive when they involved a higher number of warning behaviors (e.g., history of violence, weapon use, and leakage). Threats made by older students or threats of harm to self and others were also more likely to be substantive. Students that mentioned the use or possession of a bomb or knife were classified as a serious threat of violence. Of note, substantive threats were 36 times

more likely to be attempted compared to transient threats, consistent with the notion that substantive threats pose a serious risk of violence and that transient threats are not credible or imminent. This finding is at the crux of the transient/substantive distinction. Substantive threats were also four times more likely to result in an out-of-school suspension, nine times more likely to result in a change in placement, and 15 times more likely to result in legal action compared to transient threats. These distinctions in threat outcomes correspond with the need for punitive and/or protection action for substantive threats compared to straightforward resolutions for transient threats. This paper indicates there are patterns of distinction among the threat characteristics, warning behaviors, and threat outcomes for serious and non-serious student threats. Overall, these findings support that threats can be meaningfully distinguished between transient threats and substantive threats.

The paper, "The Distinction between Transient and Substantive Student Threats," was first presented as a poster at the American Psychological Association Annual Conference in August 2016. The paper was published in *Journal of Threat Assessment and Management* in January 2018 (Burnette, Datta, & Cornell, 2018).

Paper two. Threat assessment originated as a violence prevention strategy for threats to harm others. However, many high-profile school shooters were also suicidal. Vossekuil and colleagues (2002) examined 37 school-based attacks that were committed by 41 attackers between 1974 and 2000. The majority (78%) had a history of suicidal ideation or suicidal attempts and five (13%) killed themselves during the attack. This combination of homicidal and suicidal behaviors led individuals to question whether threat assessment should also be applied to threats to self.

The recent Virginia law not only directed that all public schools establish threat assessment teams, but also mandated that teams evaluate "a student [that] poses a threat of violence or physical harm to self or others" (*Code of Virginia,* § 22.1-79.4). Thus, suicide assessment was effectively re-categorized within threat assessment procedures. This change was unanticipated for school-based mental health personnel, because it challenged existing, evidence-based suicide assessment screening tools and procedures (Cornell et al., 2016; SAMHSA, 2017; Warren, Mullen, & McEwan, 2014). But why should schools implement threat assessment for threats to self? Distinguishing threats to self from threats to others is a key issue in the current practice of school-based threat assessment. To distinguish suicide assessment from threat assessment, the second paper investigated how frequently threats to self, threats to others, and threats to self and others occur. Next, the second paper compared threats to self and threats to others to evaluate how these threat types differ in case characteristics and how the school responses differ for the type of threat.

The Centers for Disease Control and Prevention (2017) reported comparable overall prevalence rates of homicidal (18.4%) and suicidal (17%) causes of death in youths between 2001 and 2016. However, the prevalence of homicidal and suicidal youth deaths differs at school. Specifically, the CDC also reported that a total of 632 violent youth deaths occurred at schools between 1992 and 2014 (Musu-Gillette, Zhang, Wang, Zhang, & Oudekerk, 2017). Of the reported 632 violent deaths at school nationwide, 127 (approximately 20%) were suicides and 505 (80%) were homicides. Thus, homicides are more likely to occur at school than suicides.

There is an abundance of research regarding suicidal ideation and behavior, which has been used to inform the practice of suicide risk assessment (Brock & Reeves, 2018; Gangwisch, 2010). Typical case characteristics of a threat to self involve a sense of hopelessness or

helplessness, bullying or a break-up that causes stress or depression, and/or a history of self-harm or suicidal attempts (Bridge, Goldstein, & Brent, 2006; Brock & Reeves, 2018, NASP, 2015, Rudd et al., 2006; Valois, Zullig, & Hunter, 2013). Conversely, individuals that threaten others typically have a history of violence (Monahan & Steadman, 1994), which is not observed in suicidal individuals (Brock & Reeves, 2018). Additional risk factors for violence involve the individuals acquiring weapons, leaking their intentions, and tending to display an obsession with violence (Meloy & O'Toole, 2011; Vossekuil et al., 2002).

Regarding assessment procedures, suicide assessment is typically administered by a single mental health professional, whereas threat assessment is conducted by a multi-disciplinary school-based team (Brock & Reeves, 2018; Cornell & Sheras, 2006). School counselors or psychologists conduct a suicide assessment from a supportive perspective compared to the threat assessment team's investigative perspective. Lastly, the management approaches for suicide assessment typically involve parental notification and/or therapeutic services. Conversely, a student apology is an appropriate school response in the event of a non-serious threat, while mental health services, disciplinary and/or legal action is required for a serious threat assessment case.

This study first considered the question of prevalence, how often do students threaten to harm others compared to themselves, and how often do threats to self and others co-occur? If threats to self and others frequently co-occur, then it seems more defensible for school-based teams to combine these hybrid cases in a single assessment. The second research question to consider was "How do threats to self and threats to others differ in characteristics?" The third research question considered was "How do threats to self and threats to others differ in school

responses?" If threats to self and threats to others differ in prevalence rates, then these types of threats likely differ in other discernible ways, such as characteristics and outcomes.

Statewide threat assessment data were available from the annual safety audit survey completed by school principals. The total descriptive sample consisted of 2,861 threat cases reported by 949 schools. The total sample was used to answer the first research question regarding the prevalence rates of all three threat types. To answer the remaining research questions, 159 cases of threats to both self and others were removed from the sample in order to compare threats to self and threats to others. The final analytic sample included 2,702 threats cases reported by 926 schools.

To distinguish threats to self and threats to others, this paper examined four threat characteristics: whether the student had a history of violence or disciplinary referrals, threatened the use of or possession of a weapon, and communicated the threat to the intended target, to a third party or implied it through concerning behaviors.

Because schools implement different management strategies for threats to self and threats to others (Brock & Revees, 2018; Cornell & Sheras, 2006), five threat outcomes were measured: whether the student attempted to carry out the threat, was referred for mental health services, and/or received an out-of-school suspension, change in placement, or legal action. Because of the low number of threats that were either attempted (3.5%) or carried out (0.5%) in the sample, these categories were combined into the "attempted threat" category. Mental health services included referrals for school counseling, mental health evaluation (in or outside of the school system) or other therapeutic services. Approximately 92% of the out-of-school suspensions were short-term (1-10 days).

To answer the first question, three types of threat cases were identified: (1) threat to others (60%), (2) threats to self (35%), and (3) threats to both self and others (5%). To answer the second and third questions, six regression models investigated the association of threat characteristics and threat outcomes with threats to self compared to threats to others.

These analyses found that students who made a threat to self were more likely to be females and communicate the threat implicitly versus directly compared to students who made threats to others. Of note, threats to self were more likely to be attempted and receive mental health services compared to threats to others. This coincides with literature that indicates suicidal ideation/behaviors occur at a higher prevalence rate in schools and differ in risk factors compared to violent behavior (Brock & Revees, 2018; Meloy et al., 2012; Vossekuil et al., 2002). In addition, threats to self were much less likely to be associated with more severe threat characteristics, such as weapon involvement. Threats to self were also less likely to result in punitive school responses (e.g., suspensions, change in placement, legal action). These findings indicate threats to self and threats to others are distinguishable and require different violence prevention strategies for schools to effectively manage and respond to that particular threat. Our findings call for attention and policy changes for states conducting threat assessments regarding self-harming and/or suicidal students.

The paper, "School Threat Assessment Versus Suicide Assessment: Statewide Prevalence and Case Characteristics," was presented as a poster at the American Psychological Association Annual Conference in August, 2017. The paper was published in the journal of *Psychology in the Schools* (Burnette, Huang, Maeng, & Cornell, 2019).

Paper three. Cultural portrayals of school shootings often depict angry, high school students seeking revenge in response to a grievance. Adolescence is, in fact, a developmental

period with increased aggression, violence, risky behavior (Borum, 2000; Kann et al., 2017; Moffit, 1993). Although threats of violence occur more frequently in upper elementary and middle school (Cornell et al., 2016), younger children are prone to making more impulsive statements that are expressions of anger, fear, or humor and do not reflect a serious intent to harm someone (Cornell & Sheras, 2006; Greenberg, Kusche´, & Riggs, 2002). Conversely, middle and high school students are known to make more credible and serious threats (Cornell et al., 2018). But how do schools distinguish between a violent threat made by a 3rd grade student compared to a 9th grade student? Grade-level differences have not been identified regarding threatened acts of violence. School-based teams should be aware of how student threats change across grade levels and what grade levels experiences the largest changes. The current study investigated potential grade-level distinctions across threat characteristics and outcome to help schools identify threats that pose a serious risk of violence compared to emotional expression and/or student misbehavior.

The developmental pathway to violence is associated with both static and dynamic risk factors (Borum, 2000; Cottle, Lee, & Heilbrun, 2001; Moffit, 1993; Monahan & Steadman, 1994). Static factors include age, gender, and early initiation of violence or delinquency, whereas dynamic risk factors include conduct problems, negative peer relationships, and family environment/conflict. Previous researchers investigated whether age-related differences and dynamic risk factors contributed to the accuracy of risk assessments for adjudicated juveniles (Vincent, Perrault, Guy, & Gershenson, 2012). Results indicated that risk assessments significantly predicted recidivism in adolescents but not children. These findings suggest that schools should consider developmental differences between children and adolescents when assessing their risk for violence.

A significant portion of high school students engage in aggressive or threatening behaviors. Within a national representative sample of high school students, 24% reported being in a physical fight within the last 30 days; 19% reported being bullied; 6% had been threatened or injured with a weapon; and 4% reported carrying a weapon to school (Kann et al., 2017). Regarding threats of violence, researchers found that 12% of high school students reported being threatened and 9% reported that the threats were carried out (Nekvasil & Cornell, 2012). These studies indicate that aggression and threats are common among adolescents and involve risk factors (e.g., history of violence, weapon acquisition) that reflect adolescents' increasing risk of violence (Cornell & Sheras, 2006; Meloy et al., 2012).

There are grade-level differences in aggressive and threatening behaviors. Researchers found that 55% of 9th and 10th grade students reported being in a physical fight compared to 38% of 11th and 12th grade students (Kann et al., 2018). However, upperclassmen had a slightly higher prevalence of carrying a weapon to school (mean approximately 5%) compared to 9th grade students (3%). Concerning threatened violence, 12th grade students were less likely to report being threatened than 9th grade students. Overall, these studies suggest that there is a decline in aggressive and threatening behaviors after 9th grade.

This study investigated the following research question: "How do threats of violence differ in prevalence, characteristics, and outcome across grade level?" It was hypothesized that older students would be more likely to make a threat involving a weapon compared to younger students. Older students were also hypothesized to be more likely to make a threat to kill, bomb, or physically assault someone compared to younger students. Lastly, it was hypothesized that older students would be more likely than younger students to attempt to carry out their threat.

The sample consisted of 3,282 threat cases reported by 1,033 schools who completed the School Safety Audit Survey during two academic years (2013-14 and 2014-15). To identify grade-level distinctions for school-based teams, four kinds of threat characteristics were measured: (1) threats involving weapons; (2) threat to kill; (3) bomb threat; and (4) threat to physically assault someone. Due to the increased risk associated with older student threats of violence (Burnette et al., 2018; Cornell et al., 2018; Cornell et al., 2004), it was important to investigate possible grade-level distinctions regarding whether the student attempted to carry out the threat.

Descriptive statistics were calculated for gender, race, SPED status, threat characteristics, and outcome across both years of data collection. Four logistic regression models investigated the association of threat characteristics with grade level. A fifth regression model examined the likelihood of a student attempting to carry out a threat as a function of grade level. All models controlled for gender, race/ethnicity, and SPED status due to the disproportionate number of males, minorities, and students in special education referred for a threat assessment.

Results indicated that student threats occur across k-12 grades, but peak in the 4th and 5th grades. The frequency of threats significantly decreased after the 9th grade. As grade level increased, females were more likely than males to threaten to physically assault someone, but less likely to make a threat involving weapons. Compared to White students, Black and Hispanic students were less likely to make a bomb threat, as grade level increased. Black students were more likely than White students to threaten to physically assault someone. Special education status was not distinguishable by threat characteristics or outcome, as grade level increased. As hypothesized, older students were more likely than younger students to threaten to physically assault someone. However, older students were less likely than younger students to make threats

involving weapons and to threaten to kill someone. Bomb threats were not distinguishable by grade level. Regarding threat outcome, a curvilinear effect was observed in which the attempted rate varied across grade level. Of note, 9th grade students were more likely than other grades to threaten to physically assault someone and to attempt to carry out a threat. Overall, these findings support the notion that school-based teams should consider threats by older students more seriously than threats by younger students.

This paper, "Grade-Level Distinctions in Student Threats of Violence," was first presented as a poster at the American Psychology-Law Society Annual Conference in March 2019. The paper will be submitted to the *Journal of School Violence.*

Implications

Overall, the first paper provided evidence for the critical issue of distinguishing between serious and non-serious threats to better prevent an act of violence. The second paper maintained that threat assessment and suicide risk assessment should be considered separate practices in schools. The third paper indicated that older students are less likely to *threaten* certain behaviors, but continue to pose an increased risk of *committing* violence. School-based teams should be aware of the developmental difference in threat frequency, characteristics, and outcome when evaluating student threats of violence. Together, these studies examined the implementation, management, and prevention of school violence.

Currently, Florida, Kentucky, Maryland, Pennsylvania, Ohio, Virginia, and Wisconsin mandate schools to have threat assessment teams to assess and intervene students that pose a threat. Eleven additional states have implemented laws or statutes regarding school-based threat assessment (Erwin, 2019; Woitaszewski, et al., 2018). All states enacted laws *in response* to horrifying school shootings, such as the 2007 Virginia Tech shooting, the 2012 Sandy Hook

Elementary school shooting, and the 2018 Stoneman Douglas High School shooting. As the practice becomes more widespread and other states consider threat assessment legislation to *prevent* violence, this dissertation will caution individuals from implementing a broad, fixed procedure for evaluating and managing all threats of violence. Rather, school authorities and legislative bodies should be informed of evidence-based practices in school threat assessment that are shown to appropriately distinguish student threats. In doing so, school authorities will avoid common misperceptions (e.g., schools are dangerous places, school shooters often commit suicide) regarding school violence that are often propagated by fear and the media (Cornell, 2015; Burnette et al., 2019). By implementing threat assessment, school authorities will also avoid disciplinary consequences that follow a zero-tolerance approach to treating all threats the same. As such, in each paper, important training and/or policy implications are noted to encourage school-based teams to recognize these distinctions among student threats when conducting threat assessments.

References

American Psychological Association (APA). (2013). Gun violence: Prediction, prevention, and policy. Retrieved from http://www.apa.org/pubs/info/reports/gun-violence-prevention.aspx

Amman, M., Bowlin, M., Buckles, L., Burton, K. C., Brunell, K. F., Gibson, K. A., …Robins, C. J. (2017). *Making prevention a reality: identifying, assessing, and managing the threat of targeted attacks*. Washington, DC: U.S. Department of Justice. Retrieved from: https://www.fbi.gov/file-repository/making_prevention_a_reality_identifying_assessing_managing_threats_of_ta.pdf.

Borum, R. (2000). Assessing violence risk among youth. *Journal of Clinical Psychology*, *56*, 1263-1288.

Bridge, J. A., Goldstein, T. R., & Brent, D. A. (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry*, *47*, 372-394.

Brock, S. E., & Reeves, M. A. L. (2018). School suicide risk assessment. *Contemporary School Psychology, 22*, 174-185.

Burnette, A. G., Datta, P., & Cornell, D. (2018). The distinction between transient and substantive student threats. *Journal of Threat Assessment and Management*, *5*, 4-20.

Burnette, A. G., Huang, F., Maeng, J. L., & Cornell, D. (2019). School threat assessment versus suicide assessment: Statewide prevalence and case characteristics. *Psychology in the Schools, 56,* 378-392.

Centers for Disease Control and Prevention (CDC). (2017). Web-based Injury Statistics Query and Reporting System (WISQARS) (Fatal Injury Data Visualization Tool, 2001–2016).

National Center for Injury Prevention and Control. Retrieved from https://wisqars-viz.cdc.gov

Cornell, D. (2015). Our schools are safe: Challenging the misperception that schools are dangerous places. *American Journal of Orthopsychiatry*, *85*, 217-220.

Cornell, D., & Datta, P. (2017). Threat assessment and violence prevention. In L. Wilson (Ed.), *The Wiley handbook of the psychology of mass shootings* (pp. 353–371). Hoboken, NY: Wiley.

Cornell, D., Maeng, J., Burnette, A.G., Datta, P., Huang, F., & Jia, Y. (2016). *Threat Assessment in Virginia Schools: Technical Report of the Threat Assessment Survey for 2014-2015.* Charlottesville, VA: Curry School of Education, University of Virginia.

Cornell, D., Maeng, J. L., Burnette, A. G., Jia, Y., Huang, F., Konold, T., …Meyer, P. (2018). Student threat assessment as a standard school safety practice: Results from a statewide implementation study. *School Psychology Quarterly*, *33,* 213-222.

Cornell, D., & Sheras, P. (2006). Guidelines for responding to student threats of violence. Longmont, CO: Sopris West.

Cornell, D. G., Sheras, P. L., Kaplan, S., McConville, D., Douglass, J., Elkon, A., . . . Cole, J. (2004). Guidelines for student threat assessment: Field-test findings. *School Psychology Review, 33*, 527–546.

Cottle, C. C., Lee, R. J., & Heilbrun, K. (2001). The prediction of criminal recidivism in juveniles: A meta-analysis. *Criminal Justice and Behavior*, *28*, 367-394.

Erwin, B. (2019). School safety: Prevention. *National Conference of State Legislatures.* Retrieved from: http://www.ncsl.org/research/education/school-safety-prevention636876490.aspx

Fein, R. A., & Vossekuil, B. (1999). Assassinations in the united states: An operational study of recent assassins, attackers, and near-lethal approachers. *Journal of Forensic Sciences, 50*, 221–233.

Fein, R. A., Vossekuil, B., Pollack, W. S., Borum, R., Modzeleski, W., & Reddy, M. (2002). Threat assessment in schools: A guide to managing threatening situations and creating *safe school climates.* Washington, DC: U.S. Department of Education, Office of Elementary and Secondary Education, Safe and Drug-Free Schools Program and U.S. Secret Service, National Threat Assessment Center.

Gangwisch, J. E. (2010). Suicide risk assessment. *Current Medical Literature: Psychiatry, 21,* 113-119.

Greenberg, M.T., & Kusche´, C.A. (1993). *Promoting social and emotional development in deaf children: The PATHS project.* Seattle: University of Washington Press

Hoffmann, J., & Roshdi, K. (2013). School shootings in Germany: Research, prevention through risk assessment and threat management. In N. Böckler, T. Seeger, P. Sitzer, & W. Heitmeyer (Eds.), *School shootings* (pp. 363–378). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4614-5526-4_16

Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Queen, B., … & Ethier, K. (2017). Youth Risk Behavior Surveillance — United States, 2017. *MMWR, 67*, 1–479. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/ss6708.pdf

Meloy, J. R., Hart, S. D., & Hoffmann, J. (2014). Threat assessment and threat management. In J. R. Mely & J. Hoffmann (Eds.), *International handbook of threat assessment* (pp.3-17). New York, NY: Oxford University Press.

Meloy, J. R., Hoffmann, J., Guldimann, A., & James, D. (2012). The role of warning behaviors

in threat assessment: An exploration and suggested typology. *Journal of Behavioral Sciences & the Law, 30,* 256–279.

Meloy, J. R., & O'Toole, M. E. (2011). The concept of leakage in threat assessment. *Behavioral Sciences & the Law, 29*, 513–527.

Moffitt, T. (1993). Life course persistent and adolescence limited antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Monahan, J., & Steadman, H. J. (1994). Violence and mental disorders: Developments in risk assessment. Chicago, IL: The University of Chicago Press.

Musu-Gillette, L., Zhang, A., Wang, K., Zhang, J., and Oudekerk, B.A. (2017). *Indicators of school crime and safety: 2016* (NCES 2017-064/NCJ 250650). National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. Washington, DC.

National Association of School Psychologists (NASP). (2015). Preventing youth suicide: Brief facts and tips. Retrieved from https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/preventing-youth-suicide

National Association of School Psychologists (NASP) School Safety and Crisis Response Committee. (2014). *Threat Assessment for School Administrators and Crisis Teams*. Bethesda, MD: National Association of School Psychologists. Retrieved from https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/threat-assessment-at-school/threat-assessment-for-school-administrators-and-crisis-teams

Nekvasil, E., & Cornell, D. (2012). Student reports of peer threats of violence: Prevalence and outcomes. *Journal of School Violence, 11*, 357–375.

O'Toole, M. E. (2000). The school shooter: A threat assessment perspective. Quantico, VA: FBI Academy, National Center for Analysis of Violent Crime. Retrieved from http://www.fbi.gov/statsservices/publications/school-shooter

Regier, D. A., Narrow, W. E., Clarke, D. E., Kraemer, H. C., Kuramoto, S. J., Kuhl, E. A., & Kupfer, D. J. (2013). DSM–5 field trials in the United States and Canada, Part II: Test-retest reliability of selected categorical diagnoses. *The American Journal of Psychiatry, 170*, 59–70.

Rudd, M. D., Berman, A. L., Joiner, T. E., Nock, M. K., Silverman, M. M., Mandrusiak, M., ... & Witte, T. (2006). Warning signs for suicide: Theory, research, and clinical applications. *Suicide and Life-Threatening Behavior*, *36*, 255-262.

Rugala, E. A., & Isaacs, A. R. (Eds.). (2003). *Workplace violence: Issues in response*. Critical Incident Response Group, National Center for the Analysis of Violent Crime, FBI Academy. Retrieved from: https://www.ncjrs.gov/App/publications/Abstract.aspx?id=204462

Substance Abuse and Mental Health Services Administration (SAMHSA). (2017). Suicide prevention. Retrieved from: https://www.samhsa.gov/suicide-prevention

Threat Assessment Teams and Oversight Committees, Va. Code §22.1–79.4. (2013).

Valois, R. F., Zullig, K. J., & Hunter, A. A. (2015). Association between adolescent suicide ideation, suicide attempts and emotional self-efficacy. *Journal of Child and Family Studies*, *24*, 237-248.

Vincent, G. M., Perrault, R. T., Guy, L. S., & Gershenson, B. G. (2012). Developmental issues in risk assessment: Implications for juvenile justice. *Victims & Offenders*, *7*, 364-384.

Vossekuil, B., Fein, R., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and*

findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States. Washington, DC: U.S. Secret Service and U.S. Department of Education.

Warren, L. J., Mullen, P. E., and McEwan, T. E. (2014). Explicit threats of violence. In J. Reid Meloy & Jens Hoffmann (Eds.), *The international handbook of threat assessment* (pp. 18-38). New York, NY: Oxford University Press.

Woitaszewski, S., Crepeau-Hobson, F., Conolly, C., & Cruz, M. (2018). Rules, requirements, and resources for school-based threat assessment: A fifty state analysis. *Contemporary School Psychology*, *22*, 125-134.

Abstracts

Manuscript One: The Distinction Between Transient and Substantive Student Threats

Many schools across North America have adopted student threat assessment as a violence prevention strategy. The Virginia Student Threat Assessment Guidelines (VSTAG) is a threat assessment model that emphasizes distinguishing between substantive threats that are serious and transient threats that are not serious. This retrospective study investigated the interrater reliability and criterion-related validity of this distinction in a sample of 844 student threat cases from 339 Virginia public schools. To assess inter-reliability for the transient versus substantive distinction, research coders independently classified a subsample of 148 narratives, achieving classification agreement with schools of 70% (Kappa = .53). Logistic regression analyses examined transient and substantive threat differences in threat characteristics and outcomes. Threats were more likely to be classified as substantive when they included warning behaviors (e.g., history of violence, weapon use, leakage, etc.), were made by older students, mentioned the use of a bomb or a knife, and involved threats to harm self as well as others. Although only 2.5% of threats were attempted, substantive threats were 36 times more likely to be attempted than transient threats. Substantive threats were more likely to result in out-of-school suspension, change in school placement, and/or legal action. Overall, these findings supported the transient/substantive distinction, but indicated some training needs for school teams.

