Student and School Factors to Encourage Threat Reporting

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APPROVAL OF THE DISSERTATION PROPOSAL

This dissertation proposal ("Student and School Factors to Encourage Threat Reporting") has been approved by the Graduate Faculty of the School of Education and Human Development in partial fulfillment of the requirements for the Degree of Philosophy.

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Dissertation Abstract

Threat assessment, a violence prevention strategy in which communications or behaviors that pose a serious threat are distinguished from those that do not, has become widely used in schools. In order for schools to use threat assessment to prevent violence, students must be willing to report threats to school staff. However, many students are reluctant to come forward. This three-paper dissertation investigated how authoritative school climate, school resource officers, and anonymous reporting systems were associated with student willingness to report peer threats of violence. Data for all three studies were obtained from student responses to the Virginia Secondary School Climate Survey, which was administered statewide in Virginia high schools on a biennial basis. The first study used 2018 data from 85,750 students (grades 9-12) in 322 high schools, and the second and third studies used 2020 data from 106,856 ninth through twelfth graders in 282 high schools.

Student willingness to report threats was measured with two items in which students indicated how likely they would be to tell school staff about 1) a peer who talked about killing someone or 2) a peer who brought a gun to school. Response options ranged from “strongly disagree” to “strongly agree.” These items have been used in previous studies of student help-seeking and threat reporting (Bandyopadhyay et al., 2009; Eliot et al., 2010; Millspaugh et al., 2015). Additionally, Paper 3 used the number of threat assessments conducted by schools for threats to others as an indirect measure of student willingness to report threats.

The first paper (Crichlow-Ball & Cornell, 2021) sought to expand on prior research describing student willingness to report threats and considered how teacher perceptions of school climate were associated with student willingness to report. We asked two research questions: 1) How do students who are unwilling to report threats (nonreporters) differ from students who

would report threats (reporters) in terms of demographic and school experiential characteristics? and 2) What is the association between teacher perceptions of school climate and student willingness to report violent threats? As hypothesized, student-level linear regression models indicated that higher grade level and female gender were associated with greater willingness to report, whereas non-White race was associated with less willingness to report. Furthermore, a series of three-way analyses of variance using dichotomized reporting status (reporter vs. nonreporter), race/ethnicity, and gender revealed that nonreporters had more negative experiences in school and perceived school climate more negatively than reporters did.

Finally, in partial support of our hypothesis, school-level linear regression models showed that staff perceptions of a fair school discipline structure were associated with greater student willingness to report a peer who talked about killing someone, and staff perceptions of support provided to students were associated with greater student willingness to report a peer who brought a gun to school. Overall, results were consistent with previous findings that students who were in lower grades, non-White, and male were less likely to report. Beyond demographics, we found that nonreporters were less engaged in school, felt like they did not belong at school, and were more likely to be suspended than reporters. Finally, staff perceptions of support and structure predicted greater student willingness to report threats, supporting the idea that schools can encourage student threat reporting by fostering authoritative school climates.

The second paper (Crichlow-Ball et al., 2022) examined how student perceptions of their school resource officers (SROs) influenced their willingness to report threats. This paper asked three research questions: 1) How are student perceptions that the SRO makes them feel safe at school associated with their willingness to report threats? 2) How is frequency of student

interactions with the SRO associated with their willingness to report threats? 3) How do these associations differ by student racial/ethnic identity and gender? Descriptive statistics revealed that the majority (72%) of students indicated the SRO made them feel safer in school, but less than a third of students spoke with the SRO at least once or twice per semester. Logistic regression models determined that positive views of the SRO were associated with greater willingness to report threats, supporting our hypothesis. Speaking with the SRO at least once or twice a semester was associated with greater willingness to report a peer who brought a gun to school, but not a peer who talked about killing someone, partially supporting our hypothesis. Importantly, these associations were slightly stronger among non-White students, who have been found to be less willing to report threats. For example, 83% of Black students who perceived the SRO positively indicated they would report a peer who talked about killing someone, as compared to the 64% of Black students who did not perceive the SRO positively. Our results suggest that if SROs establish positive relationships with students, student willingness to report threats may increase.