Manuscript Two: School Threat Assessment versus Suicide Assessment: Statewide Prevalence and Case Characteristics

Threat assessment is a violence prevention strategy used to investigate and respond to threats to harm others. In 2013, Virginia mandated the use of threat assessment teams for threats to self and to others, effectively subsuming suicide assessment with threat assessment and raising questions about the distinction between the two practices. In a statewide sample of 2,861 cases from 926 schools, there were more threats to others (60%) than self (35%), with only five percent involving threats to both self and others. Threats to self were more likely to be made by females (*OR* = 3.38) and students with fewer prior disciplinary actions (*OR* = 0.48). Threats to self were much less likely to involve a weapon (*OR* = 0.07), but more likely to be attempted (*OR* = 1.50) and result in mental health services (*OR* = 2.96). They were much less likely to result in out-of-school suspensions (*OR* = 0.07), legal action (*OR* = 0.17), and/or changes in placement (*OR* = 0.53). Overall, these findings support a clear distinction between suicide risk assessment versus threat assessment.

Manuscript Three: Grade-Level Distinctions in Student Threats of Violence

Student threat assessment is a violence prevention practice used to investigate and respond to k-12 grade threats. Although student threat assessment should consider how threatening behaviors vary from childhood through adolescence, research is limited. This study investigated grade level differences in a statewide sample of 3,282 cases from 1,021 schools. Student threats significantly differed across grade level in student demographics, threat characteristics, and outcome. As grade increased, students were more likely to threaten to physically assault someone (*OR* = 1.11), but less likely to make a threat involving weapons (*OR*

= 0.95) or threaten to kill (*OR* = 0.95). Fifth grade had the highest frequency of threats, but 9th grade students were more likely to threaten to physically assault someone and to attempt threats of violence (*OR* = 1.02). Findings suggest schools should make grade-differentiated responses to student threats of violence.

Manuscript One

The Distinction between Transient and Substantive Student Threats

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Published January 2018

Journal of Threat Assessment and Management

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We thank members of the project research team including Francis Huang, Yuane Jia, Tim Konold, Jennifer Maeng, Marisa Malone, Patrick Meyer, Kathan Shukla, and Shelby Stohlman. This research was supported by Grant #NIJ 2014- CK-BX-0004 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this report are those of the authors and do not necessarily reflect those of the Department of Justice. Dr. Cornell is the principal developer of the Virginia Student Threat Assessment Guidelines and lead author of Guidelines for Responding to Student Threats of Violence.

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Abstract

Many schools across North America have adopted student threat assessment as a violence prevention strategy. The Virginia Student Threat Assessment Guidelines (VSTAG) is a threat assessment model that emphasizes distinguishing between substantive threats that are serious and transient threats that are not serious. This retrospective study investigated the inter-rater reliability and criterion-related validity of this distinction in a sample of 844 student threat cases from 339 Virginia public schools. To assess inter-reliability for the transient versus substantive distinction, research coders independently classified a subsample of 148 narratives, achieving classification agreement with schools of 70% (Kappa = .53). Logistic regression analyses examined transient and substantive threat differences in threat characteristics and outcomes. Threats were more likely to be classified as substantive when they included warning behaviors (e.g., history of violence, weapon use, leakage, etc.), were made by older students, mentioned use of a bomb or a knife, and involved threats to harm self as well as others. Although only 2.5% of threats were attempted, substantive threats were 36 times more likely to be attempted than transient threats. Substantive threats were more likely to result in out-of-school suspension, change in school placement, and/or legal action. Overall, these findings supported the transient/substantive distinction, but indicated some training needs for school teams.

Keywords: threat assessment; transient and substantive distinction; school safety

The Distinction between Transient and Substantive Student Threats

In response to highly publicized and harrowing school shootings, U.S. government authorities in law enforcement and education recommended the implementation of threat assessment in schools to improve school safety (American Psychological Association, 2013; Fein et al., 2002; National Association of School Psychologists School Safety and Crisis Response Committee, 2014; O'Toole, 2000). Despite this widespread support, there is a dearth of research on the threat classification process.

Threat assessment is a systematic approach to violence prevention intended 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) and then to take appropriate prevention steps. Given that threats arise in different contexts and circumstances, they require different management strategies.

How do schools differentiate serious from non-serious threats of violence? This distinction is a critical issue in threat assessment (Cornell & Sheras, 2006; Fein et al., 2002; O'Toole, 2000). One way to address this matter is to evaluate how threat assessment teams classify and manage serious and non-serious threats. Although all threats should be taken seriously for safety purposes (O'Toole, 2000), we use "serious" in this study to mean a threat that has been determined to pose a non-trivial risk of violence because an individual has both the means and intent to carry out the threat. The purpose of this study is to examine the Virginia Student Threat Assessment Guidelines (VSTAG) use of the transient-substantive classification to distinguish threats that are serious from those that are not serious.

Prevalence of Threats and Violence in Schools

Student threats of violence are relatively common in schools (Nekvasil & Cornell, 2012). Nekvasil and Cornell (2012) surveyed 3,756 high school students and asked whether another student had threatened to harm them in the past 30 days. Approximately 12% of students reported being threatened. However, 23% of the 451 threatened students regarded the threat as serious, implying that more than three-fourths of students thought the threat would not be carried out. In contrast, approximately 9% reported that the threat was carried out. This rate of aggression might seem high in an adult workplace setting, but as summarized below, school surveys find that aggressive behavior is relatively common in an adolescent school setting.

Although student threats usually are not carried out, previous research found a correlation between threats of violence and violent behavior (Nekvasil & Cornell, 2012; Singer & Flannery, 2000; Warren, Mullen, Thomas, Ogloff, & Burgess, 2008). Singer and Flannery (2000) investigated the relationship between students' threats of violence to others and self-reported violent behaviors, and concluded that student threats should not be ignored. Compared to students who did not make a threat to harm others, students who frequently threatened violence were 14 to 23 times more likely to report attacking someone with a knife and 17 times more likely to report shooting at someone. Even students who reported threatening others infrequently were more likely to exhibit violent behaviors when compared to non-threateners.

The 2015 Youth Risk Behavior Surveillance Survey found that approximately 7.8% of high school students nationwide reported being in a physical fight on school property and 6% had been threatened or injured with a weapon (i.e. gun, knife, or club) on school property (Kann et al., 2016). Within the month preceding the survey, 4.1% of students reported carrying a weapon to school on least one day.

Although physical altercations and possession of weapons are observed in many schools, lethal acts of violence are rare. The Centers for Disease Control and Prevention reported that 462 violent youth deaths occurred at schools between 1992 and 2012 (Robers, Zhang, Morgan, & Musu-Gillette, 2015). This translates to an average of 23.1 deaths per year and a rate of approximately 0.86 deaths per 100,000 among school-age youth. While this is not a precise calculation, it demonstrates that the risk of homicidal school violence is relatively low. Another study using data from the National Incident-Based Reporting System (Nekvasil, Cornell, & Huang, 2015) similarly found that homicides rarely occurred in schools (0.3% of all homicides) compared to other locations. This perspective is important because the belief that homicidal violence is a likely event can skew the perception of risk in evaluating a potentially dangerous student.

Distinguishing Serious and Non-Serious Threats of Violence

Given that threats are commonplace but typically not carried out (Nekvasil & Cornell, 2012), how do school threat assessment teams determine which threats of violence are more likely to result in an attack? Threat assessment authorities have posited that there may be "warning behaviors" or behavioral patterns that indicate a person has serious intent to carry out a threat (Meloy, Hoffmann, Guldimann, & James, 2012). Researchers examining incidents of targeted violence within schools as well as in other settings found that most attackers had access to weapons prior to the violent incident and also exhibited leakage, suicidal ideation, and obsession with violence (Hoffmann & Roshdi, 2013; Mohandie, 2014; O'Toole, 2000; Vossekuil et al., 2002). Attackers also tended to demonstrate more warning behaviors as they moved along a pathway to violence (Meloy et al., 2011).

Meloy and O'Toole (2011) defined leakage as "the communication to a third party of an intent to do harm to a target" (p. 514). Leakage can occur through oral, written, or social media communications (Meloy & O'Toole, 2011; O'Toole, 2000). Students might intentionally confide in a peer or communicate their violent plans through their journals or social media pages. In their study of school violence, the U.S. Secret Service and U.S. Department of Education noted that in 81% of the 37 violent incidents reviewed between 1974 and 2000, at least one individual knew the attacker was considering an act of violence before it transpired (Vossekuil et al., 2002). These individuals were most often (93%) friends, classmates, or siblings; only rarely (17%) did the attackers threaten their intended targets directly. Although direct threats to the intended victims are rare, both leakage and direct threats are warning behaviors that can signify that an attacker is moving along a pathway of violence (Hoffman & Roshdi, 2013; Meloy, Hoffmann, Roshdi, Glaz-Ocik, & Guldimann, 2014). Research in German schools also found that warning behaviors, such as a preoccupation with violent media, acquisition of weapons, and suicide ideation, signal an attacker's escalation along a pathway of violence (Hoffman & Roshdi, 2013). A German model of threat assessment places primary emphasis on identifying students experiencing a psychosocial crisis that could precipitate violence (Leuschner, Fiedler, Schultze et al., 2017). This model trains teachers to recognize and report warning signs of violence in their students.

Researchers also found that almost all the attackers (93%) engaged in behaviors that concerned others prior to the incident (Vossekuil et al., 2002). The concerning behaviors of the attackers included the use of weapons (63%), fascination with violence displayed through class assignments or verbal communications (59%), and suicidal ideation (78%). The majority of the attackers had access to weapons prior to the incident (68%) and had a known history of weapon

use (63%). Lastly, the investigators found that some attackers had committed a known act of violence prior to the incident (31%) and/or had previously been arrested (27%). Although these concerning behaviors apply to only a subset of the attackers included in the study, many researchers have concluded that a history of violence is the strongest predictor of future violence (Monahan and Steadman, 1994). Overall, the threat assessment literature suggests that warning behaviors raise concern that a threat is serious (Meloy et al., 2011; O'Toole, 2000; Vossekuil et al., 2002).

Distinguishing Threat Assessment from Risk Assessment

Threat assessment has emerged as a specialized form of violence risk assessment that has some important distinguishing features (Cornell & Datta, 2017; Meloy, Hart, & Hoffmann, 2014). A threat assessment is typically conducted to determine whether a person intends to carry out a specific threatened act, usually toward a targeted victim or group, within a relatively short timeframe. In contrast, a violence risk assessment is conducted to determine an individual's potential to perpetrate a violent act during an unspecified, open-ended time period, typically to help decide whether to release an individual from incarceration (Otto & Douglas, 2011) or a mental health facility (Monahan, 2010). Meloy, Hart, and Hoffman (2014, p. 6) contend that the differences between threat assessment and violence risk assessment are substantial, but "primarily a matter of degree rather than kind." These differences include that threat assessment places more emphasis on dynamic as opposed to static risk factors, makes judgements using idiographic or case-specific factors rather than nomothetic or data-driven rules, and is concerned with risk management instead of prediction of violence.

An increasingly recognized approach to violence risk assessment is Structured Professional Judgement (SPJ) (Nicholls, Petersen, & Pritchard, 2016), which combines elements

of clinical judgement and actuarial assessment (Douglas & Kropp, 2002). The SPJ approach uses a decision theory framework to examine an individual's history of violence and relevant risk factors to make inferences about his or her potential for future violence, and to develop appropriate case management strategies (Hart & Logan, 2011). An early work on school threat assessment (Reddy et al., 2001) (using the terms "guided professional judgment" and "structured clinical assessment") cautioned that structured professional judgment is not readily applied in cases where the task is to assess an individual's risk for targeted school violence. The researchers noted that the base rate is very low and there is little empirical research on the risk factors for targeted school violence. They pointed to the behavioral and psychological heterogeneity of school shooters and their diverse motives and circumstances. They distinguished threat assessment from guided professional judgment by the former's emphasis on a deductive approach to gathering facts about the particular case in question and the need for threat assessment teams to take active steps to manage individuals in order to reduce risk to the identified target.

Although Reddy and colleagues' analysis identifies key strengths of the threat assessment approach, we respectfully suggest that threat assessment can be conceptualized as involving a form of structured professional judgement. A threat assessment model can be structured to gather information and make decisions in a structured and systematic way, and with sufficient research, it can be guided by a foundation of knowledge and empirical support. Structured professional judgement fundamentally refers to the way in which risk assessment and management decisions are guided by evidence derived from relevant empirical research, and integrated with observations of individual case characteristics and circumstances. There is no reason why threat assessment cannot be tested, evaluated, and improved with empirical research so that it becomes

an evidence-based application of structured professional judgment. The present study is intended as a contribution to that goal.

Virginia Student Threat Assessment Guidelines

One model for managing threats in school is the Virginia Student Threat Assessment Guidelines (VSTAG; Cornell & Sheras, 2006) developed at the University of Virginia. This model integrated recommendations from FBI and Secret Service studies of school shootings (Fein et al., 2002; O'Toole, 2000) with practical advice and field-tested experiences derived from work with a group of Virginia public schools (Cornell & Sheras, 2006). Notably, the VSTAG model provides teams with guidelines to distinguish whether a threat is transient (not serious) or substantive (poses a continuing risk to others). The VSTAG recognizes that all threats should be evaluated, but that, especially in a school setting, threat assessment teams are challenged to avoid over-reacting to threats that are not serious and focus their attention on serious threats that merit protective action. The transient/substantive distinction is designed to help school threat assessment teams make a structured professional judgement to meet this challenge. The transient/substantive distinction requires professional judgment by the school team based on an assessment of all available information about the student and the circumstances of the threat; therefore, it is crucial to assess the reliability and validity of the transient/substantive distinction.

A transient threat is an intentionally broad category intended to encompass all forms of threats that do not reflect a genuine intent to harm others (Cornell & Sheras, 2006). The majority of student threats are transient, and can stem from motives including humor, anger, frustration, or fear (Cornell et al., 2004; Nekvasil & Cornell, 2012). Transient threats include a variety of qualitatively different threats that nevertheless are not serious. Examples of transient threats include a student exclaiming "I'm gonna kill you" as a joke or as a competitive statement during

a game, or a student playfully using his or her fingers to shoot another classmate. Other transient threats are made as an expression of anger that nevertheless do not reflect a serious intent to harm someone, such as a student stating rhetorically "I'd like to kill that jerk" in anger but not actually possessing an intent or plan to kill anyone (Cornell & Sheras, 2006). Transient threats can differ widely in motive and context, and can be provocative and disruptive; but from the practical perspective of threat assessment, they all represent behaviors that do not reflect a real intent to harm others. The transient/substantive distinction is not based solely on a linguistic analysis of the content of the student's statements, but includes information gathered from other sources. In addition, the team considers the student's response to the assessment and whether he or she is able to explain his or her behavior, retract or clarify the threatening statement, and demonstrate a willingness to rectify the situation, if appropriate. This process is described in the VSTAG manual (Cornell & Sheras, 2006).

If a threat is not deemed transient, then school teams follow the decision tree to classify the threat as substantive. Substantive threats are behaviors or statements that represent a serious risk of harm to others (Cornell & Sheras, 2006). According to the VSTAG model, substantive threats are characterized by qualities that reflect serious intent, such as planning and preparation, recruitment of accomplices, and acquisition of a weapon. Examples of likely substantive threats include a student threatening "I'll get you next time" after a fight and refusing mediation for the dispute, or a student who threatens to stab a classmate and is found to have a knife in her backpack.

The distinction between transient and substantive threats is critical to determining appropriate responses and management strategies. The VSTAG model guides school teams in resolving and responding to student threats according to a seven-step decision tree (Cornell &

Sheras, 2006). First, school teams evaluate the threat by interviewing witnesses, using the semi-structured interview questions outlined in the VSTAG manual. These questions are simple, open-ended inquiries designed to gather specific information on the student's statements, behaviors, and intentions (e.g., "What happened today when you were [place of incident]? What exactly did you say? And what exactly did you do? What did you mean when you said or did that?"). Parallel interviews are conducted with the threatened individual, witnesses and other sources of relevant information. Consistent with threat assessment principles, there is an emphasis on gathering factual information from multiple sources and considering contextual and situational factors to determine whether the individual is on a path toward violent action (Reddy et al., 2001). Transient threats are generally resolved with an explanation or apology, and do not require protective action or security efforts. If a school team is unable to resolve the threat or they are unsure about the threat's status, then the decision tree directs them to respond to the threat as a substantive threat.

All substantive threat responses require protective action, which varies depending on the circumstances of the threat and how the threat might be carried out. At a minimum, protective action typically involves notifying the intended victim and his or her parents, as well as contacting the parents of the student who made the threat. Protective action could also involve increased monitoring or supervision of the threatening student. Depending on the nature and credibility of the threat, substantive threats are further classified as either "serious substantive" or "very serious substantive" threats. Threats involving a simple assault are classified as "serious substantive," whereas a "very serious substantive" threat typically involves a threat to kill or a threat to use a lethal weapon or inflict severe injury on someone. The final steps for very serious substantive threats include mental health treatment and disciplinary action, but fewer than 10%

of threats merit these actions (Cornell & Sheras, 2006). For example, the school team could remedy the underlying conflict that led to the threat by referring the student for a mental health evaluation and treatment. Threats that are very serious might also require exclusionary discipline and law enforcement action to protect the intended targets and reduce the likelihood that the threat will be carried out. The need for such actions is uncommon, but could include suspension from school or a change in school placement. In some of the most serious cases, legal actions such as arrest, court charges, or confinement in juvenile detention center can be warranted.

Evidence for the VSTAG Model

Although the transient-substantive distinction is an important step in the VSTAG model, there is relatively little research on its reliability and validity. The first published study of VSTAG reported the classification of transient and substantive threats in 188 cases collected from 35 schools (Cornell et al., 2004). The majority of cases (70%) were classified as transient and the remaining cases were deemed substantive. Researchers found that the proportion of substantive threats was much higher among middle (41%) and high school students (44%) compared to elementary students (15%). There were no differences in violent outcomes between transient and substantive threats because none of the threats were carried out.

Consistent with the VSTAG training model, school teams responded differently to transient versus substantive threats. Transient threats resulted in more in-school detentions and time-outs (17%) when compared to substantive threats (5%; Cornell et al., 2004). The majority of substantive threats resulted in out-of-school suspensions (80%) compared to transient threats (37%). Three substantive cases resulted in expulsions.

Additional studies found that school personnel trained in the VSTAG model demonstrated a decreased belief that school violence is commonplace, decreased support for a

zero tolerance approach to school discipline, and a decreased propensity to use suspension as a response to student threats (Allen, Cornell, Lorek, & Sheras, 2008; Cornell, Allen, & Fan, 2012). These results were found across school locations (e.g., rural vs. urban) and across school personnel (i.e., school administrators, mental health professionals, and school resource officers).

Three quasi-experimental studies demonstrated a reduction in disciplinary actions and a more supportive school climate in schools using VSTAG. The first study compared 95 high schools using VSTAG to 131 schools using either locally developed threat assessment procedures or 54 using no threat assessment approach (Cornell, Sheras, Gregory, & Fan, 2009). Students in VSTAG model schools reported less bullying in the past month and greater willingness to seek help for bullying and threats of violence. Schools using the VSTAG model had fewer long-term suspensions than the other schools.

The second study trained 23 high schools to implement the VSTAG model, in contrast to a control sample of 26 high schools that continued to use their existing approach to student threats (Cornell, Gregory, & Fan, 2011). Noteably, schools trained in the VSTAG model had a 52% decline in long-term suspensions. Schools using the VSTAG model also demonstrated a 79% reduction in bullying infractions, indicative of a more positive school environment. Additionally, school personnel trained in the VSTAG model demonstrated substantially increased knowledge and understanding of threat assessment principles.

The third study compared 166 middle schools using the VSTAG model to 47 middle schools using either an alternative model or 119 middle schools using no threat assessment approach (Nekvasil & Cornell, 2015). Researchers found that the number of years a school used the VSTAG model was associated with lower long-term suspension rates, lower levels of general victimization, higher student reports of fairer discipline, and higher teacher perceptions of school

safety. These results suggest that schools trained in the VSTAG model addressed student conflicts before they escalated into more serious acts of aggression.

In addition to the quasi-experimental studies, a randomized control trial examined 201 student threats in 40 schools (Cornell, Allen, & Fan, 2012). The schools were randomly assigned to use the VSTAG model or to use their existing disciplinary approach without threat assessment. After one year, students in schools assigned to the VSTAG model intervention group were significantly more likely to receive counseling services or a parent conference compared to students in the control group schools. Students in the control group were more likely to receive long-term suspensions or an alternative placement compared to students whose behavior underwent a threat assessment. These results indicate that the VSTAG model guides school authorities to avoid a punitive approach in response to student threats of violence, especially in response to threats that are deemed transient because they lack credible evidence such as warning behaviors. Overall, studies evaluating the VSTAG model found substantial evidence that school adoption of a threat assessment approach can change attitudes of school personnel regarding violence prevention efforts and discipline, promote a more positive school climate, and result in less punitive disciplinary responses for students making threats of violence.

Current Study

In 2013, Virginia became the first state to mandate that all public schools establish threat assessment teams to evaluate "students whose behavior poses a threat to the safety of school staff or students" (*Code of Virginia,* § 22.1-79.4). Each threat assessment team must include individuals with expertise in law enforcement, counseling, instruction, and school administration. Schools may use any model of threat assessment that is consistent with the state's basic model policies for threat assessment (Virginia Department of Criminal Justice Services, 2016).

Virginia also required its public schools to report information regarding their 2014-15 threat assessment cases through an annual School Safety Survey. As a result, it was possible to identify schools using the VSTAG model and examine threat characteristics and outcomes associated with transient versus substantive threats.

The current study examined the inter-rater reliability and criterion validity of the classification of transient and substantive threats by school teams. To assess inter-rater reliability, school team classifications were compared to classifications made by research coders. The first research question was, "Is there agreement between research coders and school threat assessment teams in the classification of threats?" It was hypothesized that there would be high agreement between research coders and school teams in their threat classifications.

The second research question was, "How do transient and substantive threats differ in case characteristics and threat outcomes?" Consistent with the VSTAG model, it was hypothesized that school teams would classify a threat as substantive if the student was in middle or high school rather than elementary school, and if it involved possession of a weapon and a higher number of warning behaviors. Because substantive threats are judged to pose a more serious risk of violence, it was hypothesized that school teams were more likely to suspend the student or change his or her placement, and that the students making substantive threats were more likely to be arrested or charged with an offense. Therefore, it was hypothesized that students who made substantive threats were more likely to attempt to carry them out. Support for these hypotheses would provide new evidence for the reliability and validity of the transient/substantive distinction that is foundational to the VSTAG model of threat assessment.

Method

Participants

The sample consisted of 844 threat cases reported by 339 schools including 173 (51%) elementary, 85 (25%) middle, and 81 (24%) high schools. The racial/ethnic breakdown was 453 (54%) White, 225 (27%) Black, 73 (9%) Hispanic, and 94 (11%) Other[1] (Table 1). Students were approximately 75% male and ranged from prekindergarten to the 12th grade. The mean grade was 6 (typically age 11) and the modal grade was 4 (typically age 9).

A subgroup of cases had a written narrative describing 148 threats obtained from 69 (47%) elementary, 44 (30%) middle, and 35 (24%) high schools. The racial/ethnic breakdown of the most serious cases was 86 (55%) White, 42 (27%) Black, 13 (8%) Hispanic, and 15 (10%) Other. The majority of the students were male (76%). Students ranged in grade from kindergarten to 12th grade (mean ~6th grade, mode 5th grade).

Procedure

Data were obtained from the 2015 School Safety Audit Survey, the online annual survey of schools conducted by the Virginia Department of Criminal Justice Services (DCJS). The survey is mandated by state law and had 100% participation by Virginia public schools. Of Virginia's 1,746 public elementary, middle, and high schools, 785 schools reported at least one threat assessment case during the 2014-15 school year. Among these 785 schools, 339 schools used the VSTAG model to classify their threat cases.

Full primary sample of threat cases. The state survey asked schools to provide specific case details for a maximum of five student threat assessment cases. The majority of schools (82%) had five or fewer cases, and thus could report all of their cases. The maximum was set at five in order to reduce the reporting burden on schools that had a large number of cases. In order

[1] The Other race/ethnicity category included students noted as Asian, Mixed race, or Unknown.

to obtain a range of cases and avoid schools skewing the sample toward their most serious or their least serious cases, the state survey asked schools with more than five cases to report their most serious case, least serious case, and three most recent cases. The term "most serious" was left for the schools to define and had no fixed criterion since it would depend on the number and kinds of threats in each school. The designation of "serious" on the state survey should not be confused with the distinction between serious and non-serious cases used for research purposes in this study. To protect student identities, no names or other identifying information were collected.

Most serious threat narratives. In the narrative description of the most serious cases, schools were requested to include a description of the threat, who was threatened, the circumstances in which it occurred, reasons why the threat was considered serious, and the actions taken by the threat assessment team. Of the 339 schools using the VSTAG model, 148 schools submitted a case narrative for their "most serious" cases.[2] These narratives provided a convenient subsample for closer examination of the transient/substantive distinction, but are not presented as representative of the primary sample.

Coding procedure for threat narratives. Two coders independently examined student characteristics, threat characteristics, and case narratives provided by each school. The researchers removed information from the narratives that revealed the outcome of the threat or responses taken by the threat assessment teams so that it would not influence coding. Prior to examining the 148 narratives in the current study, researchers trained by practice-coding a separate sample of 40 cases. After training, the coders achieved 84% agreement for identifying

[2] Because of the overall length of the safety audit survey, the state agency collecting the surveys decided not to follow-up with schools that did not submit a case narrative. Among reasons given by school authorities for non-submission were that the question was deemed to be too burdensome or that they did not consider any of their cases serious enough to merit a narrative.

the presence of warning behaviors and 80% agreement for classifying the threat as transient or substantive.

Measures

Threat characteristics. Critical threat characteristics were identified from a checklist of items, including whether the threat involved homicide, harm to self and others, battery without a weapon, a bomb, or an unspecified kind of threat. Teams reported whether the threat was communicated directly (to the intended target), indirectly (to a third party), or implicitly (implied by behaviors and actions of concern). Teams were asked whether the student threatened to use a weapon or had possession of a weapon. If so, then the type of weapon was identified. Types of weapons included firearms, knives, other edged weapons (i.e., scissors, razor blades), blunt objects (i.e., clubs, bats, furniture), or other (i.e., writing utensils, faux guns).

Warning behaviors. Warning behaviors were operationally defined as behavioral markers that indicate a student's increased risk of violence according to research on dynamic risk factors. Consistent with previous research, seven types of warning behaviors were assessed in this study: (1) a history of violence; (2) leakage of violent intentions; (3) involvement of a weapon; (4) preoccupation with violence or the target prior to the threat; (5) recruiting others to participate in the threatened act of violence, (6) preparing for an attack, and (7) other disturbing behaviors (Hoffmann & Roshdi, 2013; Meloy et al., 2011; Monahan and Steadman, 1994; O'Toole, 2000; Singer & Flannery, 2000; Vossekuil et al., 2002). All warning behavior variables were coded 0 to 1 except for involvement of a weapon. Possession of a weapon was considered more dangerous than mentioning a weapon, therefore no weapon was coded 0, mention of a weapon was coded 1, and a weapon mentioned and present at school was coded 2. Preparing for an attack involved students completing a dry run by carrying a weapon to school to test the

boundaries for disciplinary action or response time of the school administration. Other disturbing behaviors included suicide ideation, auditory/visual hallucinations, or detailed writings related to the threatened attack. The warning behaviors were summed to create a total composite score. Warning behaviors were coded from the narratives and, thus, these analyses were limited to the subgroup of 148 cases.

Threat outcomes. Four kinds of threat outcomes were measured: whether the student (1) attempted to carry out the threat; (2) received disciplinary action; (3) had a placement change; and/or (4) was subjected to legal action. Each threat outcome was coded 1 for yes or 0 for no.

Disciplinary actions included out-of-school suspensions of any duration from 1 to 365 days (although 95% were 1-10 days). Placement changes included transfer to another regular school or an alternative school, homebound instruction, or hospitalization. Legal action involved arrests, court charges, and placements in juvenile detention.

Analytic Strategy

To assess the first research question concerning the inter-reliability of the transient/substantive distinction, threat classifications for the subsample of 148 case narratives were coded. Cohen's kappa values were used to measure the agreement between school team and the research coder classifications.

The second research question was investigated with six logistic regression analyses that examined the distinction between transient and substantive classifications in threat characteristics, warning behaviors, and four threat outcomes. The first model investigated the association of threat characteristics with a substantive versus transient classification in the primary sample of 844 cases. The second regression model was limited to the subsample of 148 cases with coded warning behaviors. Four additional models investigated the likelihood of

classifications resulting in threat outcomes (i.e., threat attempted, suspension, change in placement, legal action) in the primary sample. Results are presented as the commonly-used odds ratio (*OR*s), where *OR*s > 1 signify a higher likelihood of a substantive classification or a certain outcome and *OR*s < 1 indicate a lower likelihood. All analyses controlled for student demographic variables that included gender, grade level, and race/ethnicity (i.e. White, Black, Hispanic and Other).

Results

Of the 844 cases, schools classified approximately 22% (189 cases) as substantive and 78% (655 cases) as transient threats (Table 1). Among the subsample of 148 cases with narratives, approximately 60% (89 cases) were classified as substantive and 40% (59 cases) as transient.

For the first research question, the comparison of the school team and research coder classifications of the 148 case narratives resulted in 70% agreement (Kappa = .53, $p < .001$; Table 2). When examining the 32 classification discrepancies, almost all (28 of 32, 88%) of these cases were classified as substantive by the schools and transient by the coders.

Validity of the Transient/Substantive Distinction

The first logistic regression (Table 3) found that substantive threats were distinguished from transient threats by higher student grade level (*OR* = 1.2, $p < .001$), expression of homicidal intent (*OR* = 2.0, $p < .05$), harm to self and others (*OR* = 10.0, $p < .001$), battery without a weapon (*OR* = 2.8, $p < .001$), and bomb threat (*OR* = 6.9, $p < .001$). Substantive threats were also distinguished from transient threats by the mention or possession of a knife or sharp-edged weapon (*OR* = 6.6, $p < .001$). Of the 87 cases that referenced a knife or sharp-edged weapon, in 30 cases (35%) the student was reported have a weapon in his or her student possession or on

school property. Of the 54 cases that involved a firearm, in two cases (4%) a firearm was reported to be in the student's possession or on school property. The second logistic regression (Table 4), limited to the 148 cases with narratives, found that substantive threats were distinguished from transient threats by higher student grade level ($OR = 1.2$, $p < .001$) and a higher number of warning behaviors ($OR = 2.1$, $p < .001$).

Threat outcomes. All four analyses concerned with threat outcomes were statistically significant (Table 5). A substantive threat classification was associated with an attempted threat ($OR = 36.3$, $p < .001$), an out-of-school suspension ($OR = 4.8$, $p < .001$), a change of school placement ($OR = 9.7$, $p < .001$), and legal action, ($OR = 15.0$, $p < .001$). Of the 334 cases resulting in student suspension, 201 cases were classified as transient and 133 cases were deemed substantive. In 21 cases, the student attempted to carry out the threat.

One unanticipated finding was that threats made by Hispanic students were associated with legal action ($OR = 5.3$, $p < .01$). Inspection of the data revealed that seven (10%) of the 73 cases involving a Hispanic student resulted in legal action. All seven cases were classified as substantive.

Discussion

This study provides new evidence in support of the reliability and validity of the distinction between transient and substantive threats used in the Virginia Student Threat Assessment Guidelines. The inter-rater reliability of the transient-substantive classification was supported by moderate levels of agreement between research coders and school teams. The validity of the distinction between transient and substantive threats was supported by the pattern of differences in threat characteristics, especially the association of substantive threats with more serious warning behaviors and student characteristics. In addition, substantive threats were more

likely to receive disciplinary measures and legal actions than transient threats. Finally, substantive threats were more 36 times likely to be attempted than transient threats. Overall, these findings complement and extend the body of research showing positive outcomes associated with using the VSTAG threat assessment model (Allen et al., 2008; Cornell et al., 2004; Cornell et al., 2009; Cornell et al., 2011; Cornell et al., 2012; Nekvasil & Cornell, 2015).

Reliability of the Transient/Substantive Distinction

The percentage agreement between coders and school teams was 70% and the kappa coefficient was .53. Kappa measures the agreement between raters above the level of agreement that could be expected by chance. A kappa value of 0 indicates no agreement greater than what would be expected by chance and a value of 1.00 indicates complete agreement. A kappa value of .53 is comparable to the field trials used to establish diagnoses for the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). For example, the kappa levels for Schizophrenia and Binge Eating Disorder were considered acceptable within the moderate range 0.40 – 0.59 (Regier et al., 2013).

The major source of disagreement between research coders and school teams was that teams tended to classify cases as substantive which the coders classified as transient. It is possible that school teams had additional information beyond what was presented in the narratives that may have justified a substantive classification, but a more likely explanation is that the teams tended to use the substantive classification more inclusively. To illustrate the discrepancy between the research coders and the school teams, we present three case examples. These are examples of the kind of errors in classification that we have observed in training workshops as well. Details of these cases have been de-identified to protect the confidentiality of the students and schools.

In the first case, a 1st grade student (age 6) engaged in an argument with her special education teacher and threatened to kill her. Although the teacher was reported to have no concern or fear for her safety, the school team elevated the classification to substantive because the threat was directed towards a teacher and the student had witnessed violence at home in the previous year. Threats towards a teacher might be regarded as a serious disciplinary violation meriting serious consequences; however, such threats do not automatically merit a substantive classification (Cornell & Sheras, 2006). This is a common misperception in training exercises when trainees are asked to classify a case that involved a student shouting threats toward a teacher. Consistent with the VSTAG guidelines, the 1st grade student likely threatened to kill her teacher in a moment of anger and had no substantive intention of carrying out the threat. The student's exposure to domestic violence may be a serious concern that merits counseling and might help explain the student's emotional dysregulation, but it does not merit a more serious threat classification. Lastly, the child's special education status could affect her interactions with teachers. Appropriate psychoeducation and behavioral modeling would improve her classroom experience and avoid an overreaction by the school.

The second case involved a 6th grade student (age 11) with a history of disciplinary referrals. In a counseling session, the student stated that he was going to blow up the school using explosives. Upon further inquiry by the threat assessment team, it was determined that he had no explosives. The team decided that the student did not actually intend to make a bomb, but was expressing frustration and wanted to frighten others; nevertheless, the team decided to classify the threat as substantive because a bomb threat would be highly disruptive to the school and a criminal act. The VSTAG guidelines note that a bomb threat in which there is no bomb and only an intent to be disruptive is a good example of the distinction between threat assessment and

disciplinary action (Cornell & Sheras, 2006). A false bomb threat is a serious disciplinary and legal violation, but from a threat assessment perspective, it is a transient threat that does not pose a serious risk of harm to others.

In the third case example, an 8th grade student (age 13) with a history of violence outside of school stated that he was a member of al-Qaeda and a classmate was on his kill list. Several students heard him and reported the statement to a teacher. During an interview with the threat assessment team, the student acknowledged his threat and shared five additional names on his kill list. The boy had no known affiliation with al-Qaeda and had only a vague idea that it was a terrorist organization. Nevertheless, the team elevated the classification to substantive despite his teacher's belief that the boy had no intention to harm anyone and seemed to be making a threat in order to evoke a response from his classmates. The VSTAG guidelines indicate that such a threat is likely to be transient, because the student is seeking attention and lacks substantive intent to carry out the threat (Cornell & Sheras, 2006).

The first objective of threat assessment is to determine whether a threat of violence exists. This decision has immediate practical consequences since a serious threat requires protective action to reduce the risk of violence. To achieve this objective, school teams must be able to focus on the seriousness of a threat separately from the seriousness of a school disciplinary infraction. A false bomb threat or a threat directed towards a teacher can be a legal violation or a disciplinary infraction with serious consequences, but not pose a serious threat of violence (Cornell & Sheras, 2006).

Criterion Validity of the Transient/Substantive Distinction

School teams using the VSTAG model demonstrated consistency in identifying substantive threats by relevant characteristics of a serious threat. The features associated with a

substantive threat were consistent with both the VSTAG model and the literature on warning behaviors (Cornell & Sheras, 2006; Meloy et al., 2011). For example, a higher number of warning behaviors was moderately associated with a substantive classification (*OR* = 2.1). Specifically, threats classified as substantive included more warning behaviors, such as history of violence, leakage, use of weapons, and other disturbing behaviors. These findings are consistent with previous studies which found that warning behaviors indicate an individual's increasing risk of violence and are common among adolescent school shooters (Meloy et al., 2011). This study provides one of the few attempts to validate the association between warning behaviors and more serious threats within schools.

There was a strong association between a substantive classification and a threat to harm self as well as others. The presence of suicidal intent understandably raises concern, because it suggests the student is highly distressed, and a student who feels hopeless or desperate might be less inhibited by the risk of punishment (Cornell & Sheras, 2006). We caution, however, that most student threat cases do not involve concomitant threats of self-harm, and the correlation between suicide and threats to harm others is low (Burnette, Huang, Maeng, Datta, & Cornell, 2017, August).

As hypothesized, there was a strong association (*OR* = 6.6) between substantive classification and the possession of knives or other sharp-edged weapons. Unexpectedly, threats by students in possession of a firearm was not a statistically significant predictor of a substantive classification. One explanation may be that there was an insufficient number of substantive cases (13) involving a firearm to generate conclusive results. For example, the majority of threats involving the possession of a weapon were classified as transient because the students did not have access to such weapons and their threats were largely unsubstantiated. One case involved

an elementary student who was not in possession of the weapon on school property. Another case involved an elementary student in special education services who threatened to shoot a classmate with his gun, but the threat was deemed transient after the school team confirmed the student did not have access to a firearm at home. In such cases, it is important not to dismiss a threat too quickly, and to consider all available information such as the student's previous behavior, his or her response to the assessment process, and whether the conflict or problem underlying the threat has been resolved.

Lastly, the moderate associations between a substantive classification and a threat of battery without a weapon was not hypothesized but in retrospect makes sense. School teams recognize that fighting is a relatively common event in school settings (Kann et al., 2015) and so there is an appreciable risk that a threat to fight will be carried out. Although the threat of a shooting is more ominous and demands attention, it is far less likely to be carried out (Nekvasil et al., 2015) than a threat to physically assault someone (Singer & Flannery, 2000).

The transient/substantive distinction is not based on a single factor, and no single characteristic is determinative. Consequently, the significant predictors of a substantive classification should not be interpreted in isolation. Because the majority of student threats are not carried out (Cornell et al., 2004; Nekvasil & Cornell, 2012), threat assessment requires a comprehensive evaluation of the nature and characteristics of the threat, including the student's age, credibility, and previous history of violence and disciplinary referrals (Cornell & Sheras, 2006). For example, a threat should not be classified as substantive simply because a student carries a pocket knife. Although the possession of a knife for any reason is not acceptable in school, for the purposes of threat assessment, schools should be concerned with the student's

potential to harm someone. The student might carry a pocket knife as a tool rather than as a weapon, or might have accidentally brought it to school.

The distinction between transient and substantive threats allows school teams to focus their efforts on threats that are considered serious. However, the threat assessment team is concerned with preventing violence as opposed to predicting violence. When schools identify that a threat is serious, they will take actions to prevent it from being carried out; thus it is not feasible to assess the predictive accuracy of the assessment with a conventional scientific design. A rigorous experimental study of prediction is not practical or ethical because it would involve teams taking no intervention so that researchers can observe which threats are carried out.

Threat outcomes. By definition, a threat is classified as substantive because the school team determines that the student might carry out the threat, in accordance with the VSTAG model. Only four threats (.5%) were carried out. Because so few threats were carried out, *attempts* to carry out the threat were examined. The frequency of threats that were attempted was still low (21 cases, approximately 3%), but was sufficient to detect differences between substantive and transient cases. Our analyses found that substantive threats were much more likely to be attempted (*OR* = 36.3) than transient threats. Specifically, 19 of 189 (10%) substantive cases were attempted compared to two of 655 (.3%) transient cases. This is valuable support for the transient/substantive distinction and suggests that school teams are using the classification appropriately.

As expected, students identified as making substantive threats received more serious consequences. Substantive threats were strongly associated with change in placement (*OR* = 9.7) and legal action (*OR* = 15.0), and moderately associated with out-of-school suspensions (*OR* = 4.8). These findings make sense because school authorities are more likely to conclude that

students who pose a more serious threat should be suspended from school and/or moved to a different school placement. Also, law enforcement authorities are more likely to arrest, charge, or incarcerate a student who has made a serious threat than one whose threat is deemed not to be serious. However, there are cases such as a false bomb threat that are not serious as threats, but nonetheless are serious crimes that could result in legal consequences.

Our findings indicate that school teams used the transient/substantive distinction consistent with the VSTAG model to make reasonable and defensible decisions in responding to students who have made threats of violence. Specifically, the VSTAG model's seven-step decision tree aids schools in distinguishing between serious threats and serious disciplinary infractions, and has been shown to reduce the number of long-term suspensions and other punitive actions toward students, such as transferring the student to another school (Cornell et al., 2009; Cornell et al., 2011; Cornell et al., 2012; Nekvasil & Cornell, 2015). As hypothesized, substantive cases were more likely to involve older students, possession of a weapon, and a higher number of warning behaviors. The findings suggest possible patterns in threat characteristics and warning behaviors that are associated with serious and non-serious. Transient and substantive cases also differed in case outcomes and more serious outcomes were implemented for threats classified as substantive, which is consistent with previous research (Cornell et al., 2004). Overall, these results provide evidence that school teams systematically assessed and managed student threats of violence according to a set of guidelines and decision-tree process described in the VSTAG manual. These findings support the idea that threat assessment can be designed and evaluated as an evidence-based approach using structured professional judgment.

Study Limitations and Directions for Future Research

This was a retrospective study in which survey participants reported on threat cases at the end of the school year. In a prospective study, researchers could record information on threats as the cases unfold in real time in order to maintain independence of the threat classification and outcome. However, it was not possible to monitor or record case data prospectively. In an ideal study, team members would record their observations and decisions prospectively and the case outcome would be assessed by independent sources. Another limitation is that the assessment of warning behaviors was based on a review of available written narratives and may not have contained all the information relevant to the variables being measured. Nevertheless, this study provides new information regarding the consistency of team decision-making in distinguishing transient from substantive threats.

The present study provides direct empirical support for the transient/substantive distinction based on a large sample of schools that implemented threat assessment as a preventive measure. These schools were not formally conducting research on threat assessment, so these findings represent evidence of effectiveness rather than efficacy. The schools conducted threat assessments in real-world conditions without the benefits of researcher supervision and the controlled conditions found in efficacy studies (Gottfredson et al., 2015). Effectiveness studies often detect lapses in implementation fidelity or quality of program delivery. Although the overall results support the reliability and validity of the transient/substantive distinction, the study identified some problems in the fidelity of VSTAG implementation, described below.

Training implications. The present study uncovered some training needs for threat assessment teams. First, threat assessment training should emphasize that while a threat may be a serious disciplinary violation, it may not be a serious threat of violence. The tendency for school

teams to classify any bomb threat as substantive, regardless of student intent, threat credibility, and other factors, was evident through the strong association (*OR* = 6.9) observed in the first regression model. Even in instances where a threat is especially disruptive or disturbing, accurate threat assessment requires school teams to examine the seriousness of the threat of harm rather than the seriousness of the disciplinary infraction.

A second implication involves school responses to transient threats. In this study, 70.4% (133 of 189 suspensions) of substantive threats resulted in school suspensions compared to 31% (201 of 655 suspensions) of transient threats. Although this finding was consistent with the study hypothesis, nearly a third of transient threats resulted in suspensions. Out-of-school-suspensions are often unwarranted, and are only recommended for the most serious cases (Cornell & Sheras, 2006). School suspension has come under increasing criticism as a disciplinary practice that is associated with school disengagement, academic failure, and school dropout (Morgan et al., 2014; U.S. Department of Education, 2014). Thus, suspension is rarely appropriate for a transient threat. Schools using suspension for transient threats should review their discipline practices.

In summary, this study contributes to an innovative effort to further establish threat assessment as an evidence-based practice for violence prevention. These findings indicate that school-based teams made reliable distinctions between transient and substantive threats, appropriately linking warning behaviors and concerning threat characteristics with substantive threats. The transient-substantive distinction helps schools to respond proportionately to the seriousness of a threat, avoiding over-reactions and making limited use of severe consequences such as suspensions, change in school placement, and legal consequences.

References

Allen, K., Cornell, D., & Lorek, E. (2008). Response of school personnel to student threat assessment training. *School Effectiveness and School Improvement*, *19*, 319–332. doi:10.1080/09243450802332184

American Psychological Association. (2013). Gun violence: Prediction, prevention, and policy. Retrieved from http://www.apa.org/pubs/info/reports/gun-violence-prevention.aspx

Burnette, A.G., Huang, F., Maeng, J., Datta, P., & Cornell, D. (2017, August). *How does threat assessment differ from suicide assessment? State prevalence and case characteristics*. Poster presented at the 2017 American Psychological Association Annual Convention, Washington, D.C.

Cornell, D., Allen, K., & Fan, X. (2012). A randomized controlled study of the Virginia Student Threat Assessment Guidelines in grades K-12. *School Psychology Review, 41*, 100-115.

Cornell, D., & Datta, P. (2017). Threat assessment and violence prevention. In L. Wilson (Ed.), *The Wiley handbook of the psychology of mass shootings* (pp. 353-371). Hoboken, NY: Wiley.

Cornell, D., Gregory, A., & Fan, X. (2011). Reductions in long-term suspensions following adoption of the Virginia Student Threat Assessment Guidelines. *Bulletin of the National Association of Secondary School Principals, 95,* 175-194.

Cornell, D., & Sheras, P. (2006). *Guidelines for responding to student threats of violence*. Longmont, CO: Sopris West.

Cornell, D., Sheras, P., Gregory, A., & Fan, X. (2009). A retrospective study of school safety conditions in high schools using the Virginia Threat Assessment Guidelines versus

alternative approaches. *School Psychology Quarterly, 24*, 119-129. doi: 10.1037/a0016182

Cornell, D. G., Sheras, P. L., Kaplan, S., McConville, D., Douglass, J., Elkon, A., ... & Cole, J. (2004). Guidelines for student threat assessment: Field-test findings. *School Psychology Review*, *33*, 527-546.

Douglas, K. S., & Kropp, P. R. (2002). A prevention-based paradigm for violence risk assessment: Clinical and research applications. *Criminal Justice and Behavior*, *29*, 617-658.