The third paper (Crichlow-Ball et al., 2022) considered whether the availability of anonymous reporting systems (ARSs) was associated with greater student threat reporting. This study asked: 1) What kinds of ARSs do Virginia high schools use? 2) How is the presence of ARSs related to student willingness to report peer threats of violence? 3) How is the presence of ARSs associated with the number of threat assessments conducted in a school? 4) How do ARSs compare to other aspects of school climate in their association with threat reporting? The study found that most (93%) schools used at least one ARS, and the most common ARSs were internet tip lines (67%) and email (61%). Our hypothesis that ARS presence would be associated with greater student willingness to report threats was not supported, as demonstrated by both school-

level linear regression models and multilevel linear regression models looking at the individual student level. Our hypothesis that ARS presence would be associated with more TAs was also unsupported; a school-level negative binomial regression model showed no relationship between ARS presence and number of TAs. However, student perceptions of supportive relationships with staff and fair discipline structure predicted their willingness to report threats, and student education about threat assessment teams was associated with more TAs. In sum, ARS presence was not associated with either greater student willingness to report threats or more TAs, but student perceptions of positive school climate predicted greater willingness to report, and educating students about TA predicted a greater number of TAs. These results are consistent with earlier findings that students are more willing to report threats in authoritative school climates, and suggest that educating students about TA and promoting TA is essential to student threat reporting.

These studies were correlational and cannot establish causation. They also relied on student reports of how they might behave in a hypothetical situation rather than behavioral data. Nonetheless, these results underscore the idea that schools can prevent violence by working to promote positive school climates in which students feel comfortable seeking help from staff. Our findings suggest that supportive relationships with school staff may be more influential in student threat reporting than security measures.

Project Overview

Following a series of highly-publicized school shootings in the 1990s, the Federal Bureau of Investigation (O'Toole, 2000) and U.S. Secret Service and the U.S. Department of Education (Vossekuil et al., 2002) reviewed targeted school attacks with the goal of identifying detectable, pre-attack behaviors that could be used to prevent violence. A key finding was that prior to attacks, bystanders observed threatening statements or behavior that raised concerns about potential violent attacks at school (Vossekuil et al., 2002). Furthermore, the group most likely to have foreknowledge was the attacker's peers (Vossekuil et al., 2002). Based on these observations, authorities recommended that schools adopt threat assessment, a strategy for evaluating and reducing risk posed by threatening communications or behavior. Behavioral threat assessment and management, often abbreviated to threat assessment (TA), was developed by the U.S. Secret Service in response to targeted threats of violence directed toward public officials, as opposed to actuarial measures of risk that rely on statistical probability (Borum et al., 1999). School threat assessment has emerged as a specialized form of behavioral threat assessment and management that is used to prevent violence in schools (Cornell, 2020). While TA can be used to manage threats made by non-students, this dissertation focuses on using TA to manage threats made by students.

From the outset, experts cautioned that school threat assessment is contingent upon students coming forward with information about peer threats (Vossekuil et al., 2002). Consequently, it is critical for schools to foster cultures in which students feel comfortable sharing their concerns with staff. Students must trust staff to handle reports in a fair, responsible manner. Studies of averted school attacks show that bystanders reported information that helped avert attacks because they trusted staff to take them seriously and respond appropriately (Pollack et al., 2008).

Conversely, other students did not report information because they worried staff would disbelieve them or would get them in trouble (Pollack et al., 2008).

Subsequent work examined factors that could encourage student threat reporting. In particular, several studies supported the idea that in positive school climates, students are more willing to report threats. Bandyopadhyay et al. (2009) found that school-wide willingness to seek help was associated with safer school conditions, such as lower bullying rates and more student help-seeking behaviors. Eliot et al. (2010) found students who perceived their teachers as more supportive were more willing to seek help for bullying and threats of violence. Conversely, Williams and Cornell (2006) found students with stronger aggressive attitudes and who perceived school climate as tolerant of bullying were less willing to seek help.

In order to encourage student threat reporting, school authorities need to better understand school- and student-level factors associated with student willingness to report. Although previous studies have evidenced a link between school climate and student threat reporting, there is need for further study using larger sample sizes across all high school grade levels to examine multiple aspects of school climate, e.g., both supportive student-teacher relationships and school discipline structure.