Fein, R. A., Vossekuil, B., Pollack, W. S., Borum, R., Modzeleski, W., & Reddy, M. (2002). *Threat assessment in schools: A guide to managing threatening situations and creating safe school climates.* Washington, DC: U.S. Department of Education, Office of Elementary and Secondary Education, Safe and Drug-Free Schools Program and U.S. Secret Service, National Threat Assessment Center.

Gottfredson, D. C., Cook, T. D., Gardner, F. E., Gorman-Smith, D., Howe, G. W., Sandler, I. N., & Zafft, K. M. (2015). Standards of evidence for efficacy, effectiveness, and scale-up research in prevention science: Next generation. *Prevention Science, 16,* 893-926.

Hart, S. D., & Logan, C. (2011). Formulation of violence risk using evidence-based assessments: The structured professional judgment approach. *Forensic case formulation*, 83-106.

Hoffmann, J., & Roshdi, K. (2013). School shootings in germany: Research, prevention through risk assessment and threat management. In N. Böckler, T. Seeger, P. Sitzer, & W. Heitmeyer (Eds.), *School shootings* (pp. 363-378). New York: Springer.

Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Hawkins, J., … & Zaza, S. (2016). Youth Risk Behavior Surveillance — United States, 2015. *MMWR, 65*, 1–174.

Retrieved from http://dx.doi.org/10.15585/mmwr.ss6506a1

Leuschner, V., Fiedler, N., Schultze, M., Ahlig, N., Göbel, K. Sommer, F., Scholl, J. Cornell, D., & Scheithauer, H. (2017). Prevention of targeted school violence by responding to students' psychosocial crises: The NETWASS Program. *Child Development*, *88*, 68-82.

Meloy, J.R., Hart, S. D., & Hoffmann, J. (2014). Threat assessment and threat management. In J. Reid Meloy & Jens Hoffmann (Eds.), *The international handbook of threat assessment* (pp. 3-17). New York, NY: Oxford University Press.

Meloy, J.R., Hoffmann, J., Guldimann, A., & James, D. (2012). The role of warning behaviors in threat assessment: An exploration and suggested typology. *Journal of Behavioral Sciences & the Law*, *30*, 256-279.

Meloy, J.R., Hoffmann, J., Roshdi, K., Glaz-Ocik, J., & Guldimann, A. (2014). Warning behaviors and their configurations across various domains of targeted violence. In J. Reid Meloy & Jens Hoffmann (Eds.), *The international handbook of threat assessment* (pp. 39-53). New York, NY: Oxford University Press.

Meloy, J. R., & O'Toole, M. E. (2011). The concept of leakage in threat assessment. *Behavioral Sciences & The Law*, *29*, 513-527.

Mohandie, K. (2014). Threat assessment in schools. In J. Reid Meloy & Jens Hoffmann (Eds.), *The international handbook of threat assessment* (pp. 126-141). New York: Oxford University Press.

Monahan, J. (2010). The classification of violence risk. In R. Otto and K. Douglas (Eds.), *Handbook of violence risk assessment* (pp. 187–198). New York, NY: Routledge.

Monahan, J., & Steadman, H.J. (1994) *Violence and mental disorders: Developments in risk assessment.* Chicago, IL: The University of Chicago Press.

Morgan, E., Salomon, N., Plotkin, M., & Cohen, R. (2014). *The school discipline consensus*

report: Strategies from the field to keep students engaged in school and out of the juvenile justice system. New York, NY: Council of State Governments Justice Center.

National Association of School Psychologists School Safety and Crisis Response Committee. (2014). *Threat Assessment for School Administrators and Crisis Teams*. Bethesda, MD: National Association of School Psychologists. Available at https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/threat-assessment-at-school/threat-assessment-for-school-administrators-and-crisis-teams

Nekvasil, E., & Cornell, D. (2012). Student reports of peer threats of violence: Prevalence and outcomes. *Journal of School Violence*, *11*, 357-375. doi:10.1080/15388220.2012.706764

Nekvasil, E., & Cornell, D. (2015). Student threat assessment associated with positive school climate in middle schools. *Journal of Threat Assessment and Management 2*, 98-113. http://dx.doi.org/10.1037/tam0000038

Nekvasil, E., Cornell, D., & Huang, F. (2015). Prevalence and offense characteristics of multiple casualty homicides: Are schools at higher risk than other locations? *Psychology of Violence, 5*, 236-245.

Nicholls, T. L., Petersen, K. L., & Pritchard, M. M. (2016). Comparing preferences for actuarial versus structured professional judgment violence risk assessment measures across five continents: To what extent is practice keeping pace with science?. In J.P. Singh, S. Bjørkly, & S. Fazel (Eds.), *International perspectives on violence risk assessment* (pp. 127-149). New York, NY: Oxford University Press.

O'Toole, M. E. (2000). *The school shooter: A threat assessment perspective.* Quantico, VA: FBI Academy, National Center for Analysis of Violent Crime. Retrieved from http://www.fbi.gov/stats-services/publications/school-shooter

Otto, R. K., & Douglas, K. S. (Eds.). (2011). *Handbook of violence risk assessment*. New York, NY: Routledge.

Reddy, M., Borum, R., Berglund, J., Vossekuil, B., Fein, R., & Modzeleski, W. (2001). Evaluating risk for targeted violence in schools: Comparing risk assessment, threat assessment, and other approaches. *Psychology in the Schools*, *38*, 157-172.

Regier, D. A., Narrow, W. E., Clarke, D. E., Kraemer, H. C., Kuramoto, S. J., Kuhl, E. A., & Kupfer, D. J. (2013). DSM-5 field trials in the united states and Canada, part II: Test-retest reliability of selected categorical diagnoses. *American Journal of Psychiatry, 170,* 59-70.

Robers, S., Zhang, A., Morgan, R.E., and Musu-Gillette, L. (2015). *Indicators of School Crime and Safety: 2014* (NCES 2015-072/NCJ 248036). National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. Washington, DC.

Singer, M. I., & Flannery, D. J. (2000). The relationship between children's threats of violence and violent behavior. *Archives of Pediatrics & Adolescent Medicine, 164,* 785–790.

Threat Assessment Teams and Oversight Committees, Va. Code § 22.1-79.4 et seq.

U.S. Department of Education (2014). School climate and discipline. Retrieved from http://www2.ed.gov/policy/gen/guid/school-discipline/index.html

Virginia Department of Criminal Justice Services (2016). *Threat Assessment in Virginia Public Schools: Model Policies, Procedures, and Guidelines.* Retrieved from https://www.dcjs.virginia.gov/virginia-center-school-and-campus-safety/k-12/resources

Vossekuil, B., Fein, R., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in*

the United States. Washington, DC: U.S. Secret Service and U.S. Department of Education.

Warren, L. J., Mullen, P. E., Thomas, S. D., Ogloff, J. R., & Burgess, P. M. (2008). Threats to kill: A follow-up study. *Psychological Medicine*, *38*, 599-605.

Table 1
Student Demographics for Transient and Substantive Threats

Student	Transient Threats n = 655 (77.6%)		Substantive Threats n = 189 (22.4%)		Total Sample N = 844 (100%)	
Sex						
Male	492	(75.1%)	139	(73.5%)	631	(74.8%)
Female	128	(19.5%)	46	(24.3%)	174	(20.6%)
Unknown	35	(5.3%)	4	(2.1%)	39	(4.6%)
Receiving Special Ed Prior to Threat						
Yes	217	(33.1%)	74	(39.2%)	291	(34.5%)
No	419	(64.0%)	111	(58.7%)	530	(62.8%)
Unknown	19	(2.9%)	4	(0.4%)	23	(2.7%)
Grade						
Prekindergarten	6	(0.9%)	0	(0.0%)	6	(0.7%)
Kindergarten	24	(3.7%)	2	(1.1%)	26	(3.1%)
1st Grade	33	(5.0%)	4	(2.1%)	37	(4.4%)
2nd Grade	62	(9.5%)	8	(4.2%)	70	(8.3%)
3rd Grade	60	(9.2%)	7	(3.7%)	67	(7.9%)
4th Grade	88	(13.4%)	18	(9.5%)	106	(12.6%)
5th Grade	63	(9.6%)	19	(10.1%)	82	(9.7%)
6th Grade	63	(9.6%)	15	(7.9%)	78	(9.2%)
7th Grade	67	(10.2%)	26	(13.8%)	93	(11.0%)
8th Grade	61	(9.3%)	18	(9.5%)	79	(9.4%)
9th Grade	52	(7.9%)	29	(15.3%)	81	(9.6%)
10th Grade	34	(5.2%)	20	(10.6%)	54	(6.4%)
11th Grade	24	(3.7%)	12	(6.3%)	36	(4.3%)
12th Grade	15	(2.3%)	11	(5.8%)	26	(3.1%)
Unknown	3	(0.5%)	0	(0.0%)	3	(0.4%)
Race/ Ethnicity						
Hispanic or Latino	59	(9.0%)	14	(7.4%)	73	(8.6%)
White	349	(53.3%)	104	(55.0%)	453	(53.7%)
African American	169	(25.8%)	56	(29.6%)	225	(26.7%)
Other[1]	79	(12.1%)	15	(7.9%)	94	(11.1%)

Note. [1]Other includes Asian, Mixed race, and Unknown.

Table 2
Classification Discrepancies

	Coder Classification		
School Classification	Transient	Substantive	Total
Transient	55	4	59
Substantive	28	61	89
Total	83	65	148

Table 3

Threat Characteristics in the Transient/Substantive Classification (n = 844)

Predictors	Substantive Classification		
	OR	*95% CI*	
Gender[1]	0.8	0.51	1.21
Grade	1.2***	1.12	1.27
Black[2]	1.2	0.81	1.88
Hispanic[2]	0.9	0.46	1.81
Other[2,3]	0.7	0.37	1.46
Threat of Bomb	6.9***	2.76	17.32
Harm to Self and Others	10.0***	4.82	20.80
Unspecified Threat	1.3	0.71	2.30
Battery without Weapon	2.8***	1.57	5.12
Threat of Homicide	2.0*	1.12	3.45
Threat Communicated: Indirectly[4]	1.0	0.66	1.53
Threat Communicated: Implicitly[4]	0.9	0.50	1.57
Firearm Involvement	2.2	0.98	4.97
Knife or Sharp-Edged Weapon Involvement	6.6***	3.43	12.77
Other Weapon Involvement	1.8	0.56	6.07

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

[1]Male is the reference group. [2]White is the reference group. [3]Other includes Asian, Mixed race, and Unknown. [4]Directly communicated threats is the reference group.

Table 4

Warning Behaviors in the Transient/Substantive Classification (n=148)

Predictors	Substantive Classification		
	OR	*95% CI*	
Gender[1]	0.9	0.54	1.35
Grade	1.2***	1.14	1.29
Black[2]	0.8	0.54	1.31
Hispanic[2]	0.6	0.27	1.22
Other[2,3]	0.8	0.39	1.48
Warning Behaviors	2.1***	1.84	2.49

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

[1]Male is the reference group. [2]White is the reference group. [3]Other includes Asian, Mixed race, and Unknown.

Table 5
Logistic Regression Odds Ratio and Confidence Intervals for Threat Outcomes (n = 844)

	Attempted Threat			Out-of-school Suspension			Change in Placement			Legal Action		
Predictors	*OR*	*95% CI*		*OR*	*95% CI*		*OR*	*95% CI*		*OR*	*95% CI*	
Gender[1]	0.5	0.18	1.37	1.4	0.96	2.05	1.3	0.75	2.08	0.9	0.34	2.13
Grade	0.9	0.74	1.04	1.1***	1.06	1.17	1.1**	1.03	1.18	1.3**	1.10	1.53
Black[2]	1.2	0.42	3.14	1.2	0.84	1.70	0.9	0.56	1.48	1.7	0.66	4.45
Hispanic[2,3]	---	---	---	0.9	0.51	1.58	0.7	0.30	1.61	5.3**	1.70	16.66
Other[2,4]	0.7	0.08	5.36	0.8	0.46	1.32	1.7	0.87	3.34	1.8	0.45	7.28
Substantive Threats	36.3***	8.02	164.38	4.8***	3.30	6.90	9.7***	6.30	14.78	15.0***	5.48	41.06

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.
[1]Male is the reference group. [2]White is the reference group. [3]There were no (n=0) Hispanic cases of an attempted threat to include this variable in this analysis. [4]Other includes Asian, mixed race, and unknown.

Manuscript Two

School Threat Assessment Versus Suicide Assessment: Statewide Prevalence and Case Characteristics

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Published March 2019

Psychology in the Schools

Author Note

We thank members of the project research team including Brittany Crowley, Pooja Datta, Yuane Jia, Tim Konold, Marisa Malone, Patrick Meyer, and Shelby Stohlman. This research was supported in part by Grant #NIJ 2014-CK-BX-0004 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this report are those of the authors and do not necessarily reflect those of the U.S. Department of Justice or the Virginia Department of Criminal Justice Services.

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Abstract

Threat assessment is a violence prevention strategy used to investigate and respond to threats to harm others. In 2013, Virginia mandated the use of threat assessment teams for threats to self and to others, effectively subsuming suicide assessment with threat assessment and raising questions about the distinction between the two practices. In a statewide sample of 2,861 cases from 926 schools, there were more threats to others (60%) than self (35%), with only five percent involving threats to both self and others. Threats to self were more likely to be made by females (*OR* = 3.38) and students with fewer prior disciplinary actions (*OR* = 0.48). Threats to self were much less likely to involve a weapon (*OR* = 0.07), but more likely to be attempted (*OR* = 1.50) and result in mental health services (*OR* = 2.96). They were much less likely to result in out-of-school suspensions (*OR* = 0.07), legal action (*OR* = 0.17), and/or changes in placement (*OR* = 0.53). Overall, these findings support a clear distinction between suicide risk assessment versus threat assessment.

Keywords: threat assessment; suicide assessment; violence prevention; school safety

School Threat Assessment Versus Suicide Assessment: Statewide Prevalence and Case Characteristics

In the 1990's, a series of school shootings prompted U.S. authorities in law enforcement and education to recommend the use of threat assessment in schools (APA, 2013; Fein et al., 2002; NASP School Safety and Crisis Response Committee, 2014). Threat assessment is a systematic approach to violence prevention intended to assess individuals who communicate a threat of violence to others in order to determine whether they pose a serious threat to carry out a violent act (Cornell, 2015; Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002). Although threat assessment is a relatively new school practice, suicide assessment is "a far more developed area of clinical practice than the assessment and management of threats to kill others" (Warren, Mullen, & McEwan, 2014, p. 29). Twenty-eight states mandate school personnel suicide prevention training and 14 additional states encourage schools to train personnel (AFSP, 2018), whereas only six states have implemented specific laws or procedures for school threat assessment programs (Woitaszewski, Crepeau-Hobson, Conolly, & Cruz, 2018).

In 2013, Virginia became the first state to mandate that all public schools establish threat assessment teams to evaluate students "whose behavior poses a threat to the safety of school staff or students" (*Code of Virginia,* § 22.1-79.4; Threat Assessment Teams and Oversight Committees, 2013). Given its breadth, the law effectively placed threats to self under the umbrella of threat assessment by mandating that a threat assessment team must evaluate "a student [that] poses a threat of violence or physical harm to self or others" (*Code of Virginia,* § 22.1-79.4; Threat Assessment Teams and Oversight Committees, 2013). School staff were surprised by this change in procedures because it seemed to require previously confidential results of a suicide assessment to be shared with law enforcement and other members of a

multidisciplinary threat assessment team that ordinarily would not have access to such information. The state also did not differentiate threats to self and threats to others within guidelines for investigating threats and interviewing students and witnesses. The unexpected inclusion of suicide assessment within the threat assessment mandate created a challenge for educators and school-based mental health personnel to revise existing suicide assessment policies and practices (Cornell et al., 2016).

In response to the 2018 shooting at Stoneman Douglas High School, Florida enacted legislation that mandated threat assessment for its public schools (*Florida Senate Bill,* § 7026; Marjory Stoneman Douglas High School Public Safety Act, 2018). In emulation of the Virginia law, the Florida bill also extended threat assessment to include persons who exhibit "threatening or aberrant behavior that may represent a threat to the community, school, or self."

An important policy question is whether the practice of suicide assessment in schools should become part of the threat assessment process. To inform this question, the current study compared threat assessment cases in Virginia schools that involved a threat to others with those involving a threat to self. The study investigated how student threats to harm others compared to threats to harm self in prevalence, case characteristics, and school response. It should be noted that threats to harm self are not necessarily suicidal and that some youth engage in self-injury that is not suicidal (Muehlenkamp & Gutierrez, 2007), but this study is concerned primarily with suicide assessment.

School-Based Suicide Assessment

Suicide assessment can be distinguished from threat assessment based on its prevalence, case characteristics, and school responses. From 2001 to 2016, suicide was the third leading cause of death in school-aged youths in the United States (CDC, 2017). Males had a higher rate

of suicidal deaths (4.7 deaths per 100,000) compared to females (1.4 per 100,000). The 2017 Youth Risk Behavior Surveillance Survey (YRBSS) found that approximately 17.2% of high school students seriously considered attempting suicide within the year preceding the survey; 13.6% reportedly made a suicide plan; 7.4% attempted suicide one or more times; and 2.4% made a suicide attempt that resulted in an injury, poisoning, or overdose requiring medical treatment (Kann et al., 2017). Female high school students had a higher prevalence for suicidal ideation, planning, and attempts compared to male students.

Although suicidal ideation and behaviors are observed in many schools, completed suicides at school are rare. The CDC reported that a total of 632 violent youth deaths occurred at schools between 1992 and 2014 (Musu-Gillette, Zhang, Wang, Zhang, & Oudekerk, 2017). Of the reported 632 violent deaths at school nationwide, 127 (approximately 20%) were suicides.

Given the prevalence of youth suicides over the past 15 years and the frequency of teen suicide ideation, it is clear that suicide risk assessment is much-needed in schools. Research indicates that suicide risk assessment is a promising approach to prevent youth suicide (Crepeau-Hobson, 2013). Researchers evaluated 3,443 student suicide risk assessments conducted within three large school districts between 2007-2010 and found that only 11% resulted in the student's hospitalization and no suicides were completed. As such, school-based suicide assessments are crucial for identifying and intervening with at-risk youths (AFSP, 2018; Erbacher & Singer, 2017) due to the "ideal context" schools provide "for prevention, intervention, positive development, and regular communication between schools and families" (NASP, 2016, p. 1). School psychologists in particular have been tasked with promoting the "recognition of risk and protective factors that are vital to understanding and addressing systematic problems such as…youth suicide" (NASP, 2010, p. 7).

Case characteristics. There is a large body of research on risk factors for suicidal ideation or behavior (Brock & Reeves, 2018). These factors vary by age and gender and fluctuate over time (Gangwisch, 2010). Among children and adolescents, risk factors include hopelessness, purposelessness, low self-esteem, withdrawal or isolation, mental illness, drug or alcohol use, or a history of suicide attempts. In addition, an acute or situational event (e.g., bullying, break-up with a romantic partner, disciplinary crisis, death of a loved one) can result in stress or depression, increasing youths' risk for suicide ideation and/or behavior (Bridge, Goldstein, & Brent, 2006; Brock & Reeves, 2018; NASP, 2015; Rudd et al., 2006; Valois, Zullig, & Hunter, 2013). For example, researchers found that cyberbullying victimization increases suicidal thoughts (Gini & Espelage, 2014), and general involvement in bullying as the victim or perpetrator increases an adolescent's risk for suicidal ideation and behavior (Yen, Liu, Yang, & Hu, 2015). Risk factors that are identified as immediate precipitants to a suicide attempt are termed warning signs and involve a youth creating a detailed plan of how, when, and where to commit suicide; acquiring weapons or the means to commit suicide; concealing the intentions to avoid being thwarted; and engaging in final acts (e.g., writing notes, giving away meaningful possessions; Brock & Reeves, 2018; Harrington, 2001).

School use of suicide assessment. Suicide assessment is an established practice conducted by a single school psychologist or other trained mental health professional, typically in the form of a structured questionnaire to determine a student's potential level of risk for suicidal behavior. The school psychologist helps to implement intervention responses in order to decrease the student's risk suicidal behavior on a long-term basis (Brock & Reeves, 2018; NASP, 2010). Specifically, the assessment determines the student's history of suicidal thoughts and behaviors (Crepeau-Hobson, 2013), the degree to which he/she feels connected with others

in a meaningful way, has coping strategies to counter feelings of hopelessness, and whether or not the student has a current suicidal plan and means to carry it out (Brock & Reeves, 2018).

Suicide assessments are typically classified as low, moderate, or high based on the level of risk associated with the student's current risk and protective factors (Brock & Reeves, 2018). Typical school responses to suicide assessments emphasize parental consultation to encourage the student to receive therapeutic services. A moderate classification implies that the student experiences relatively frequent or severe suicidal thoughts, warranting parental consultation, encouragement to seek therapeutic services, and potential transportation to a psychiatric emergency center. The most serious classification in a suicide risk assessment is characterized by the student's severe emotional pain, suicidal thoughts, and lack of perceived social supports. School responses can include immediate transportation to a psychiatric emergency facility coupled with the other school responses. Of note, school-based suicide risk assessment is the first step in a more involved mental health intervention process that typically requires expertise outside of the school for long-term care.

School-Based Threat Assessment

Student threats and acts of violence are relatively common in schools. From 2001 to 2016, homicide was the second leading cause of death in school-aged youths (CDC, 2017). Males had a higher rate of homicidal deaths (5.4 deaths per 100,000) compared to females (1.2 per 100,000). The 2017 YRBSS found that approximately 8.5% of high school students nationwide reported being in a physical fight on school property and 6% had been threatened or injured with a weapon (i.e. gun, knife, or club) on school property (Kann et al., 2017). Within the month preceding the survey, 3.8% of students reported carrying a weapon to school on at least one day. Another study similarly found that student threats of violence and aggressive behavior

were relatively common in schools (Nekvasil & Cornell, 2012). Researchers surveyed 3,756 high school students and asked whether another student had threatened to harm them in the past 30 days. Approximately 12% of students reported being threatened and approximately 9% reported that the threat was carried out.

Although student threats and aggressive behaviors are observed in many schools, lethal acts of violence are rare. Of the 632 violent deaths at schools between 1992 and 2014, 505 or approximately 80% were homicides (Musu-Gillette et al., 2017). This translates to an average of 23 homicidal deaths at school per year and an annual rate of approximately 0.041 homicidal deaths per 100,000 school-age youths. While these are not precise calculations, they demonstrate that the risk of homicidal school violence is relatively low. Another study using data from the National Incident-Based Reporting System (Nekvasil, Cornell, & Huang, 2015) similarly found that homicides rarely occurred in schools (0.3% of all homicides) compared to other locations. However, the prevailing belief that homicides are likely events in schools can skew the perception of risk in evaluating a potentially dangerous student (Cornell, 2006).

Threat characteristics. Threat assessment authorities have posited that there are warning behaviors or behavioral patterns that indicate a person has serious intent to carry out a threat (Meloy, Hoffmann, Guldimann, & James, 2012). Researchers examining incidents of targeted violence within schools and other settings found that most attackers had access to weapons prior to the violent incident and an obsession with violence (Hoffmann & Roshdi, 2013; Mohandie, 2014; O'Toole, 2000; Vossekuil et al., 2002). Further, students often communicated to a third party about their intent to commit a violent act, a warning behavior commonly known as leakage (Meloy & O' Toole, 2011). Leakage can occur through oral, written, or social media

communications and communication is typically directed towards friends, classmates, or siblings rather than the intended victim (Meloy & O'Toole, 2012; O'Toole, 2000; Vossekuil et al., 2002).

Researchers also found that attackers engaged in behaviors that concerned others prior to the incident (93%), such as a known history of weapon use (63%), access to weapons prior to the incident (68%), fascination with violence displayed through class assignments or verbal communications (59%; Vossekuil et al., 2002). Some attackers had committed a known act of violence prior to the incident (31%) and/or had previously been arrested (27%; Vossekuil et al., 2002), coinciding with the notion that a history of violence is the strongest predictor of future violence (Monahan & Steadman, 1994). Lastly, Vossekuil and colleagues (2002) noted that the majority of attackers reported suicidal ideation (78%). Although suicidal ideation is a risk factor for the attackers that have in fact committed school shootings, it is not necessarily a risk factor for the larger group of students that threaten to harm others. Overall, these are case characteristics that school-based teams investigate during a threat assessment (Meloy et al., 2012; O'Toole, 2000; Vossekuil et al., 2002).

School use of threat assessment. Threat assessment has emerged as a specialized form of violence prevention that has some important features that distinguish it from suicide assessment. A threat assessment is typically conducted to determine whether a person intends to carry out a specific threatened act, usually toward a targeted victim or group, within a relatively short time frame (Cornell & Datta, 2017; Cornell & Sheras, 2006). Threat assessment uses a step-by-step process to gather information, make systematic judgments using both case-specific and dynamic risk factors, and implement management strategies to reduce the risk of violence (Cornell & Sheras, 2006). The threat assessment process is often completed by a multidisciplinary team, typically consisting of a principal or assistant principal, school resource

officer, school psychologist, school counselor, and/or a teacher. Together, the team determines the seriousness of the threat and implements appropriate management strategies.

When a threat assessment team determines that a threat is serious, the team will take protective actions to prevent an act of violence. Protective actions can include notifying targeted individuals and taking actions such as contacting the police. The team might initiate a variety of interventions such as counseling, mental health treatment, and hospitalization. Students might receive disciplinary consequences that range from a reprimand to school suspension, school transfer, or expulsion. There may be legal consequences including arrest, court charges, and incarceration.

Current Study

Violence directed to others and violence directed to self have similar underlying risk factors, especially in the adult literature (Monahan, Vesselinov, Robbins, & Appelbaum, 2017; O'Donnell, House, Waterman, 2015). However, there are both similarities and differences between threat assessment for *adolescents* who have *threatened* to harm someone and suicide assessments for *adolescents* who have *threatened* to harm themselves but not someone else. Although homicide and suicide among school-age youth have similar overall prevalence rates (18.4% vs. 17.0%), homicides are four times more likely to occur at school than suicides (Musu-Gillette et al., 2017). The rate of suicide in schools is 0.01 per 100,000 and the rate of homicide in schools 0.041 per 100,000. These calculations indicate that threat assessment and suicide assessment have similar rates of prevalence, but the media attention given to school shootings in which the student also committed suicide may create an impression that suicide and homicide are associated. The U.S. Secret Service and U.S. Department of Education noted in their study of

school violence that five of the 41 attackers committed suicide, but there is no empirical indication that the typical suicide case also involves a threat to others (Vossekuil et al., 2002).

The threat assessment process may differ from suicide assessment in several ways within schools. Important distinctions are observed in the prevalence and the characteristics of students who threaten others versus themselves in terms of history of violent behavior, prior discipline problems, and weapon possession. In addition, suicide assessment is typically administered by a single school-based mental health professional, whereas threat assessment is a stepwise process conducted by a multi-disciplinary school-based team (Brock & Reeves, 2018; Cornell & Sheras, 2006). Finally, the classification and management approaches differ between threats to self and threats to others. Management approaches for both types of assessments depend on the student's intent and level of imminence for the act to be carried out. In suicide assessment, approaches typically involve parental notification, therapeutic services, and/or transfer to an emergency psychiatric facility, often resulting in long-term intervention and care outside of the school (Brock & Reeves, 2018). In contrast, threat assessment management approaches range from asking the student to apologize in the case of a non-serious threat to more complex responses in a serious case. Schools are likely to respond more punitively and less sympathetically to students who threaten others versus themselves. Although a student who threats others is likely to be suspended from school as a punishment, a student who expresses suicidal feelings is less likely to be suspended.

Despite these important distinctions, Virginia's law mandated threat assessment teams to evaluate both students that pose a threat of violence to self or others and made no distinction between suicide assessment and threat assessment. Consequently, it is important to understand how threat assessment teams responded to threats of violence to self in comparison to threats of

violence to others. Understanding the similarities and differences in these cases can inform future practice and legislation to ensure that school resources and prevention strategies are appropriate.

Since 2013, Virginia law (*Code of Virginia,* § 22.1-79.4; Threat Assessment Teams and Oversight Committees, 2013) also mandated that schools report information regarding their threat assessment cases through an annual School Safety Audit Survey. Specifically, school principals indicate the number of conducted threat assessment cases and whether the cases involved a threat to self, others, or both self and others. Thus, it was possible to examine the prevalence and case characteristics of both threats to self and threats to others in the current study. However, the study was limited to items adopted by the state agency in charge of the survey and were asked in one particular year (2014-15).

The first research question was, "How do threats of violence to self and others differ in prevalence?" The study examined how frequently schools conducted threat assessments for students who threatened others, threatened to harm themselves, or made both kinds of threats.

The second research question was, "How do threats of violence to self and others differ in threat characteristics?" Consistent with previous research (CDC, 2017; Kann et al., 2017; Cornell et al., 2018), it was hypothesized that threats to self would include more older students, female students, whereas threats to others would include more middle school students and disciplinary referrals. It was also hypothesized that threats against self would be less likely to involve the mention or possession of a weapon than threats against others.

The third research question was, "How do threats of violence to self and others differ in school responses?" It was hypothesized that students who threaten suicide would be more likely to make an attempt to carry out their threat and that teams would be more likely to refer them for

mental health services. In contrast, threats to others would be more likely to lead to the student being suspended, removed from school, arrested, and/or charged with an offense.

Method

Participants

The total descriptive sample consisted of 2,861 threats cases reported by 949 schools and involved three threat categories (e.g., threats to self, threats to others, and threats to self and others). The hypotheses comparing suicide assessment and threat assessment omitted 159 cases that were both threats to self and others, resulting in 2,702 threat cases reported by 926 schools, which included 492 (53%) elementary, 226 (24%) middle, and 208 (23%) high schools (Table 1). The racial/ethnic breakdown of students making the threats was 1,391 (51.5%) White, 769 (28.5%) Black, 203 (7.5%) Hispanic, 79 (2.9%) Asian, and 260 (9.6%) Other[3]. Most threats (64%) were made by males. Students making threats ranged from kindergarten to the 12th grade; the mean grade was 6th and the modal grade was 4th.

Procedure

Data were obtained from the School Safety Audit Survey, an annual survey of schools completed online after each school year and conducted by the Virginia Department of Criminal Justice Services (DCJS). The survey is mandated by state law (*Code of Virginia,* § 22.1-79.4; Threat Assessment Teams and Oversight Committees, 2013; *Code of Virginia,* §22.1-279.8; School Safety Audits and School Crisis, Emergency Management, and Medical Emergency Response Plans Required, 1997) and had 100% participation by Virginia public schools. The state survey asked school principals to provide specific case details for a maximum of five

[3] The Other race/ethnicity category included students noted as Unknown or Mixed race.

student threat assessment cases during the 2014-15 school year, including whether the cases involved threats to self or others. Of Virginia's 1,746 elementary, middle, and high schools, the majority (n = 1,498, 85.8%) had five or fewer cases, and thus reported all of their cases. The maximum was set at five in order to reduce the reporting burden on schools that had a large number of cases.

Measures

Case characteristics. Critical threat characteristics were identified from a checklist of survey items, including whether the threat was communicated directly (to the intended target), indirectly (to a third party), or implicitly (implied by behaviors and actions of concern). Teams reported whether the student had a history of violence or prior disciplinary actions, as well as whether the student threatened the use of a weapon or was in possession of one.

Threat outcomes. Five kinds of threat outcomes (coded 1 for yes and 0 for no) were measured: whether the student (1) attempted to carry out the threat; (2) was referred for mental health services, (3) received an out-of-school suspension; (4) had a change in school placement; and/or (5) was subjected to legal action (i.e., arrest, juvenile detention, or charges). Teams reported whether the student attempted to carry out the threat. Because of the low number of threats that were attempted (3.5%) or carried out (0.5%) in the sample, these categories were combined into an "attempted threat" category. Mental health services included referrals for school counseling, mental health evaluation (in or outside of the school system) or other therapeutic services. Out-of-school suspension of any duration from 1 to 365 days (approximately 92% were 1-10 days, defined as short-term suspensions in Virginia). Placement changes included transfer to another regular school or an alternative school, homebound

instruction, or hospitalization. Legal actions included arrest, court charges, or incarceration in juvenile detention.

Covariates. The analyses controlled for school demographic variables obtained from the state department of education database: school size, percent minority enrollment, and the percent of students that qualified for a free or reduced priced meal (FRPM), a commonly used proxy for socioeconomic status (SES). The analyses also controlled for student demographics obtained from the survey, which included gender, sex, race/ethnicity, and special education (SPED) status.

Analytic Strategy

To assess the first research question concerning the prevalence of threats to self or others, the number of cases involving threats to self, threats to others, and threats to both self and others were determined. In order to compare cases involving threats to self and threats to others, a small proportion (5%) of cases involving both threats to self and others were omitted from subsequent analyses. Descriptive statistics were calculated for key variables (e.g., sex, race/ethnicity, threat outcome, school response) for the three types of threats (Table 1).

To address the second research question, a logistic regression model investigated the association of threat characteristics with a threat to self (coded as 1) versus a threat to others (coded as 0). Threat characteristics include a student's possession or use of a weapon, prior history of violence in school or disciplinary action, and the way in which the threat was communicated. To answer the third research question, five logistic regression models investigated the likelihood of a threat to self resulting in attempted threats, mental health services, out-of-school suspensions, change in placement, or legal action.

All models controlled for student- and school-level demographic covariates that included school size, percent minority enrollment, and percent of students eligible for FRPM. Cluster

robust standard errors, using Taylor series linearization (Huang, 2014; Rust, 1985), which accounted for students nested within schools, were used to reduce Type I errors. Logistic regression results are presented using standard odds ratios (*OR*s) and 95% confidence intervals, where *OR*s > 1 signify a higher likelihood of a threat to self or a certain threat outcome and *OR*s < 1 indicate a lower likelihood. To aide in the interpretation of effect sizes, when predictors were dichotomous, *OR*s were converted into Cohen's *d* values using ln(*OR*)/1.81 (Chinn, 2000). Using Cohen's (1992) guidelines, effect sizes were interpreted as small (~ 0.20), moderate (~ 0.50), or large (~ 0.80).

Results

The 2,861 cases included 3 groups: 1) threat to others (1,707; 60%), 2) threats to self (995; 35%), and 3) threats to both self and others (159; 5%; Table 1). The small proportion of cases involving a threat to both self and others was of interest. Inspection of the data revealed that 114 (72%) of the 159 cases involved males and 81 (51%) cases involved elementary school students. These students lacked a history of violence (31%) and the majority of the threats did not involve a weapon (92%). Only 8 (5%) of the 159 cases were attempted and only 3 of the attempted cases were considered serious by threat assessment teams and received substantial attention. These 8 cases primarily involved students who engaged in self-harming behaviors (e.g., cutting) or acquired razor blades for themselves and/or a friend to engage in self injury. In response, most of the students were referred for mental health services (77%) and were able to return to their original school (76%) without a change in placement. Less than half received an out-of-school suspension and only 1% was subject to legal intervention (e.g., arrest or court charges).

Regarding the second research question, only two variables (i.e., SPED status and history of violence in school) were not statistically significant predictors of threats to self (both *p*s > .05; Table 2). Students making threats to self were less likely to have prior disciplinary action (*OR* = 0.48, $p < .001$, $d = -0.41$) and more likely to communicate the threat implicitly versus directly (*OR* = 2.93, $p < .001$, $d = 0.59$). As hypothesized, threats to self were more likely to be made by female than male students (*OR* = 3.38, $p < .001$, $d = 0.67$) and less likely to involve a weapon (*OR* = 0.07, $p < .001$, $d = 1.46$).

Regarding the third research question, only 4% of all reported threats were attempted (Table 1). Results of logistic regression models indicated threats to self were more likely to be attempted compared to threats to others (*OR* = 1.50, $p < .05$, $d = 0.22$; Table 3). Female students were more likely to attempt a threat to self than a threat to others (*OR* = 1.99, $p < .001$, $d = 0.38$). No other student- and school-level variables were statistically significant (i.e., *p*s > .05).

Students who made threats to self were more likely to receive mental health services (*OR* = 2.96, $p < .001$, $d = 0.60$) and less likely to receive an out-of-school suspension (*OR* = 0.07, $p < .001$, $d = 1.47$), face legal action (*OR* = 0.17, $p < .001$, $d = 0.98$), or have a change in placement (*OR* = 0.53, $p < .001$, $d = 0.35$; Table 3) than students who made threats to others.

Discussion

This study provides new evidence in support of the distinction between suicide assessment and threat assessment. Contrary to the perception generated by highly publicized school shootings in which the shooter also committed suicide, the current study found, in a large statewide sample, that most students who threatened others were not identified as suicidal. Further, most students who threatened to harm themselves did not threaten to harm others. Ninety-five percent of students identified for a threat assessment threatened others or themselves;

only five percent threatened both themselves and others. Overall, these findings have important policy implications for school systems and legislative bodies who might mistakenly assume that threats to self and others frequently co-occur and require similar responses.

Threat Characteristics

Cases of threats to others were clearly distinguishable from threats to harm self. Students who made threats to self were evenly distributed across gender, whereas students who made threats to harm others were predominantly male (Table 1). This gender difference parallels research that consistently finds a higher proportion of depression and suicidal ideation among female youths (Harrington, 2001; Kann et al., 2017) and the predominance of physical violence among male rather than female youths (Nansel et al., 2001). In addition, students who made threats to others had a greater prevalence of prior violence and disciplinary action (Table 1), which is consistent with threat assessment literature on warning behaviors (Mohandie, 2014; O'Toole, 2000; Vossekuil et al., 2002). Based on Cohen's (1992) effect size guidelines, threats to others had a moderate association with prior disciplinary action and a strong association with the use or possession of a weapon (Table 2). Students who threatened themselves were more likely to communicate their threats through implicit behaviors compared to the overt warning behaviors demonstrated by students who threatened others.

School Responses

School threat assessment teams responded differently to students who threatened themselves rather than others. Female students were much more likely to make and attempt threats to harm themselves compared to male students. This finding is consistent with the suicide literature that indicates a high rate of females threaten and attempt self-harm (Brock & Reeves, 2018; Harrington, 2001; Kann et al., 2017). In contrast, previous threat assessment literature

indicated that male students were much more likely to receive a threat assessment than female students (Cornell et al., 2018). Further, students who threatened to harm themselves were 1.5 times more likely to attempt to carry out the threat compared students threatening others. Previous literature on the prevalence of attempted and carried out suicides among school-aged youths also supports this finding (Kann et al., 2017; Musu-Gillette et al., 2017).

Students threatening themselves had odds that were approximately three times higher to receive mental health services than students threatening others. This finding substantiates the suicide literature that emphasizes increased mental health services for students experiencing suicidal ideation and/or intent (Brock & Reeves, 2018; Crepeau-Hobson, 2013). Such services, alongside a suicide assessment, respond to the student's level of distress, hopelessness and desperation, and avoid unnecessary punitive school responses to a predominately mental health issue. These results support previous research that indicates mental health professionals have established procedures for responding to student suicidal ideation and behavior in schools (Crepeau-Hobson, 2013; Kreuze et al., 2017; Warren et al., 2014).

Finally, disciplinary consequences were used more frequently in threat assessment compared to suicide assessment; students who threatened others were 14 times more likely to receive out-of-school suspensions and six times more likely to receive legal action. Students who threatened others also had a moderate association with a change in placement. These differences in school responses further support the pattern of distinction between threats to self and threats to others. Overall, these findings indicate practical and conceptual distinctions between threat assessment and suicide assessment both in warning behaviors and school responses.

Clinical Implications

In contrast to threat assessment, suicide risk assessment is a well-established practice that is widely supported by decades of research (Warren et al., 2014). Evidence-based screening tools and procedures exist to assess suicide risk, such as the Suicide Assessment Five-Step Evaluation and Triage, Columbia-Suicide Severity Rating Scale, and Suicide Ideation Questionnaire (SAMHSA, 2017). Professionals conducting suicide risk assessment and threat assessment both seek to understand the context in which the threat was made and the underlying concerns that prompted the threat (Brock & Revees, 2017; Cornell & Sheras, 2006). However, one mental health professional typically conducts a suicide risk assessment from an empathic and supportive perspective (Brock & Revees, 2017). In contrast, the multi-disciplinary team conducts the threat assessment from an investigative perspective, evaluating the details of the threat and student's intent to cause harm. Suicide assessment is concerned with one student's safety, typically leading the school to urge parents to secure mental health services for their child. Conversely, threat assessment is concerned with the safety of others, which may require protective actions such as warning targeted victims and contacting law enforcement. Although a student receiving a threat assessment may receive emotional support and referral for mental health services, there will also be efforts to resolve interpersonal conflicts, disciplinary consequences, and possible legal action.

Overall, the results presented here suggest that students who make a threat to harm themselves should not automatically receive a threat assessment. Mental health professionals can assess threats to self without referral to the threat assessment team, unless the relatively infrequent situation occurs in which there is both a threat to self and others. In these hybrid cases, the team could supplement the procedures typically used to assess a threat to others with the methods typically used to assess threats to self (SAMSHA, 2017; Warren et al., 2014).

Limitations and Conclusion

This retrospective study relied on survey reports of threat assessments conducted during the prior school year. In a prospective study, researchers could gather information on threats as the cases unfold in real time in order to maintain independence of the threat outcome. However, it was not possible in this study to monitor or record case data prospectively. Another limitation was that schools were not asked to distinguish between threats of self-harm and threats of suicide when reporting the number of assessments conducted for threats to self. More detailed information about the exact nature of these threats is warranted to investigate the differences in types of suicidal threats. Finally, longitudinal information on students that made a threat to self would be beneficial in evaluating the appropriateness of school responses. It would be valuable to investigate how students fared after a threat assessment and whether there were further threats, conflicts, or other problems in subsequent years.

Despite these limitations, the findings presented provide empirical support for the distinction between threats to self and threats to others based on a large sample of schools that implemented threat assessment as a violence prevention strategy. Ultimately, these results suggest that threat assessment and suicide risk assessment should be considered independent practices except in the rare hybrid cases when a student threatens to harm both others and self. For such cases, the overlapping nature did not automatically increase the severity of risk, as evidenced by the small number of attempts. Schools also did not administer more severe disciplinary action in hybrid cases. These critical findings are often misconstrued by the media due to highly publicized school shootings that resulted in the attacker's suicide. These results also substantiate previous research that indicates the rates of both homicidal and suicidal incidents are low compared to the rates of homicidal or suicidal acts of violence (Felthous &

Hempel, 1995). Both suicide and threat assessment are appropriate in the hybrid cases, but the engagement of a multi-disciplinary team and law enforcement are unnecessary for the large number of students threatening to harm themselves only. In suicide cases, the involvement of a large team might be counterproductive to the process of supporting the student and gaining his or her trust. As more states and school divisions adopt policies to implement school-based threat assessment, they should carefully consider the important distinctions between the types of threats identified in the present study to avoid suicide assessment being subsumed into the threat assessment process.

References

American Foundation for Suicide Prevention (AFSP). (2018). State laws: Suicide prevention in schools (K-12). Retrieved from http://afsp.org/wp-content/uploads/2018/02/AFSP_K-12-Schools-Issue-Brief-2-5-18.pdf

American Psychological Association (APA). (2013). Gun violence: Prediction, prevention, and policy. Retrieved from http://www.apa.org/pubs/info/reports/gun-violence-prevention.aspx

Bridge, J. A., Goldstein, T. R., & Brent, D. A. (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry*, *47*, 372-394.

Brock, S. E., & Reeves, M. A. L. (2018). School suicide risk assessment. *Contemporary School Psychology, 22*, 174-185.

Centers for Disease Control and Prevention (CDC). (2017). Web-based Injury Statistics Query and Reporting System (WISQARS) (Fatal Injury Data Visualization Tool, 2001–2016). National Center for Injury Prevention and Control. Retrieved from https://wisqars-viz.cdc.gov

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine*, *19*(22), 3127–3131.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155–159.

Cornell, D. (2006). School violence: Fears versus facts. Mahwah, NJ: Lawrence Erlbaum.

Cornell, D. (2015). Our schools are safe: Challenging the misperception that schools are dangerous places. *American Journal of Orthopsychiatry*, *85*, 217-220.

Cornell, D., & Datta, P. (2017). Threat assessment and violence prevention. In L. Wilson (Ed.), *The Wiley handbook of the psychology of mass shootings* (pp. 353-371). Hoboken, NY:

Wiley.

Cornell, D., Maeng, J., Burnette, A.G., Datta, P., Huang, F., & Jia, Y. (2016). *Threat Assessment in Virginia Schools: Technical Report of the Threat Assessment Survey for 2014-2015.* Charlottesville, VA: Curry School of Education, University of Virginia.

Cornell, D., Maeng, J. L., Burnette, A. G., Jia, Y., Huang, F., Konold, T., . . . Meyer, P. (2018). Student threat assessment as a standard school safety practice: Results from a statewide implementation study. *School Psychology Quarterly, 33*, 213-222.

Cornell, D., & Sheras, P. (2006). *Guidelines for responding to student threats of violence*. Longmont, CO: Sopris West.

Crepeau-Hobson, F. (2013). An exploratory study of suicide risk assessment practices in the school setting. *Psychology in the Schools*, *50*, 810-822.

O'Donnell, O., House, A., & Waterman, M. (2015). The co-occurrence of aggression and self harm: Systematic literature review. *Journal of Affective Disorders*, *175*, 325-350.

Erbacher, T. A., & Singer, J. B. (2017). Suicide risk monitoring: The missing piece in suicide risk assessment. *Contemporary School Psychology, 22*, 186-194.

Fein, R. A., Vossekuil, B., Pollack, W. S., Borum, R., Modzeleski, W., & Reddy, M. (2002). *Threat assessment in schools: A guide to managing threatening situations and creating safe school climates.* Washington, DC: U.S. Department of Education, Office of Elementary and Secondary Education, Safe and Drug-Free Schools Program and U.S. Secret Service, National Threat Assessment Center.

Felthous, A. R., & Hempel, A. (1995). Combined homicide-suicides: a review. *Journal of Forensic Science*, *40*, 846-857.

Gangwisch, J. E. (2010). Suicide risk assessment. *Current Medical Literature: Psychiatry, 21,*

113-119.

Gini, G., & Espelage, D. L. (2014). Peer victimization, cyberbullying, and suicide risk in children and adolescents. *Jama*, *312*, 545-546.

Harrington, R. (2001). Depression, suicide and deliberate self-harm in adolescence. *British Medical Bulletin*, *57*, 47-60.

Hoffmann, J., & Roshdi, K. (2013). School shootings in germany: Research, prevention through risk assessment and threat management. In N. Böckler, T. Seeger, P. Sitzer, & W. Heitmeyer (Eds.), *School shootings* (pp. 363-378). New York: Springer.

Huang, F. (2014). Analyzing group level effects with clustered data using Taylor series linearization. *Practical Assessment, Research, and Evaluation*, *19*, 1–9.

Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Queen, B., … & Ethier, K. (2017). Youth Risk Behavior Surveillance — United States, 2017. *MMWR, 67*, 1–479. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/ss6708.pdf

Kreuze, E., Stecker, T., & Ruggiero, K. J. (2017). State requirements for school personnel suicide prevention training: where do we go from here? *Adolescent Research Review, 3*, 235-253.