An important next step is to understand the relationship between school resource officers (SROs) and student threat reporting, both to consider the impact of SROs on student willingness to report, and to compare that impact with the association of school climate and student reporting. SROs have become increasingly common in schools in the past decade (Wang et al., 2020). Although their role in school safety expanded following a series of school shootings in the 1990s (National Association of School Resource Officers, 2012), organizations such as the National Association of School Resource Officers (NASRO; NASRO, 2012) and the National

Association of School Psychologists (2020) endorse a model for SROs in which they serve not only as law enforcement officers, but also as educators and informal counselors. Case studies demonstrate that students have helped prevent attacks by reporting threats to SROs (Allison et al., 2020), suggesting that SROs could play a larger role in student threat reporting. Researchers have questioned the role of law enforcement officers in schools for years (e.g., Jackson, 2002). More recently, societal criticism of law enforcement has stimulated re-evaluation of SROs due to concerns that they lead to disproportionate exclusionary discipline and criminalization for students of color (Ryan et al., 2018; Turner & Beneke, 2020). Although SROs were implemented in response to fears about school attacks, the bulk of SRO research focuses on connections between SROs and student misbehavior or crime; no empirical study has examined SROs' role in student threat reporting.

Finally, little research investigates the impact of anonymous reporting systems on student threat reporting. There has been a recent surge of interest in tip lines. Twelve states have established statewide tip lines (Gourdet et al., 2021), and stakeholders view them favorably (Espelage et al., 2021). Proponents hope that anonymous reporting systems will encourage students to report more threats, thus facilitating more threat assessments. Case studies (Payne & Elliott, 2011) suggest that tipsters helped prevent attacks by submitting information via anonymous reporting systems. However, current research on anonymous reporting systems is limited to descriptive findings (Planty et al., 2020) and stakeholder perceptions (Espelage et al., 2021). Despite anonymous reporting systems' wide use and repeated calls for empirical studies of their effectiveness (e.g., Messman et al., 2022), no study has examined the association between presence of anonymous reporting methods and student reporting outcomes.

Dissertation Structure

This three-paper dissertation aims to deepen our understanding of factors that encourage students to report threats of violence. It examines both school-level and student-level factors and their associations with student attitudes toward threat reporting. Specifically, it asks how the school-level factors of school climate and the presence of anonymous reporting systems are related to student threat reporting. It also asks how the student-level factors of personal characteristics and perceptions of SROs are associated with threat reporting.

The first paper, "Association of School Climate with Student Willingness to Report Threats of Violence," looked at the demographic characteristics and school experiences among students who were unwilling to report threats. Paper 1 also adds to previous findings that a school climate characterized by supportive teacher-student relationships and fair discipline structure is associated with student willingness to report a threat of violence. Data were from high schoolers who participated in the 2018 Virginia Secondary School Climate Survey.

The second paper, "Student Perceptions of School Resource Officers and Threat Reporting," investigated the associations among student perceptions of SROs, student interactions with SROs, and student willingness to report threats. It also asked how these associations differed by student race/ethnicity and gender. Data were from high schoolers who completed the Virginia Secondary School Climate Survey in 2020.

The third paper, "Anonymous Reporting Systems and Student Threat Reporting," investigated whether the presence of anonymous reporting systems in schools was associated with student willingness to report threats and with the number of threat assessments conducted. We conducted analyses using data from high schoolers who completed the 2020 Virginia Secondary School Climate Survey and administrators who completed the 2020 School Safety Audit Survey.

Paper 1

In order for schools to use threat assessment to prevent violence, students must be willing to report peer threats to staff. Students are often aware of a peer's plans for a violent act (Pollack et al., 2008), and students have helped prevent school attacks by reporting information about their peers (Daniels, 2019). However, some students are unwilling to report threats to school staff. Codes of silence within schools lead students to fear that others will perceive them as snitches and will ostracize or retaliate against them (Oliver & Candappa, 2007). Students also worry that staff will not believe them or will get them in trouble (Pollack et al., 2008).

Previous studies have examined student willingness to generally seek help from school staff or report threats to them. These studies have found variation in willingness to report by student age, gender, and race. Among middle schoolers, older students have been found to be less willing to seek help (Oliver & Candappa, 2007; Williams & Cornell, 2006). Male students are less willing to report threats than their female peers (Millspaugh et al., 2015), and Black students are less willing to report than students of other races (Eliot et al., 2010; Millspaugh et al., 2015).