Marjory Stoneman Douglas High School Public Safety Act, Florida Senate Bill §7026. (2018).

Meloy, J.R., Hoffmann, J., Guldimann, A., & James, D. (2012). The role of warning behaviors in threat assessment: An exploration and suggested typology. *Journal of Behavioral Sciences & the Law*, *30*, 256-279.

Meloy, J. R., & O'Toole, M. E. (2011). The concept of leakage in threat assessment. *Behavioral Sciences & The Law*, *29*, 513-527.

Mohandie, K. (2014). Threat assessment in schools. In J. Reid Meloy & Jens Hoffmann (Eds.),

The international handbook of threat assessment (pp. 126-141). New York: Oxford University Press.

Monahan, J., & Steadman, H. J. (1994). *Violence and mental disorders: Developments in risk assessment.* Chicago, IL: The University of Chicago Press.

Monahan, J., Vesselinov, R., Robbins, P. C., & Appelbaum, P. S. (2017). Violence to others, violent self-victimization, and violent victimization by others among persons with a mental illness. *Psychiatric Services*, *68*(5), 516-519.

Muehlenkamp, J. J., & Gutierrez, P. M. (2007). Risk for suicide attempts among adolescents who engage in non-suicidal self-injury. *Archives of Suicide Research*, *11*, 69-82.

Musu-Gillette, L., Zhang, A., Wang, K., Zhang, J., and Oudekerk, B.A. (2017). *Indicators of school crime and safety: 2016* (NCES 2017-064/NCJ 250650). National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. Washington, DC.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. Journal of the American Medical Association, 285, 2094–2100. http://dx.doi.org/10.1001/jama.285.16.2094

National Association of School Psychologists (NASP). (2010). Model for comprehensive and integrated school psychological services. Bethesda, MD: Author. Retrieved from https://www.nasponline.org/Documents/Standards%20and%20Certification/Standards/2_PracticeModel.pdf

National Association of School Psychologists (NASP). (2015). Preventing youth suicide: Brief facts and tips. Retrieved from https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/preventing-youth-suicide

National Association of School Psychologists (NASP). (2016). *School-based mental health services: Improving student learning and well-being*. Retrieved from https://www.nasponline.org/resources-and-publications/resources/mental-health/school-psychology-and-mental-health/school-based-mental-health-services

National Association of School Psychologists (NASP) School Safety and Crisis Response Committee. (2014). *Threat Assessment for School Administrators and Crisis Teams*. Bethesda, MD: National Association of School Psychologists. Retrieved from https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/threat-assessment-at-school/threat-assessment-for-school-administrators-and-crisis-teams

Nekvasil, E., & Cornell, D. (2012). Student reports of peer threats of violence: Prevalence and outcomes. *Journal of School Violence*, *11*, 357-375.

Nekvasil, E., Cornell, D., & Huang, F. (2015). Prevalence and offense characteristics of multiple casualty homicides: Are schools at higher risk than other locations? *Psychology of Violence, 5*, 236-245.

O'Toole, M. E. (2000). *The school shooter: A threat assessment perspective.* Quantico, VA: FBI Academy, National Center for Analysis of Violent Crime. Retrieved from http://www.fbi.gov/stats-services/publications/school-shooter

Rudd, M. D., Berman, A. L., Joiner, T. E., Nock, M. K., Silverman, M. M., Mandrusiak, M., ... & Witte, T. (2006). Warning signs for suicide: Theory, research, and clinical applications. *Suicide and Life-Threatening Behavior*, *36*, 255-262.

Rust, K. (1985). Variance estimation for complex estimators in sample surveys. *Journal of Official Statistics*, *1*, 381–397.

School Safety Audits and School Crisis, Emergency Management, and Medical Emergency Response Plans Required, Va. Code §22.1-279.8. (1997).

Substance Abuse and Mental Health Services Administration (SAMHSA). (2017). Suicide prevention. Retrieved from: https://www.samhsa.gov/suicide-prevention

Threat Assessment Teams and Oversight Committees, Va. Code §22.1–79.4. (2013).

Valois, R. F., Zullig, K. J., & Hunter, A. A. (2015). Association between adolescent suicide ideation, suicide attempts and emotional self-efficacy. *Journal of Child and Family Studies*, *24*, 237-248.

Vossekuil, B., Fein, R., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States.* Washington, DC: U.S. Secret Service and U.S. Department of Education.

Warren, L. J., Mullen, P. E., and McEwan, T. E. (2014). Explicit threats of violence. In J. Reid Meloy & Jens Hoffmann (Eds.), *The international handbook of threat assessment* (pp. 18-38). New York, NY: Oxford University Press.

Woitaszewski, S., Crepeau-Hobson, F., Conolly, C., & Cruz, M. (2018). Rules, requirements, and resources for school-based threat assessment: A fifty state analysis. *Contemporary School Psychology*, *22*, 125-134.

Yen, C., Liu, T., Yang, P., & Hu, H. (2015). Risk and protective factors of suicidal ideation and attempt among adolescents with different types of school bullying involvement. *Archives of Suicide Research, 19*, 435–452.

Table 1

Descriptive Statistics by Threat Type

Student	Threats to Self n = 995 (36.8%)		Threats to Others n = 1,707 (63.2 %)		Total Sample N = 2,702 (100%)		Threats to Self and Others n = 159	
School Type								
Elementary	434	(43.6%)	783	(45.9%)	1,275	(47.2%)	81	(50.9%)
Middle	301	(30.3%)	533	(31.2%)	770	(28.5%)	41	(25.8%)
High School	260	(26.1%)	391	(22.9%)	657	(24.3%)	37	(23.3%)
Sex								
Male	465	(46.7%)	1,274	(74.6%)	1,739	(64.4%)	114	(71.7%)
Female	450	(45.2%)	317	(18.6%)	767	(28.4%)	38	(23.9%)
Unknown	80	(8.0%)	116	(6.8%)	196	(7.3%)	7	(4.4%)
Race/Ethnicity								
White	536	(53.9%)	855	(50.1%)	1,391	(51.5%)	99	(62.3%)
Black	248	(24.9%)	521	(30.5%)	769	(28.5%)	42	(26.4%)
Hispanic or Latino	82	(8.2%)	121	(7.1%)	203	(7.5%)	6	(3.8%)
Asian	31	(3.1%)	48	(2.8%)	79	(2.9%)	2	(1.3%)
Other[1]	98	(9.8%)	162	(9.5%)	260	(9.6%)	10	(6.3%)
SPED Status	280	(28.1%)	578	(33.9%)	858	(31.8%)	67	(42.1%)
History of Violence in School	125	(12.6%)	407	(23.8%)	532	(19.7%)	50	(31.4%)
History of Disciplinary Action	324	(32.6%)	963	(56.4%)	1,287	(47.6%)	82	(51.6%)
Threat Communicated: Indirectly[2]	165	(16.6%)	443	(26.0%)	608	(22.5%)	53	(33.3%)
Threat Communicated: Implicitly[2]	325	(32.7%)	236	(13.8%)	561	(20.8%)	28	(17.6%)
Weapon Involvement	18	(1.8%)	355	(20.8%)	373	(13.8%)	13	(8.2%)
Attempted Threat	54	(5.4%)	54	(3.2%)	108	(4.0%)	8	(5.0%)
Mental Health Services	692	(69.5)	753	(44.1)	1,445	(53.5%)	122	(76.7%)
Out-of-School Suspension	54	(5.4%)	786	(46.0%)	840	(31.1%)	71	(44.7%)
Change in Placement	85	(8.5%)	265	(15.5%)	350	(13.0%)	39	(24.5%)
Legal Action	9	(0.9%)	88	(5.2%)	97	(3.6%)	1	(0.6%)

Note. [1]Other includes unknown and mixed race. [2]Six cases out of 2,702 (i.e., <1%) were missing.

Table 2

Logistic Regression Odd Ratios for Threat Characteristics (n =2,696)

Predictors	Threat to Self		
	OR	*95% CI*	
School-level variables			
School Size	0.93*	0.88	0.98
Percent Minority Enrollment	1.01*	1.00	1.02
Percent FRPM[1] Eligible	0.99*	0.98	1.00
Student-level variables			
Female[2,3]	3.38***	2.74	4.17
Elementary School grade[4]	1.42*	1.02	1.97
High School grade[4]	1.92**	1.28	2.87
SPED Status[5]	1.04	0.83	1.31
Black[6]	0.70**	0.54	0.92
Hispanic[6]	1.10	0.75	1.62
Asian[6]	0.59	0.31	1.14
Other[6,7]	0.77	0.53	1.11
History of Violence in School	0.87	0.64	1.19
Prior Disciplinary Action	0.48***	0.38	0.61
Threat Communicated: Indirectly[8,9]	0.65**	0.49	0.88
Threat Communicated: Implicitly[8,9]	2.93***	2.20	3.91
Weapon Involvement	0.07***	0.04	0.12

Note. *$p < .05$. **$p < .01$. ***$p < .001$. [1]FRPM = free or reduced price meal. [2]Male is the reference group. [3]Due to some schools failing to report the student's gender, researchers controlled for unknown gender. [4]Middle school students were the reference group. [5]Students identified as non-special education is the reference group. [6]White is the reference group. [7]Other includes unknown and mixed race. [8]Directly communicated threats is the reference group. [9]Six cases out of 2,702 (i.e., <1%) were missing. Results used cluster robust standard errors.

Table 3

Logistic Regression Odds Ratio for Attempted Threats and Threat Outcomes (n = 2,702)

	Attempted Threat			Mental Health Services			Out-of-school Suspension			Change in Placement			Legal Action		
Predictors	*OR*	*95% CI*		*OR*	*95% CI*		*OR*	*95% CI*		*OR*	*95% CI*		*OR*	*95% CI*	
School-level variables															
School Size	1.01	0.96	1.07	0.99	0.96	1.02	1.00	0.96	1.04	1.00	0.96	1.04	1.02	0.96	1.09
Percent Minority Enrollment	1.00	0.99	1.01	1.0	0.99	1.00	0.99*	0.99	1.00	1.00	0.99	1.00	0.99	0.98	1.00
Percent FRPM[1] Eligible	1.01	0.99	1.02	1.01**	1.00	1.01	1.02***	1.01	1.02	1.01**	1.00	1.02	1.01	0.99	1.02
Student-level variables															
Female[2,3]	1.99***	1.36	2.90	1.06	0.86	1.30	0.81	0.63	1.03	0.92	0.68	1.23	0.78	0.42	1.44
Elementary School grade[4]	0.77	0.46	1.30	0.9	0.69	1.17	0.45***	0.33	0.60	0.44***	0.31	0.62	0.14***	0.06	0.31
High School grade[4]	1.05	0.58	1.91	1.07	0.77	1.50	1.13	0.78	1.64	1.57*	1.06	2.32	1.74*	1.01	2.98
SPED Status[5]	1.27	0.83	1.96	1.04	0.87	1.25	1.26*	1.02	1.55	1.22	0.93	1.60	0.82	0.50	1.32
Black[6]	1.12	0.63	2.01	0.71**	0.57	0.88	1.2	0.92	1.55	1.06	0.77	1.45	1.07	0.59	1.97
Hispanic[6]	1.31	0.61	2.83	1.00	0.70	1.43	1.00	0.66	1.50	1.17	0.72	1.90	1.75	0.79	3.88
Asian[6]	0.95	0.27	3.28	1.63	0.94	2.82	0.34**	0.17	0.69	0.54	0.22	1.36	0.43	0.06	3.16
Other[6,7]	1.16	0.51	2.64	0.82	0.60	1.13	0.82	0.58	1.16	0.9	0.59	1.39	1.23	0.56	2.71
Threat to Self	1.50*	1.01	2.23	2.96***	2.38	3.67	0.07***	0.05	0.10	0.53***	0.40	0.71	0.17***	0.07	0.42

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. [1]FRPM = free or reduced price meal. [2]Male is the reference group. [3]Due to some schools failing to report the student's gender, researchers controlled for unknown gender. [4]Middle school students were the reference group. [5]Students identified as non-special education is the reference group. [6]White is the reference group. [7]Other includes unknown and mixed race. All results use cluster robust standard errors.

Manuscript Three

Grade-Level Distinctions in Student Threats of Violence

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Published June 2020

Journal of School Violence

Author Note

We thank members of the project research team including Caroline Crichlow-Ball, Brittany Crowley, Kelly Edwards, Francis Huang, Yuane Jia, Marisa Malone, and Shelby Stohlman. This research was supported in part by Grant #NIJ 2014-CK-BX-0004 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions, or recommendations expressed in this report are those of the authors and do not necessarily reflect those of the U.S. Department of Justice or the Virginia Department of Criminal Justice Services.

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Abstract

Student threat assessment is a violence prevention practice used to investigate k-12 grade threats. Although this practice should consider how threatening behaviors vary from childhood through adolescence, research is limited. This study investigated grade-level differences in a statewide sample of 3,282 cases from 1,021 schools. Threats significantly differed across grade level in demographics, characteristics, and outcome. As grade increased, students were more likely to threaten to physically assault someone (*OR* = 1.11), but less likely to make a threat involving weapons (*OR* = 0.95) or threaten to kill (*OR* = 0.95). Fifth grade had the highest frequency of threats, but 9th grade was more likely to attempt threats of violence (*OR* = 1.02). Findings suggest schools should make grade-differentiated responses to student threats of violence.

Keywords: grade-level distinctions, student threat assessment, violence prevention

Grade-Level Distinctions in Student Threats of Violence

Threat assessment is a violence prevention practice used in schools (APA, 2013; NASP School Safety and Crisis Response Committee, 2014) that is expanding substantially with federal training funds from the STOP School Violence Act of 2018. Florida, Kentucky, Maryland, Pennsylvania, Ohio, Virginia, and Wisconsin explicitly mandate schools to have threat assessment teams and use threat assessment procedures, and 11 additional states have implemented specific laws or procedures regarding school threat assessment and/or threat reporting (Erwin, 2019; Woitaszewski, Crepeau-Hobson, Conolly, & Cruz, 2018). However, despite increasing endorsement, many aspects of this new practice have not been studied.

Threat assessment has emerged as a specialized form of violence risk assessment that is conducted when a person threatens to carry out a specific targeted act within a relatively short timeframe (Meloy, Hart, & Hoffmann, 2014). Threat assessment teams assess the threat of violence and respond with appropriate prevention steps (National Threat Assessment Center, 2018). Student threat assessment has the potential both to help schools prevent serious acts of violence and at the same time avoid over-reacting to student misbehavior. However, student threat assessment must recognize developmental differences, such as the tendency of youth to make impulsive and emotional statements that might not be serious threats.

Research regarding developmental differences in threats of violence is limited. The current study investigated threat assessment cases in Virginia schools for potential developmental differences by grade level. These grade-level distinctions were evaluated across threat characteristics and outcomes to aid school-based teams in assessing and managing student threats of violence.

Developmental Differences in Aggression

Aggressive and violent behaviors vary developmentally from childhood through adolescence (Loeber & Hay, 1997). In general, younger children are more likely than older adolescents to make emotional threats of violence that are not indicative of a serious intent to harm someone (Cornell & Sheras, 2006). In contrast, adolescence is a developmental period characterized by an increase in deviant peer influences, risky behaviors, aggression, and violence (Borum, 2000; Moffit, 1993). There also may be developmental changes in the nature of student threats from childhood to adolescence.

Violence among youths may begin with minor delinquent behaviors and can escalate to increasingly serious forms of assault (Office of the Surgeon General, 2001). According to the Office of Juvenile Justice and Delinquency Prevention (OJJDP, 2018), law enforcement agencies made 809,700 arrests of individuals under the age of 18 in 2017. Approximately 15.2% (123,040 of 809,700) of the arrests were for simple assault; 3.5% (28,220 of 809,700) were for aggravated assault; 2.3% (18,370 of 809,700) were for carrying or possessing a weapon; and 0.11% (910 of 809,700) were for murder.

There are clear developmental differences in the pattern of juvenile arrests for violent crimes. According to the OJJDP (2018), most forms of violent offending increase with age. Juvenile arrests for violent offenses are most common between the ages of 15 and 17 for murder (91%; 830 of 910), aggravated assault (67%), simple assault (61%), and carrying or possessing a weapon (71%). Developmental patterns also may exist in threats of violence among children and adolescents.

The pathway to violence is associated with static or historical risk factors. Static risk factors include the youth's race, gender, and age of first offense. There are developmental

differences in dynamic risk factors, which include conduct problems, negative peer relationships, and family environment/conflict (Borum, 2000; Cottle, Lee, & Heilbrun, 2001; Vincent, Perrault, Guy, & Gershenson, 2012). Vincent and colleagues (2012) investigated whether age-related differences and dynamic risk factors contributed to the accuracy of risk assessments for 674 adjudicated juveniles on probation. Researchers found that risk assessments significantly predicted both general and violent recidivism in adolescents between the ages of 13-15 and 16-18 but not in children aged 12 or below. They suggested that this age discrepancy was due to a low base rate of offending in children aged 12 or younger. However, previous studies have found a comparatively high rate of threats made in this younger age group (Cornell, Maeng, Burnette, Datta, Huang, & Jia, 2016). Evaluators must consider developmental differences between children and adolescents in their risk factors for violence.

Threat Assessment

Threat assessment is a form of risk assessment with a narrower focus that evaluates a specific targeted act that a person threatened to carry out. School-based threat assessment teams use a step-by-step process to gather information, make systematic judgments using both case-specific and dynamic risk factors, and implement management strategies to reduce the risk of violence (Cornell & Sheras, 2006). The teams are multidisciplinary, such as a principal, school mental health personnel, teacher, and/or school resource officer. Understanding developmental differences may help teams make more accurate assessments among student threats.

Threat assessment literature indicates that serious threats are more common among older students (Burnette, Datta, & Cornell, 2018; Cornell et al., 2004; Cornell et al., 2018). Despite the fact that the highest frequencies of student threats occur in upper elementary and middle school, these threats tend to be transient and lack a serious intent to harm others (Cornell et al., 2016).

Instead, upper middle and high school students have an increased likelihood of carrying out threats compared to elementary students (Burnette et al., 2018; Meloy, Hoffmann, Guldimann, & James, 2012).

Previous studies also have indicated a high prevalence of peer aggression among high school students. A nationally representative survey found that approximately 19% of students reported being bullied; 6% had been threatened or injured with a weapon (i.e. gun, knife, or club); and 3.8% reported carrying a weapon to school on at least one day (Kann et al., 2018). Within the month preceding the survey, 23.6% of students reported being in a physical fight. Similarly, another study surveyed 3,756 high school students among whom approximately 12% of students reported being threatened and approximately 9% reported that the threat was carried out (Nekvasil & Cornell, 2012). These studies indicate that threatening and aggressive behaviors among students are not only common, but typically involve risk factors that are displayed prior to an attack (Meloy et al., 2012).

There are differences in aggressive and threatening behaviors between older and younger adolescents. Researchers found that 9th and 10th grade students (54.5%) had a higher prevalence of being in a physical fight compared to 11th and 12th grade students (38.2%; Kann et al., 2018). Conversely, 11th (5.0%) and 12th grade students (4.2%) had a higher prevalence of carrying a weapon on school property compared to 9th grade students (2.5%). Regarding threats of violence, 12th grade students were less likely to report being threatened than 9th grade students (Nekvasil & Cornell, 2012). These studies indicate that, overall, there is a decline after 9th grade among student threats and violence, which contrasts with the increases observed in juvenile arrest statistics.

Despite the high proportion of aggressive and threatening behaviors observed in schools, serious acts of violence occur at a low rate. According to the Centers for Disease Control and Prevention (2019), there were more than 800,000 shooting casualties from 2011 to 2017 but only a fraction (0.04%; 321 of 800,000 shooting casualties) of the total gun violence in the United States occurred at schools. Another study using data from the National Incident-Based Reporting System found that homicides rarely occurred in schools and colleges (0.3%) compared to other locations (Nekvasil, Cornell, & Huang, 2015). Lastly, an epidemiological study identified 215 school shootings between 1990 and 2012 (Shultz, Cohen, Muschert, & Flores, 2013). The majority (60%) of these shootings occurred in a high school, followed by a college/university (18%), an elementary school (11%), and a middle school (10%). A third (32%) of the perpetrators were aged 18 years old or below and the vast majority (73%) were males.

Adolescents often exhibit risk factors prior to serious acts of violence. A previous study retrospectively examined 37 incidents of targeted school violence perpetrated by students from 1974 to 2000 (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002). The majority (85%) of the student attackers was adolescents and all attackers (100%) were males. Approximately a third of the student attackers (31%) had a history of violence and the majority (63%) acquired a weapon prior to the attack. These risk factors reflect the seriousness and credibility of a potential threat by older students (Burnette et al., 2018). Threat assessment should examine how student threats change across grade levels and what grade levels experiences the largest changes.

Student Characteristics that Influence a Threat Assessment Referral

There are a disproportionate number of threat referrals involving male students, minority students, and students receiving special education services. The demographic composition of student threat assessment cases is not proportionate to the general student population. Research

indicates that male students are four times more likely to be referred for a threat assessment compared to female students (Cornell et al., 2018). In fact, male students accounted for approximately 75% of 1,865 threat assessment cases conducted in Virginia during the 2013-14 academic year. These findings are consistent with previous research that males receive disciplinary infractions at a rate of two to four times higher than female students (Skiba et al., 2014). Similarly, there are higher rates of bullying and physical altercations among male adolescent students (Espelage & Holt, 2012; Nansel et al., 2001).

Minority students are disproportionately referred for a threat assessment. Cornell and colleagues (2018) found that the proportion of Black students referred for a threat assessment was 1.3 times higher than the proportion of White students. Conversely, Hispanic and Asian students were less likely to be referred for a threat assessment compared to White students. These findings coincide with well-known racial disparities observed in exclusionary discipline practices (U.S. Departments of Justice and Education, 2014). Black students receive disciplinary referrals at a higher rate compared to White students (Losen & Martinez 2013; Nansel et al., 2001).

Lastly, students enrolled in special education (SPED) services are approximately four times more likely to receive a threat assessment compared to students enrolled in regular coursework (Cornell et al., 2018). This finding parallels previous research that indicated students in special education made disproportionately more threats compared to students not receiving special education services (Kaplan & Cornell, 2005). Furthermore, students classified with an emotional disturbance (ED) had the highest threat rate, students with other health impairments had the second highest rate, and students with learning disabilities had a lower rate.

Current Study

School threat assessment teams are directed to consider the maturity and capability of the student making a threat (Cornell et al., 2018; Mohandie, 2014). Although previous studies suggest that threats by children are less serious than threats by adolescents (Cornell et al., 2004; Cornell et al., 2018), it is unknown whether threat characteristics and outcome differ across grade level, and where these differences might occur. The present study used a large, statewide sample to identify grade level differences among risk factors typically associated with more serious threats.

The primary research question was, "How do student threats of violence differ in prevalence, characteristics, and outcome across grade level?" The study examined how frequently threats of violence occurred within grades. Threat characteristics referred to the nature of the threat made by the student. It was hypothesized that students in older grades compared to younger students would be more likely to make a threat involving a weapon. Older students were also hypothesized to be more likely to threaten to kill, bomb, or physically assault someone compared to younger students. Lastly, the study examined whether the student attempted or did not attempt to carry out the threatened act of violence. It was hypothesized that older students would be more likely than younger students to attempt to carry out their threat. The study considered the influence of student demographics including gender, race, and SPED status in assessing grade level effects.

Method

Participants

The sample consisted of 3,282 threat cases reported by 1,021 schools across two school years (2013-14 and 2014-15). Two years were used in order to obtain a larger sample. Of the

1,021 schools, 548 (54%) were elementary, 240 (24%) were middle, and 233 (23%) were high schools. The racial/ethnic breakdown of students making threats consisted of 1,681 (51%) White, 1,011 (31%) Black, 254 (8%) Hispanic, and 336 (10%) other[4] (Table 1). Most threats (78%) in the sample were made by boys, and threats were reported across all grade levels from kindergarten through 12th grade (Mean = 6th grade, Mode = 5th grade). The number of threat assessments conducted across grade levels was comparable between the 2013-14 and 2014-15 school years.

Procedure

Data were obtained from the School Safety Audit Survey, an annual survey completed by schools online for the Virginia Department of Criminal Justice Services (DCJS). The survey is mandated by state law (*Code of Virginia,* §22.1-279.8) and had 100% participation by Virginia public schools. The study was limited to items adopted by the state agency in charge of the survey and asked over the course of two specific years (2013-14 and 2014–15). School principals provided case details for a maximum of five student threat assessment cases during each school year. Of Virginia's 1,746 schools, the majority (n = 1,462; 84%) had five or fewer cases, and thus reported all their cases. The maximum was set at five in order to reduce the reporting burden on schools that had conducted a large number of cases.

Measures

School principals completed surveys regarding student demographics, threat characteristics, threat outcomes, and school responses (for more information, see VDCJS, 2018). To protect student identities, no names or other identifying information were collected.

[4] The other race/ethnicity category included students noted as Asian, mixed race, other, or unknown.

Threat characteristics. Both surveys asked school principals whether the student explicitly threatened to use a weapon to harm someone and/or made a threat while in possession of a weapon. Reported weapons included firearms, knives, or blunt objects (i.e., baseball bat). This threat characteristic is referred to as "threats involving weapons" within the current study. Similarly, both surveys asked whether the student threatened to use a bomb or other explosive device and/or made a threat while in possession of an explosive device. The current study refers to this threat characteristic as a "bomb threat." In total, four threat characteristics (coded 1 for yes and 0 for no) were measured: (1) threats involving weapons; (2) threat to kill; (3) bomb threat; and (4) threat to physically assault someone.

Threat outcomes. Both surveys asked whether there was an (unsuccessful) attempt to carry out the threat or the threat was (successfully) carried out. Researchers combined these two categories in the current study due to the low number of threats that were attempted but averted (2.3%) or carried out (1.2%). One kind of threat outcome (coded 1 for yes and 0 for no) was measured: whether the student attempted to carry out the threat.

Covariates. Consistent with previous research, the sample had a disproportionate number of threat cases involving male students (Cornell et al., 2018; Skiba et al., 2002; Espelage & Holt, 2012; Losen & Martinez 2013) and students receiving special education services (Cornell et al., 2018; Kaplan & Cornell, 2005). A disproportionately high rate of minority students were also referred for threat assessments compared to the racial/ethnic composition of the sample (Cornell et al., 2018). The analyses, therefore, controlled for student demographics obtained from the survey, which included gender, race/ethnicity, and special education (SPED) status.

Analytic Strategy

Descriptive statistics were calculated for key variables (e.g., gender, race/ethnicity, special education status, threat characteristics, and threat outcome) across both years of data collection and are graphically represented in a series of Figures.

To assess threat characteristics, four logistic regression models investigated the association of threat characteristics with the grade of the student, where the four threat characteristics of violence were regressed on the grade level of the student. Both linear and quadratic forms of the grade level regressor were examined to evaluate the possibility of non-linear associations. The four threat characteristics included threat involving weapons, threat to kill, bomb threat, and threat to physically assault. A fifth logistic regression model investigated the likelihood of a threat resulting in an actual attempt to carry out the threat as a function of grade level.

All models controlled for student-level demographics that included gender, race/ethnicity, and special education status. Cluster robust standard errors were used to account for the variance attributed at the school level (e.g., school size, students nested within schools; Huang, 2014; Rust, 1985). Logistic regression results are presented using standard odds ratios (ORs), where ORs >1 signify a higher likelihood of a threat characteristic being present (or threat being attempted) as student grade level increases, and ORs < 1 indicate a lower likelihood of a threat characteristic or attempt. To aide in the interpretation of effect sizes, when predictors were dichotomous, ORs were converted into Cohen's *d* values using ln(OR)/1.81 (Chinn, 2000). These effect sizes were interpreted as small (~0.20), moderate (~0.50), or large (~0.80; Cohen, 1992).

Results

Descriptive statistics for student demographics, threat characteristics, and outcome (threat attempted) across grade levels are presented in Figures 1-5. The proportion of threats increased between kindergarten (3%; 111 student threats) and the 5th grade (11%; 368), and decreased during the 10th (6%; 191), 11th (5%; 155) and 12th grades (3%; 108), see Figures 1-5. Fourth and 5th grade students made the most threats (Table 1) and the majority of these threats were classified as low risk (85%; 608 of 717). Less than one-third of high school student threats were classified as high risk (28%; 219 of 775). The proportion of threats made by male students was consistent across grade level with the lowest proportion in 6th grade (72%) and highest in 12th grade (85%; Figure 1). The proportion of White students (mean 56%) remained consistent across grades, whereas the proportion of Black students peaked in 3rd grade (38%; 110 of 292 student threats) and Hispanic students peaked in the 1st grade (11%; 17 of 151; Figure 2). At least a third of students making a threat of violence were enrolled in special education courses between the 4th (33%; 116 of 349 students were SPED) and 12th grades (44%; 48 of 108; Figure 3). Special education status was not significant regarding the association of threat characteristics and outcome with grade level.

The number of threats to physically assault someone was highest during the 7th (22%; 74), 8th (20%; 67), and 9th grades (24%; 78; Figure 4). Although 4th and 5th grade students made the most threats, 9th grade students made the most attempts to carry out their threats (Figure 5). The attempt rate fluctuated across grade level: rates began high at approximately 5% from kindergarten to the 2nd grade, steadily decreased to 1% (14 of 244) in the 6th grade, peaked to 7% (22 of 118) in the 9th grade, and decreased to approximately 3% in the remaining high school grades.

Regression Analyses

Linear and nonlinear logistic regression models that examined relations between threat characteristics as a function of student grade level are presented in Table 2. Broadly, the association between threat characteristics and student grade level were linear, but a nonlinear pattern was found for the association of attempted threats and grade level. As hypothesized, students were more likely to threaten to physically assault someone (OR = 1.11, p < .001, d = 0.06) as grade level increased. However, older students were less likely to make threats involving weapons (OR = 0.95, p < .01, d = -0.03) or threaten to kill (OR = 0.95, p < .01, d = -0.03). Student threats to bomb the school were not distinguishable by grade level.

Regarding threat outcome, the variability in students who attempted and/or carried out threats was attributable to curvilinear effects of grade level (OR = 1.02, p < .05, d = 0.01). As hypothesized, threats were more likely to be attempted as students increased in grade level, but the rate decreased after the 9th grade. No student demographic control variables were significant regarding the association of attempted threats and grade level.

There were several significant findings for the student demographic control variables. Specifically, as grade level increased, female students were less likely, compared to male students, to make threats involving weapons (OR = 0.72, p < .01, d = -0.18) and to make a bomb threat (OR = 0.46, p < .001, d = -0.43). However, as student grade level increased, females were more likely than males to threaten physical assault (i.e., hit, fight, kick, strangle; OR = 1.50, p < .001, d = 0.22). Compared to White students, Black (OR = 0.59, p < .01, d = -0.29) and Hispanic students (OR = 0.37, p < .001, d = -0.55) were less likely to make a bomb threat as grade level increased. Black students were less likely than White students to make a threat to kill (OR =

0.79, p < .05, *d* = -0.13), but were more likely to threaten physical assault (*OR* = 1.71, p < .001, *d* = 0.30).

Secondary Analyses

Due to the observed linear and curvilinear relationships between threat characteristics and outcome by grade level, specific differences among grades were investigated through additional regression analyses (Table 3). Grade 9 was chosen as the reference group due to the decreased proportion of student threats observed between the 9th (321 student threats) and 10th (191), 11th (155), and 12th (108) grades. Significant findings among student demographic control variables remained the same. Regarding threat characteristics, 11th grade students were less likely to make threats involving weapons compared to 9th grade students (*OR* = 0.39, *p* < .001, *d* = -0.52). Kindergarten through 6th grade (*OR* = 0.30, *p* < .001, *d* = -0.66; *OR* = 0.47, *p* < .001, *d* = -0.41; *OR* = 0.52, *p* < .01, *d* = -0.36; *OR* = 0.42, *p* < .001, *d* = -0.48; *OR* = 0.52, *p* < .001, *d* = -0.36; *OR* = 0.33, *p* < .001, *d* = -0.61; *OR* = 0.62, *p* < .01, *d* = -0.27) and 8th grade students (*OR* = 0.67, *p* < .05, *d* = -0.22) were less likely to threaten to physically assault someone compared to 9th grade students. Tenth grade students (*OR* = 0.33, *p* < .01, *d* = -0.61) were significantly less likely to make a bomb threat compared to 9th grade students. Of note, 1st grade students (*OR* = 2.01, *p* < .05, *d* = 0.40) were two times more likely to threaten to kill someone compared to 9th grade students.

Regarding threat outcome, 3rd (*OR* = 0.31, *p* < .001, *d* = -0.65), 4th (*OR* = 0.47, *p* < .01, *d* = -0.42), 5th (*OR* = 0.48, *p* < .01, *d* = -0.40), 6th (*OR* = 0.13, *p* < .001, *d* = -1.12), and 7th grade students (*OR* = 0.34, *p* < .001, *d* = -0.59) were less likely to attempt a threat compared to 9th grade students. In high school, 10th (*OR* = 0.31, *p* < .001, *d* = -0.66) and 12th grade students (*OR* = 0.29, *p* < .001, *d* = -0.69) were less likely to attempt a threat compared to 9th graders.

Discussion

This study provides new evidence to support grade-level distinctions in student threats of violence. Developmental differences are important to consider in assessing a threat. Younger students may be more inclined to make impulsive, exaggerated threats that they do not intend to carry out, whereas older students are less likely to make such threats. Threat assessment teams need information on how threats vary across grade levels. Results from a large statewide sample confirm that students across grade levels differed in the types of threats they make and in the likelihood of acting upon their threats. Threats occurred across all grades but peaked in the 4th and 5th grades. After the 9th grade, threats of violence dramatically decreased in frequency. In addition to a decrease in threat frequency, older students were less likely to make threats involving weapons and less likely to threaten to kill someone. No grade-level distinctions were observed with students who threatened to bomb the school. Notably, 9th graders were most likely to attempt to carry out a threat compared to other grades. Older students also were more likely to threaten to physically assault someone. Overall, these findings have important assessment and management implications for school-based teams.

Prevalence

Threat assessment teams are necessary in elementary schools to avoid over-reacting to threats and subjecting elementary school students to zero tolerance consequences (George, 2013). The higher incidence of threatened violence by 4th and 5th grade students may reflect, in part, developmental differences between younger and older students, such as the tendency of youth to make impulsive and exaggerated statements (Greenberg, Kusche´, & Riggs, 2002). Notably, the majority of threats occurring in the 4th and 5th grades were classified as not serious,

consistent with previous reports that elementary school threats were less likely to be considered serious compared to middle school threats (Cornell et al., 2018).

There was a decrease in student threats during the 10th, 11th, and 12th grades, and the majority of high school threats were classified as not serious, despite research noting an increase in juvenile arrests for this age group (OJJDP, 2018). Students in upper high school are shown to have greater maturity and self-control, as well as the understanding to not make explicit threats of violence (Björkqvist, Österman, & Kaukiainen, 1992). Nevertheless, students in this age group are capable of serious acts of delinquency, most of which occur outside of school.

As grade level increased, there was a small association that female students were more likely to threaten to physically assault someone compared to male students. Inspection of the data revealed that male students (66%) made the majority of threats to physically assault someone, as well as the majority of attempts (67%) to carry out the assault. Research indicates that the frequency of male students (30%) engaging in a physical fight is higher than female students (17%; Kann et al., 2018). However, there is a slightly higher prevalence of physical fighting among 9th grade female students (23%) compared to females in the 10th (18%), 11th (15%), and 12th grades (12%). Although female students were more likely to make such a threat as grade level increased, male students maintained a higher rate of physical altercations (Nansel et al., 2001).

Although the majority of students who made threats were White (Table 1), minorities were associated with certain threat characteristics (Table 2). As grade level increased, there was a small association that Black students were more likely to threaten physical harm compared to White students. Although Black students are disproportionately more likely to be referred for a threat assessment, a threat assessment is not a disciplinary consequence. Threat assessments and

disciplinary referrals are separate school-based responses to student behavior. Previous research found no disparity in disciplinary outcomes, such as out-of-school suspensions, expulsions, or changes in school placements (Cornell et al., 2018). If a threat is deemed serious (i.e., a bomb threat), then a school may be inclined to assign serious disciplinary consequences to that student.

Bomb threats were distinguishable by student demographics, but not by grade level. Male students were increasingly likely to threaten to bomb the school as grade level increased. Further inspection of the data indicated that most bomb threats were made by male students (89%; 125 of 140) and peaked in the 6th (9%; 18 bomb threats) and 7th (8%; 17) grades. As grade level increased, White students also were more likely than minority students to make a bomb threat. Indeed, the majority of threats to bomb the school were disproportionately made by White students (61%; 93 of 152 threats). Typically, after receiving a bomb threat, schools are evacuated or closed. Since 1982, Virginia has mandated:

> Any person who…communicates to another by any means any threat to bomb…shall be guilty of a Class 5 felony; provided, however, that if such person be under fifteen years of age, he shall be guilty of a Class 1 misdemeanor (*Code of Virginia,* §18.2-83).

Regardless of the age of the student responsible, bomb threats require special attention from school personnel due to their disruptive nature and the potential for a high volume of casualties (Burnette et al., 2018). Disciplinary consequences may be severe for bomb threats even though, from a threat assessment perspective, the actual danger to others is minimal if the student has no bomb or intent to carry out the bomb threat.

Threat Characteristics

Student threats of violence were clearly distinguishable by grade level. Older students were less likely to make threats involving weapons (Table 2) and secondary analyses indicated a

potential explanation due to grade level differences (Table 3). Specifically, there was a moderate association that 11th grade students were less likely to make a weapons threat compared to 9th grade students. In fact, the rate of a threat involving weapons by 9th grade students (18%) was two times more than the rate for 11th grade students (7%). At first glance, this finding would appear to be inconsistent with the fact that the majority of juveniles arrested for carrying or possessing a weapon are between the ages of 15 and 17 (OJJDP, 2018). Moreover, 11th and 12th grade students were found to have a higher prevalence for carrying weapons to school compared to 9th grade students (Kann et al., 2018). Lastly, the majority of juveniles arrested for carrying or possessing a weapon were between the ages of 15 to 17 (71%). However, these observations underscore the importance of distinguishing trends for threats from trends for violent behaviors. Ninth grade students are more likely to threaten such behavior, but older students may realize that such statements will get them into trouble and are more circumspect.

Older students also were less likely to make a threat to kill someone than younger students. First grade students referred for a threat assessment were more likely to make a threat to kill someone (29%) than 9th grade students (17%). The severity of a student threat of violence cannot be considered in isolation; school-based teams should recognize the grade of the student making the threat. Promoting Alternative Thinking Strategies and Life Skills Training are examples of school-based programs that attempt to help younger children inhibit such impulsive and aggressive responses to conflict (Modecki, Zimmer-Gembeck, & Guerra, 2017). Broadly, these programs aim to increase children's awareness and understanding of their own emotions to implement better coping strategies in times of stress.

Older students were more likely to threaten to physically assault someone compared to younger students, which parallels the higher rate of arrests for physical assault between the ages

of 15 and 17, (OJJDP, 2018). Secondary analyses indicated that there were moderate associations between kindergarten, 1st grade, 3rd grade, and 5th grade students and a decreased likelihood of threatening to assault someone compared to 9th grade. There were small associations between 2nd grade, 4th grade, 6th grade, and 8th grade and a decreased likelihood of threatening to assault someone compared to 9th grade. Although the proportion of threats to physically assault someone was low (18%), 9th graders (24%) were two times more likely to make such a threat compared to kindergarten students (9%).

Threat Outcome

Broadly, the frequency of attempted and/or carried out threats was low (4%) for all grades. The rate increased from 1% in the 6th grade to 4% in the 8th grade and 7% in the 9th grade. The low attempted threat rate parallels the low base rate of violence in the United States, especially within schools (Nekvasil et al., 2015).

Notably, 9th grade students were most likely to attempt to carry out a threat. A curvilinear effect was observed in which the attempted rate varied across grade level. Multiple grades were less likely to attempt a threat than 9th grade students; the effect sizes ranged from small to moderate. For example, the attempt rate for 9th grade (7%) was double the attempt rate for 3rd grade (3%). School-based teams might classify a 9th grade student's threat to physically assault someone seriously, based on 9th grade students' increased rate to threaten physical assault and increased attempt rate.

Although student threats of violence are not often attempted, students who make threats are at an increased risk for violence. For example, a study by Singer and Flannery (2000) found that students who frequently threatened violence were 14 to 23 times more likely to report attacking someone with a knife and 17 times more likely to report shooting at someone than

students who did not engage in threatening others. Even students who infrequently threatened others were more likely to exhibit violent behaviors compared to students who did not make threats.

Clinical Implications

School-based teams should be aware of developmental differences in frequency of threats when evaluating student threats of violence. These findings support the general assumption that school-based teams should take threats by students in higher grades more seriously than threats by students in lower grades. Despite the substantial decrease in threats following the 9th grade, the peak for attempting to carry out a threat was in the 9th grade. Older students remain at an increased risk of carrying out threats of violence and different risk levels would be necessary for threats made by younger student threat. Appropriate management strategies for such a 9th grade student would include mental health services, increased supervision, changes in class schedule, and possibly detention or suspension. Both universal and targeted school-based programs have been found to be effective in reducing aggressive and disruptive behaviors among students, especially those at an elevated risk of violence (Wilson & Lipsey, 2007). Older students are less likely to make a threat involving weapons. This finding indicates that older students are less likely to *threaten* certain behaviors but continue to pose an increased risk of *committing* aggressive behaviors (OJJDP, 2018; Vossekuil et al., 2002).

Limitations and Future Research

This study was retrospective and cross-sectional. It relied on two annual surveys of threat assessments conducted during the prior school year. Researchers were unable to monitor or record case data prospectively as the threat assessment cases unfolded in real time. Like other cross-sectional surveys of school safety, this study investigated the correlates of grade-level

distinctions but did not demonstrate a causal effect of grade level on threat characteristics and outcome. Another limitation was that schools reported a student's grade level rather than a student's age. Some of the students may have been relatively older or younger than peers in their respective grade level. Further study with age, grade, and identification of age/grade discrepancies would be useful.

Despite these limitations, these findings provide pertinent grade-level distinctions for school-based threat assessment teams. There is a need to explore grade-level differences across additional threat characteristics and outcome variables. For example, are younger students more likely to communicate threats verbally and directly to a target? Are older students more likely to communicate threats indirectly or anonymously through social media? Similarly, researchers should investigate potential grade-level distinctions in the use of mental health services, suspensions, or legal action to ensure school-based teams are avoiding overreactions and making limited use of severe consequences.

References

American Psychological Association. (2013). Gun violence: Prediction, prevention, and policy. Retrieved from http://www.apa.org/pubs/info/reports/gun-violence-prevention.aspx

Björkqvist, K., Österman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Björkqvist & P. Niemelä (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51–64). San Diego, CA: Academic Press.

Borum, R. (2000). Assessing violence risk among youth. *Journal of Clinical Psychology*, *56*, 1263-1288.

Burnette, A. G., Datta, P., & Cornell, D. (2018). The distinction between transient and substantive threats. *Journal of Threat Assessment and Management, 5,* 4-20.

Centers for Disease Control and Prevention [CDC], National Center for Injury Prevention and Control. (2019). Web-based Injury Statistics Query and Reporting System (WISQARS). *Data and Statistics WISQARS.* Retrieved from https://www.cdc.gov/injury/wisqars/index.html

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine, 19*, 3127–3131.

Cornell, D., Maeng, J., Burnette, A.G., Datta, P., Huang, F., & Jia, Y. (2016). *Threat Assessment in Virginia Schools: Technical Report of the Threat Assessment Survey for 2014-2015.* Charlottesville, VA: Curry School of Education, University of Virginia.

Cornell, D., Maeng, J. L., Burnette, A. G., Jia, Y., Huang, F., Konold, T., . . . Meyer, P. (2018). Student threat assessment as a standard school safety practice: Results from a statewide implementation study. *School Psychology Quarterly, 33*, 213-222.

Cornell, D., Maeng, J., Huang, F., Shukla, K., & Konold, T. (2018). Racial/ethnic parity in

disciplinary consequences using student threat assessment. *School Psychology Review*, *47*, 183-195.

Cornell, D., & Sheras, P. (2006). *Guidelines for responding to student threats of violence*. Longmont, CO: Sopris West.

Cornell, D. G., Sheras, P. L., Kaplan, S., McConville, D., Douglass, J., Elkon, A., . . . Cole, J. (2004). Guidelines for Student Threat Assessment: Field-Test Findings. School *Psychology Review, 33*, 527-546.

Cottle, C. C., Lee, R. J., & Heilbrun, K. (2001). The prediction of criminal recidivism in juveniles: A meta-analysis. *Criminal Justice and Behavior*, *28*, 367-394.

Erwin, B. (2019). School safety: Prevention. *National Conference of State Legislatures.* Retrieved from: http://www.ncsl.org/research/education/school-safety-prevention636876490.aspx

Espelage, D., & Holt, M. K. (2012). Understanding and preventing bullying and sexual harassment in school. In K. R. Harris, S. Graham, & T. Urdan (Eds.), *APA educational psychology handbook: Volume 2. Individual differences and cultural and contextual factors* (pp. 391–416). Washington, DC: American Psychological Association. http://dx.doi.org/10.1037/13274-016

George, D. (2013, September 13). Boy suspended for chewing breakfast pastry into a gun shape will get hearing. *The Washington Post.* Retrieved from https://www.washingtonpost.com/local/education/boy-suspended-for-chewing-breakfast-pastry-into-a-gun-shape-will-get-hearing/2013/09/13/8326c878-1bf6-11e3-8685-5021e0c41964_story.html?utm_term=.e3530e86ea86

Greenberg, M.T., & Kusche´, C.A. (1993). *Promoting social and emotional development in deaf children: The PATHS project.* Seattle: University of Washington Press

Huang, F. (2014). Analyzing group level effects with clustered data using Taylor series linearization. *Practical Assessment, Research, and Evaluation*, *19*, 1–9.

Kann, L., McManus, T., Harris, W. A., Shanklin, S. L., Flint, K. H., Queen, B., & Ethier, K. (2018). Youth Risk Behavior Surveillance— United States, 2017. Surveillance Summaries. *Morbidity and Mortality Weekly Report 2018, 67*, 1-479. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/ss6708.pdf

Kaplan, S., & Cornell, D. (2005). Threats of violence by students in special education. *Behavioral Disorders, 31*, 107–119.

Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology*, *48*, 371-410.

Losen, D., & Martinez, T. (2013). *Out of school and off track: The overuse of suspensions in American middle and high schools*. Los Angeles, CA: University of California.

Meloy, J.R., Hart, S.D., & Hoffmann, J. (2014). Threat assessment and threat management. In J. Reid Meloy & Jens Hoffmann (Eds.), *The International Handbook of Threat Assessment* (pp. 3-17). New York: Oxford University Press.