Education and law enforcement authorities cautioned that threat assessment relies on a positive school climate where students feel comfortable turning to adults for help if they learn of a threat (O'Toole, 2000; Vossekuil et al., 2002). School climate refers to the quality of interpersonal relationships and interactions among students and school staff. Authoritative school climate is a conceptual framework for school climate characterized by supportive teacher-student relationships (i.e., support) and strict-but-fair discipline (i.e., structure; Gregory & Cornell, 2009). Authoritative school climate is associated with many healthy school outcomes, including

less peer aggression and bullying (Cornell & Konold, 2018). Students in schools with authoritative climates might feel empowered to report threats to staff.

Previous work (Bandyopadhyay et al., 2009; Eliot et al., 2010) points to the link between positive school climate and student willingness to report threats. However, these studies did not measure both aspects of authoritative school climate. Additionally, they relied on student perceptions of both climate and willingness to report threats, meaning that shared method variance could inflate the association between perceptions of support and threat reporting.

We aimed to expand upon previous research by investigating the associations between staff perceptions of support and structure and student-rated willingness to tell staff about peer threats. Research Question 1 asked: How do students who are unwilling to report threats (non-reporters) differ from students who would report threats (reporters) in terms of demographic and school experiential characteristics? We hypothesized that students who were older, non-White, and male would be less willing to report threats. We also hypothesized that non-reporters would be more likely to have been suspended, be less engaged in school, and have more negative perceptions of teacher support and school discipline structure. Research Question 2 was: What is the association between teacher perceptions of school climate and student willingness to report violent threats? We hypothesized that teacher perceptions of strong support for students and fair discipline will be associated with greater student willingness to report violent threats.

The analytic sample consisted of 85,750 9^{th}-12^{th} graders in 322 Virginia schools. Students answered two items about their willingness to report threats: “If another student talked about killing someone, I would tell one of the teachers or staff at school” and “If another student brought a gun to school, I would tell one of the teachers or staff at school.”

We measured staff perceptions of support using a 10-item scale asking about supportive relationships between teachers and students and student willingness to seek help from teachers. Staff perceptions of discipline structure were measured with a 9-item scale asking about the fairness and consistency of school discipline.

As described in Paper 1, two linear regression models revealed significant associations among student grade level, gender, and race/ethnicity with willingness to report a peer who talked about killing someone or brought a gun to school. Higher grade level and female gender were associated with greater willingness to report threats, whereas non-White racial/ethnic identity was associated with decreased willingness to report. These results supported Hypothesis 1. Next, a series of three-way ANOVAs using reporting status (reporter vs. non-reporter), race/ethnicity, and gender found that non-reporters had more negative school experiences and more negative perceptions of school climate. These findings supported Hypothesis 2. Non-reporters were less academically engaged and were suspended out-of-school for more days than reporters. Additionally, non-reporters also perceived their teachers as less supportive and perceived school discipline as less fair than reporters.

Finally, school-level linear regression models examined how staff perceptions support and structure were associated with student willingness to report threats. Hypothesis 3 was partially supported; staff perceptions of structure were significantly associated with student willingness to report a peer who talked about killing someone, and staff perceptions of support were significantly associated with student willingness to report a peer who brought a gun to school. Paper 1 supported previous findings that a positive school climate is associated with greater student willingness to report threats (Bandyopadhyay et al., 2009; Eliot et al., 2010).

Additionally, we found that students who were unwilling to report threats were those who had negative experiences in school and unfavorable perceptions of school climate.

This paper, "Association of School Climate with Student Willingness to Report Threats of Violence," was presented as a poster at the American Psychological Association Annual Conference in August 2019 and won the Division 16 student poster award. It was published in the *Journal of Threat Assessment and Management* in August, 2021, with Caroline Crichlow-Ball as lead author and Dewey Cornell as co-author. Dr. Cornell refined the research questions and reviewed the writing, and Francis Huang consulted on analysis plans and execution.

Paper 2

School resource officers (SROs) are widely used in U.S. high schools (Wang et al., 2020). However, some school districts are reconsidering the use of SROs due to concerns that they criminalize student misbehavior, especially for students of color. Proponents of SROs argue that SROs help prevent school violence, and case studies show that school attacks have been averted because students reported threats to SROs (Allison et al., 2020). Less attention has been given to student perceptions of SROs and SROs' role in reporting threats of violence.

If students feel comfortable with and trust their SROs, they might be willing to report threats to them. Research finds that students tend to view their SROs positively (Curran et al., 2020), though some studies find racial differences in student attitudes toward SROs (Pentek & Eisenberg, 2018). However, increased SRO or security guard presence has also been linked to a greater incidence of student misbehavior and crime (Crawford & Burns, 2015; Curran, 2020; Gottfredson et al., 2020). Critics of SROs interpret these studies to mean that SROs are responding harshly to minor misbehavior, while proponents maintain that SROs are detecting criminal behavior that was previously undetected.

Evidence that SRO prevalence is associated with disproportionate rates of exclusionary discipline (Crosse et al., 2021) and referrals to law enforcement (Sorensen et al., 2021) for students of color is particularly worrisome. However, a limitation of these studies is their reliance on school or state records of student suspensions and offenses as outcome data. These records do not indicate whether SROs were involved in detecting or punishing student behavior. The National Association of School Resource Officers (2012) explicitly discourages the involvement of SROs in school discipline and recommends that SROs only become involved when there is a criminal act. It is conceivable that SROs are introduced into a school in response to a perceived need for stricter enforcement of school discipline, which might be carried out by school administrators rather than SROs. There is a need for research on SROs that looks at their impact on students beyond discipline and arrest records, such as how SRO presence is related to student threat reporting.

Paper 2 investigated whether high school student perceptions of their SROs were related to their willingness to report peer threats to school staff. Our research questions asked: 1) How are students' perceptions that the SRO makes them feel safe at school associated with their willingness to report threats? 2) How is frequency of student interactions with the SRO associated with their willingness to report threats? and 3) How do these associations differ by student racial/ethnic identity and gender? We hypothesized that more positive perceptions of the SRO (Hypothesis 1) and more frequent interactions with the SRO (Hypothesis 2) would be associated with greater willingness to report threats. We also hypothesized that White (Hypothesis 3) and non-male (Hypothesis 4) students would perceive SROs more positively and interact with them more frequently than non-White and male students, respectively.

The analytic sample included 99,358 9th-12th graders in 258 Virginia schools. Participants completed a statewide school climate survey in 2020. Students responded to: “The school resource officer (SRO) makes me feel safer at school” and “Over the past school year, about how often have you spoken with the school resource officer who works in your school?” Students also answered two items about their willingness to report peer threats: **“**If another student talked about killing someone, I would tell one of the teachers or staff at school” and “If another student brought a gun to school, I would tell one of the teachers or staff at school.”

Student-level logistic regression models investigated Research Questions 1 and 2. Supporting Hypothesis 1, students who felt the SRO made them safer were more willing to report a peer who talked about killing someone or who brought a gun to school than students who did not feel the SRO made them safer. Partially supporting Hypothesis 2, students who spoke with the SRO at least once or twice per semester were more willing to report a peer who brought a gun to school than students who never spoke with the SRO. However, speaking with the SRO was not associated with willingness to report a peer who talked about killing someone.

Regarding Hypothesis 3, White students viewed SROs more positively than non-White students, and male students viewed SROs more positively than non-male students. Additionally, positive perceptions of the SRO reduced racial/ethnic disparities in willingness to report threats. Overall, Paper 2 found that positive student-SRO relationships were associated with greater student willingness to report threats. These associations were slightly stronger among non-White and male students who are generally less willing to report than White and non-male students.

Paper 2 was presented as a poster at the American Psychological Association Annual Conference in August 2021, and it was published in the *Journal of School Violence* in April 2022. Caroline Crichlow-Ball was lead author, and Dewey Cornell and Francis Huang were co-

authors. Dr. Cornell assisted with refining research questions and reviewing the manuscript text, and Dr. Huang contributed substantially to the data analyses.

Paper 3

Anonymous reporting systems have grown in popularity in recent years, and the majority of secondary schools now operate anonymous tip lines (Planty et al., 2020). People use anonymous reporting systems to share information about threats to schools (Kingkade, 2020), and case studies demonstrate tipsters have helped avert school attacks by using tip lines (Payne & Elliott, 2011; Stallings & Hall, 2019). However, the existing literature on anonymous reporting systems is largely descriptive and relies on student or staff perceptions of tip lines. Researchers (Espelage et al., 2021; Messman et al., 2022) have repeatedly called for empirical studies of anonymous reporting systems' effectiveness. There is no research (to our knowledge) on the association between anonymous reporting systems and student threat reporting.