Meloy, J.R., Hoffmann, J., Guldimann, A., & James, D. (2012). The role of warning behaviors in threat assessment: An exploration and suggested typology. *Journal of Behavioral Sciences & the Law, 30*, 256–279.

Modecki, K. L., Zimmer-Gembeck, M. J., & Guerra, N. (2017). Emotion regulation, coping, and decision making: three linked skills for preventing externalizing problems in adolescence. *Child Development*, *88*, 417-426.

Moffitt, T. (1993). Life course persistent and adolescence limited antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Mohandie, K., (2014). Threat assessment in schools. In J. Reid Meloy & Jens Hoffmann (Eds.), *The International Handbook of Threat Assessment* (pp. 126-141). New York: Oxford University Press.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association, 285*, 2094–2100.

National Association of School Psychologists (NASP) School Safety and Crisis Response Committee (2014). Threat Assessment for School Administrators and Crisis Teams. Bethesda, MD: Author.

National Threat Assessment Center. (2018). *Enhancing school safety using a threat assessment model: An operational guide for preventing targeted school violence.* U.S. Secret Service, Department of Homeland Security.

Nekvasil, E. K., & Cornell, D. G. (2012). Student reports of peer threats of violence: Prevalence and outcomes. *Journal of School Violence, 11*, 357-375.

Nekvasil, E., Cornell, D., & Huang, F. (2015). Prevalence and offense characteristics of multiple casualty homicides: Are schools at higher risk than other locations? *Psychology of Violence, 5,* 236–245.

Office of Juvenile Justice and Delinquency Prevention [OJJDP]. (2018). Statistical Briefing Book. Retrieved from https://www.ojjdp.gov/ojstatbb/crime/ucr.asp?table_in=1

Office of the Surgeon General. (2001). The developmental dynamics of youth violence. *Youth Violence: A Report of the Surgeon General.* Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK44301/

Rust, K. (1985). Variance estimation for complex estimators in sample surveys. *Journal of Official Statistics*, *1*, 381–397.

School Safety Audits and School Crisis, Emergency Management, and Medical Emergency Response Plans Required, Va. Code §22.1-279.8. (1997).

Shultz, J. M., Cohen, A. M., Muschert, G. W., & Flores de Apodaca, R. (2013). Fatal school shootings and the epidemiological context of firearm mortality in the United States. *Disaster Health, 1*, 84-101. http://doi.org/10.4161/dish.26897

Singer, M. I., & Flannery, D. J. (2000). The relationship between children's threats of violence and violent behaviors. *Archives of Pediatrics & Adolescent Medicine, 154*, 785–790.

Skiba, R. J., Chung, C. G., Trachok, M., Baker, T. L., Sheya, A., & Hughes, R. L. (2014). Parsing disciplinary disproportionality: Contributions of infraction, student, and school characteristics to out-of-school suspension and expulsion. *American Educational Research Journal*, *51*, 640-670.

STOP School Violence Act of 2018, H.R. 4909, 115th Congress. (2018).

Threats to Bomb or Damage Buildings or Means of Transportation; False Information as to Danger to Such Buildings, etc.; Punishment; Venue, Va. Code §18.2-83 (1982).

Vincent, G. M., Perrault, R. T., Guy, L. S., & Gershenson, B. G. (2012). Developmental issues in risk assessment: Implications for juvenile justice. *Victims & Offenders*, *7*, 364-384.

Virginia Department of Criminal Justice Services (VDCJS). (2018). Virginia school safety audit program. Retrieved from https://www.dcjs.virginia.gov/virginia-center-school-and-campus-safety/virginia-school-safety-audit-program

Vossekuil, B., Fein, R., Reddy, M., Borum, R., Modzeleski, W. (2002). The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States. Washington, DC: U. S. Secret Service and U. S. Department of Education.

Wilson, S. J., & Lipsey, M. W. (2007). School-based interventions for aggressive and disruptive behavior: Update of a meta-analysis. *American Journal of Preventive Medicine*, *33*, 130-143.

Woitaszewski, S., Crepeau-Hobson, F., Conolly, C., & Cruz, M. (2018). Rules, requirements, and resources for school-based threat assessment: A fifty state analysis. *Contemporary School Psychology, 22*, 125–134.

Table 1

Descriptive Statistics across Data Collection Year

Student	Year One n = 1,426 (43.4%)		Year Two n = 1,856 (56.6 %)		Total Sample N = 3,282 (100%)	
School Type						
Elementary	246	(24.1%)	302	(29.6%)	548	(53.7%)
Middle	102	(10.0%)	138	(13.5%)	240	(23.5%)
High	102	(10.0%)	131	(12.8%)	233	(22.8%)
Gender[1]						
Male	1,170	(37.1%)	1,380	(43.7%)	2,550	(80.8%)
Female	251	(8.0%)	355	(11.2%)	606	(19.2%)
Race/Ethnicity						
White	732	(22.3%)	949	(28.9%)	1,681	(51.2%)
Black	449	(13.7%)	562	(17.1%)	1,011	(30.8%)
Hispanic or Latino	125	(3.8%)	129	(3.9%)	254	(7.7%)
Other[2]	120	(3.7%)	216	(6.6%)	336	(10.2%)
SPED Status[3]	525	(16.4%)	643	(20.1%)	1,168	(36.5%)
Grade[4]						
Kindergarten	57	(1.7%)	54	(1.7%)	111	(3.4%)
1st Grade	59	(1.8%)	92	(2.8%)	151	(4.6%)
2nd Grade	103	(3.2%)	141	(4.3%)	244	(7.5%)
3rd Grade	137	(4.2%)	155	(4.7%)	292	(8.9%)
4th Grade	143	(4.4%)	206	(6.3%)	349	(10.7%)
5th Grade	164	(5.0%)	204	(6.2%)	368	(11.3%)
6th Grade	116	(3.5%)	189	(5.8%)	305	(9.3%)
7th Grade	154	(4.7%)	189	(5.8%)	343	(10.5%)
8th Grade	136	(4.2%)	194	(5.9%)	330	(10.1%)
9th Grade	154	(4.7%)	167	(5.1%)	321	(9.8%)
10th Grade	86	(2.6%)	105	(3.2%)	191	(5.8%)
11th Grade	66	(2.0%)	89	(2.7%)	155	(4.7%)
12th Grade	46	(1.4%)	62	(1.9%)	108	(3.3%)
Weapon Use or Possession	212	(14.9%)	368	(19.8%)	580	(17.7%)
Threat Nature						
Threat to Kill	293	(8.9%)	420	(12.8%)	713	(21.7%)
Bomb Threat	77	(2.3%)	75	(2.3%)	152	(4.6%)
Threat to Assault without a weapon	255	(7.8%)	340	(10.4%)	595	(18.1%)
Attempted Threat	56	(1.7%)	62	(1.9%)	118	(3.6%)

Note. [1]One hundred and twenty-six cases out of 3,282 were missing, researchers controlled for unknown gender. [2]Other includes Asian, mixed race, other, and unknown. [3]Eight-six cases out of 3,282 were missing, researchers controlled for unknown special education status. [4]Fourteen cases out of 3,282 (i.e., <1%) were missing.

Figure 1

Threats by Gender across Grade Level

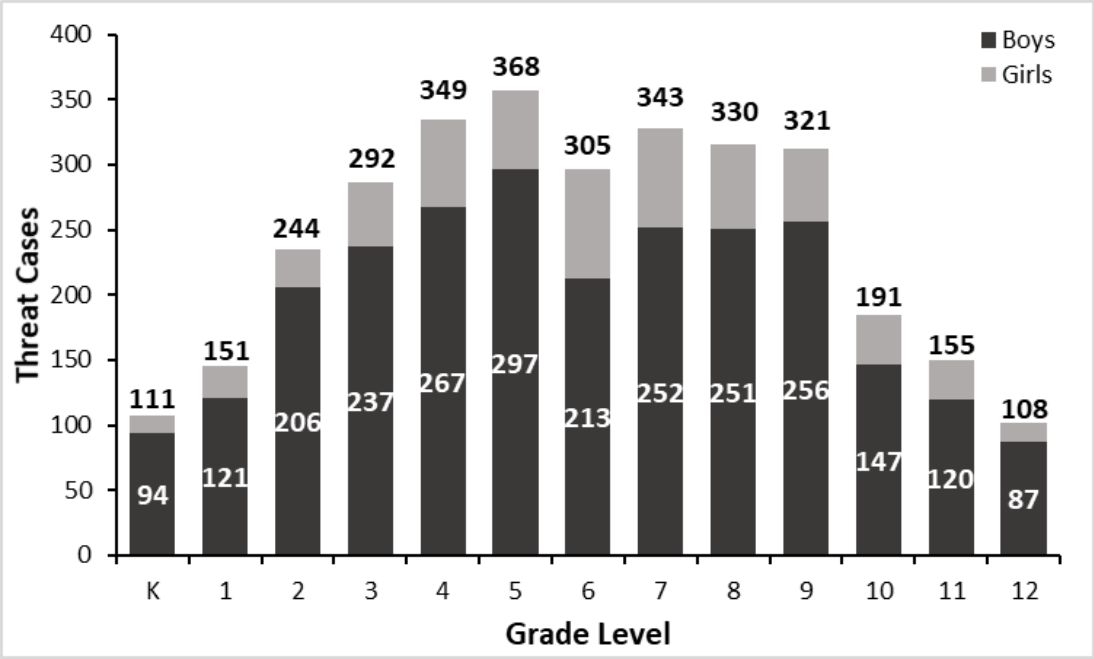

Figure 2

Threats by Race across Grade Level

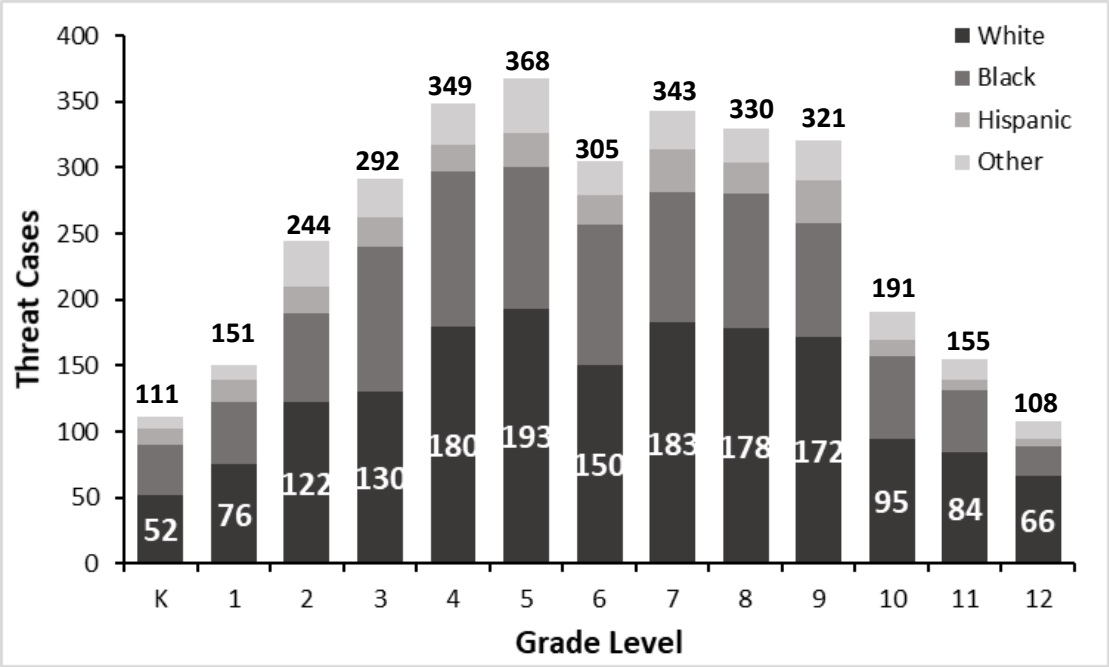

Figure 3

Threats by Special Education Status across Grade Level

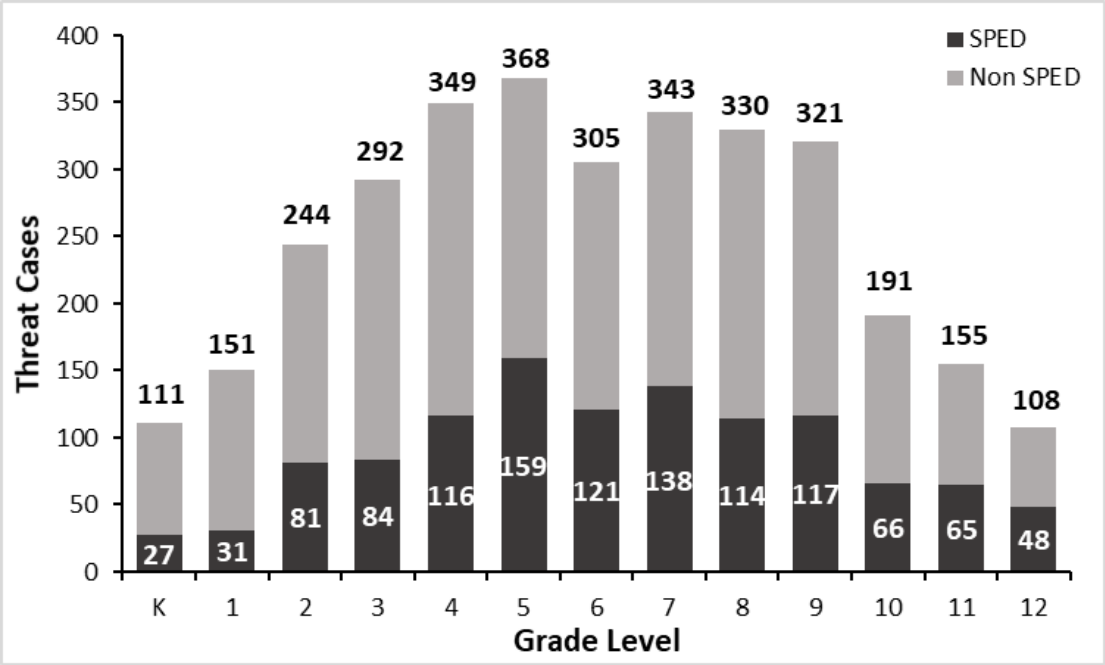

Figure 4

Threats by Physical Assault across Grade Level

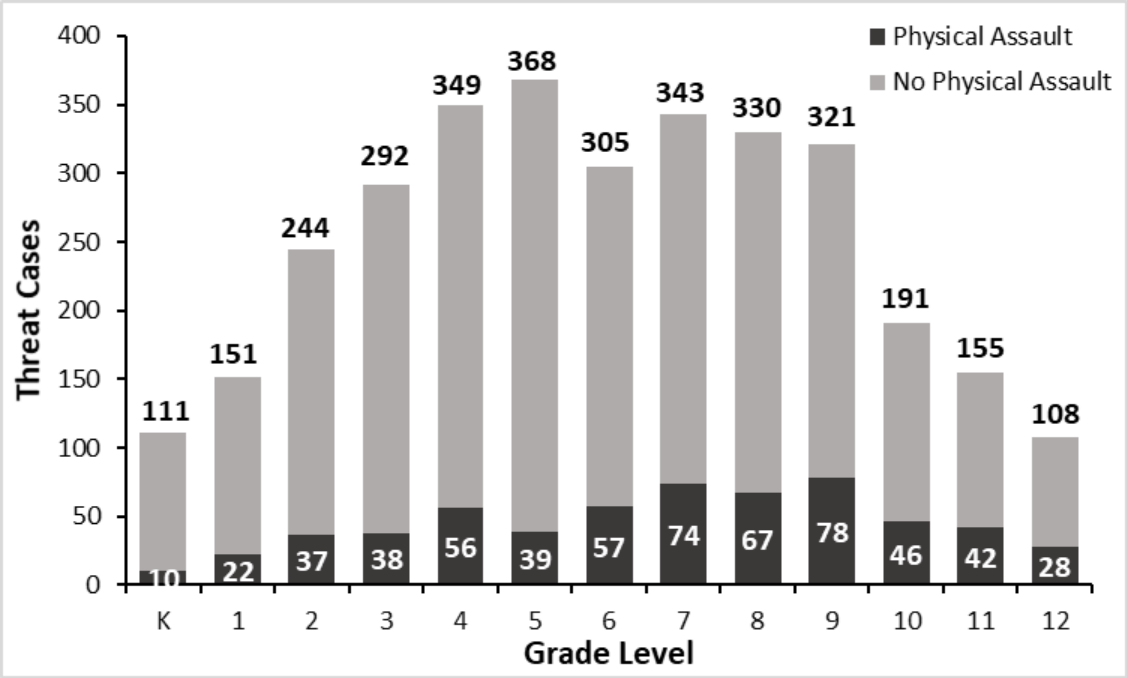

Figure 5

Threats by Attempted Threats across Grade Level

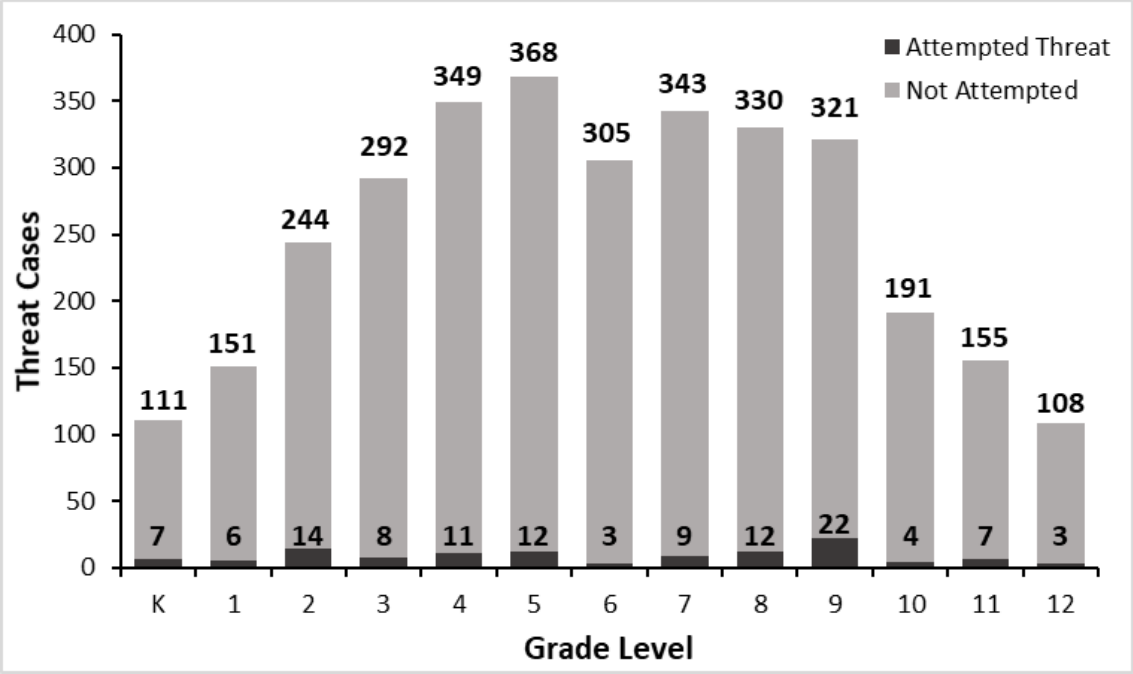

Table 2

Logistic Regression Odds Ratios for Threat Characteristics (n = 3,282)

Predictors	Weapon Involvement		Threat to Kill		Bomb Threat		Physical Altercation		Attempted Threat	
	OR	*SE*	*OR*	*SE*	*OR*	*SE*	*OR*	*SE*	*OR*	*SE*
Student-level variables										
Female[1,2]	0.72**	0.09	1.14	0.13	0.46***	0.14	1.50**	0.18	1.32	0.31
Black[3]	0.94	0.11	0.79*	0.09	0.59**	0.14	1.71***	0.21	1.52	0.34
Hispanic[3]	1.48	0.26	0.74	0.15	0.37***	0.17	1.15	0.24	0.79	0.35
Other[3,4]	1.06	0.19	0.81	0.13	0.88	0.27	0.70*	0.14	0.64	0.28
SPED Status[5,6]	0.98	0.10	0.10	0.10	1.13	0.22	1.22	0.13	1.62	0.34
Grade Level[7]	0.95**	0.02	0.95**	0.02	1.00	0.03	1.11***	0.02	0.79*	0.09
Grade Level Squared	--	--	--	--	--	--	--	--	1.02*	0.01

Note. *$p < .05$. **$p < .01$. ***$p < .001$. [1]Male is the reference group. [2]Due to some schools failing to report the student's gender, researchers controlled for unknown gender. [3]White is the reference group. [4]Other includes Asian, mixed race, other, or unknown. [5]Students identified as non-special education is the reference group. [6]Due to some schools failing to report the student's special education status, researchers controlled for unknown special education status. [7]Fourteen cases out of 3,282 (i.e., <1%) were missing. All results use cluster robust standard errors.

Table 3

Logistic Regression Odds Ratios for Between Grade Level Differences

Predictors	Weapon Involvement		Threat to Kill		Bomb Threat		Physical Altercation		Attempted Threat	
	OR	*SE*	*OR*	*SE*	*OR*	*SE*	*OR*	*SE*	*OR*	*SE*
Student-level variables										
Female[1,2]	0.72**	0.10	1.11	0.13	0.43***	0.13	1.50**	0.18	1.40	0.33
Black[3]	0.95	0.11	0.79*	0.09	0.59**	0.13	1.72***	0.21	1.57	0.35
Hispanic[3]	1.47	0.26	0.74	0.14	0.36***	0.16	1.12	0.23	0.77	0.34
Other[3,4]	1.07	0.19	0.82	0.14	0.90	0.28	0.70*	0.14	0.61	0.27
SPED Status[5,6]	0.98	0.10	0.99	0.10	1.12	0.23	1.25	0.13	1.65	0.35
Grade Level[7]										
Kindergarten	1.33	0.36	1.56	0.46	0.75	0.45	0.30***	0.11	1.07	0.51
1st Grade	1.17	0.30	2.01*	0.52	1.19	0.62	0.47***	0.15	0.66	0.33
2nd Grade	1.30	0.30	1.49	0.37	0.57	0.31	0.52**	0.15	0.95	0.41
3rd Grade	1.11	0.24	1.58	0.36	0.75	0.35	0.42***	0.11	0.31***	0.17
4th Grade	1.08	0.22	1.56	0.34	0.87	0.40	0.52***	0.13	0.47**	0.19
5th Grade	1.11	0.23	1.44	0.32	0.78	0.33	0.33***	0.08	0.48**	0.19
6th Grade	1.03	0.23	1.75	0.41	1.42	0.61	0.62**	0.16	0.13***	0.08
7th Grade	1.13	0.25	1.27	0.28	1.27	0.53	0.77	0.17	0.34***	0.15
8th Grade	1.05	0.24	1.43	0.33	0.72	0.32	0.67*	0.16	0.55	0.24
10th Grade	0.76	0.21	0.95	0.27	0.33**	0.21	0.90	0.19	0.31***	0.17
11th Grade	0.39***	0.13	1.31	0.30	0.53	0.32	1.10	0.28	0.56	0.34
12th Grade	0.91	0.30	0.66	0.22	1.32	0.66	1.09	0.32	0.29**	0.22

Note. *$p < .05$. **$p < .01$. ***$p < .001$. [1]Male is the reference group. [2]Due to some schools failing to report the student's gender, researchers controlled for unknown gender. [3]White is the reference group. [4]Other includes Asian, mixed race, other, or unknown. [5]Students identified as non-special education is the reference group. [6]Due to some schools failing to report the student's special education status, researchers controlled for unknown special education status. [7]Ninth grade is the reference group; 14 cases out of 3,282 (i.e., <1%) were missing. All results use cluster robust standard error.