Experts have recommended schools implement anonymous reporting systems as a way to encourage students to share information that can be used in threat assessment (Langman & Straub, 2019; NTAC, 2019; Pollack et al., 2008). Anonymous reporting systems may help reduce barriers to reporting, such as codes of silence (Oliver & Candappa, 2007) and fears of ostracization (Madfis, 2014) or retaliation (Pollack et al., 2008). Brank et al. (2007) found the proportion of middle schoolers who indicated they would report a peer for carrying a weapon increased from 70% to 83% under the condition of anonymity. Furthermore, the percentage who would report a friend increased from 58% to 70% if they could do so anonymously (Brank et al., 2007). These findings suggest anonymity has a positive effect on students' decisions to report their peers.

Paper 3 addressed the lack of empirical studies on anonymous reporting systems by investigating the association between availability of anonymous reporting systems and student threat reporting. Research questions asked: 1) What kinds of anonymous reporting systems do Virginia high schools use? 2) How is the presence of anonymous reporting systems related to student willingness to report peer threats of violence? 3) How is the presence of anonymous reporting systems associated with the number of threat assessments conducted in a school? and 4) How do anonymous reporting systems compare to other aspects of school climate, particularly student instruction about threat assessment, in their association with threat reporting? We hypothesized that presence of anonymous reporting systems would be associated with greater student willingness to report threats and with a greater number of threat assessments conducted.

Our analytic sample consisted of 106,865 students in grades 9-12 in 282 Virginia high schools who completed the School Climate Survey in 2020. The predictor of primary interest was presence of anonymous reporting systems in schools as indicated by school administrators on the 2019-2020 Virginia School Safety Audit Survey. Administrators also indicated whether their schools instructed students about threat assessment. We used student perceptions of supportive teacher relationships and fair discipline structure as covariates, along with student demographic characteristics. The first outcome variable was student report of their willingness to tell staff about a peer's violent threat. The second outcome variable was the number of threat assessments conducted in each school.

Results indicated that most high schools (91%) used at least one anonymous reporting system, and internet tip lines were the most common type. However, an independent check of school websites revealed that although 198 schools indicated they had internet tip lines, only 98 school websites contained functioning links to online anonymous reporting systems. The

hypothesis that anonymous reporting systems would be associated with greater student willingness to report threats was not supported. However, student perceptions of supportive relationships with teachers and fair discipline structure were associated with greater willingness to report threats. The hypothesis that anonymous reporting systems would be associated with a greater number of threat assessments was also unsupported. However, student instruction about threat assessment was associated with more threat assessments conducted. Findings suggest that presence alone of anonymous reporting systems might not be enough to boost student threat reporting, but that positive school climate and education about the threat assessment process may encourage students to report threats.

At the time of this dissertation defense, Paper 3 had been submitted for publication with Caroline Crichlow-Ball as lead author. Co-author Dr. Cornell assisted in distilling the research questions and reviewing the manuscript, and co-author Tim Konold helped plan and run analyses.

Implications and Future Directions

Each chapter discusses potential implications of findings on future threat reporting research, as well as implications for school decision-makers. Findings from Paper 1 suggest that schools should direct efforts to encourage threat reporting toward those students who are less willing to report threats – students who perceive school climate negatively, who feel disengaged and like they do not belong at school, and who are suspended more often. It is particularly important to encourage these groups of students to report threats because they are more likely to affiliate with deviant peers (Dishion & Tipsord, 2011), and thus might have the most access to peers' plans for violence. Additional findings from Paper 1 suggest schools can boost willingness to report threats among all students by building authoritative school climates in which students

feel supported by teachers and staff enforce discipline fairly. Taken together, results from Paper 1 suggest that schools should encourage threat reporting not only through threat assessment education, but also by helping all students feel engaged and supported in school (e.g., through multitiered support systems or socioemotional learning).

Finally, Paper 1 measured school climate using staff perceptions, indicating that previous findings of the association between student perceptions of school climate and student willingness to report were not due to shared method variance. Put simply, even with a more conservative measure of school climate, Paper 1 still supports the idea that authoritative school climates facilitate student threat reporting.

Paper 2 contributed to the SRO literature by looking at their influence on student feelings of safety and safe behaviors, as opposed to previous work that only addressed associations of SRO presence with student misbehavior, discipline, and arrests. Results from Paper 2 suggest that positive relationships between SROs and students may increase student willingness to report threats. SROs can play a valuable role in threat assessment by forging positive relationships with students. This has important implications for the use of law enforcement officers in schools, especially at a time when many schools are reconsidering their use of SROs. Furthermore, positive perceptions of SROs were related to reduced racial/ethnic disparities in willingness to report threats. This suggests that SROs might offer an inroad for encouraging threat reporting among non-White students who are generally less willing to report threats.

Paper 3 contributed to research on anonymous reporting systems by looking at their influence on student threat reporting rather than only prevalence rates or stakeholder perceptions. Our finding that student perceptions of school climate, rather than presence of anonymous reporting systems, predicted greater willingness to report threats was consistent with results from

Papers 1 and 2. We also found that while presence of anonymous reporting systems was not related to a greater number of threat assessments conducted, education about threat assessment was. This implies that it is not enough for schools to simply implement anonymous reporting systems; they must also actively teach students how to use them and promote them. Taken together, Paper 3 results suggest that while anonymous reporting systems may be useful for obtaining help for students with problems such as bullying or suicidality (Planty et al., 2021), anonymous reporting systems alone are unlikely to boost student threat reporting. When considering which approaches might prevent school violence, schools should not underestimate the importance of supportive student-teacher relationships and fair discipline structure.

An important limitation across all three studies is that they measured willingness to report threats with student self-report. Although survey data were anonymous, student self-report was still susceptible to desirability bias (i.e., students might have overreported their willingness to report threats). Furthermore, students reported how they might act in hypothetical scenarios; we do not know how students would act if exposed to genuine threats. We emphasize that the papers in this dissertation investigated student *willingness* to report threats, as compared to observed reporting behaviors. Relatedly, the two items measuring student willingness to report threats used highly dangerous but infrequent scenarios (a peer who talked about killing someone and a peer who carried a gun to school). We cannot draw conclusions about student willingness to report more common, less severe threats, such as a peer threatening to fight someone. Another limitation of all studies is their correlational design, meaning we cannot conclude that staff perceptions of school climate, student perceptions of SROs, or presence of ARSs caused changes in student willingness to report threats. Finally, results from all studies were based on a state-wide sample of high-schoolers in Virginia public schools and may not generalize to students of

other ages or in other states. Despite these limitations, these three papers advance our understanding of school- and individual-level factors that can influence student willingness to report threats.

There remains a need for experimental studies to investigate the efficacy of school-based interventions designed to increase student willingness to report threats. Specifically, future studies could compare student willingness to report threats before and after a school implemented an intervention aimed at improving school climate or at SRO relationships with students, or before and after a school adopted an ARS. In particular, longitudinal studies could look at changes in student threat reporting over time, which is important for determining directionality. Additionally, rather than using student self-report of their attitudes toward threat reporting, future studies could use more objective measures of student behavior. For example, students could indicate incidents when they did report threats to staff, or studies could use the number of threats students reported to school tip lines as the outcome variable.

In sum, this three-paper dissertation addressed gaps in the literature on student threat reporting and offers information to schools on how they can encourage their students to report. All three papers provided evidence that students are more willing to report threats in schools with authoritative school climates (i.e., schools with high levels of support provided to students and with fair discipline structures). Additionally, Paper 1 found that students who were unwilling to report threats had academic and behavior difficulties in school. The second paper found that students were more willing to report threats when they perceived their school resource officers positively. Finally, Paper 3 found that schools that taught their students about threat assessment conducted more threat assessments. Overall, our message to schools is they can facilitate student

threat reporting by fostering authoritative school climates, encouraging school resource officers to build positive relationships with students, and teaching students about threat assessment.

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Abstracts

Paper 1: Association of School Climate with Student Willingness to Report Threats of Violence

School threat assessment hinges on students being willing to report threats to school adults. This study investigated student willingness to report threats in 85,750 high school students surveyed in 322 Virginia high schools. We examined personal characteristics and school climate conditions for 13,324 students (16%) who indicated that they would not report a peer's homicidal threat. Student-level hierarchical regressions revealed that students who were in a lower-grade level, male, and non-White were less willing to report a peer's threat than other students. A series of ANOVAs determined that students unwilling to report threats were suspended more often, were less engaged in school, perceived teachers as less supportive, and perceived school discipline structure as less fair. Finally, school-level regressions found that staff perceptions of a supportive and structured school climate were associated with increased student willingness to report a homicidal threat.

Paper 2: Student Perceptions of School Resource Officers and Threat Reporting

National debate over law enforcement in schools has largely overlooked student reporting of violent threats to school resource officer (SROs). This statewide assessment of Virginia high school students (n = 99,358) found that the majority of Black (64%), Hispanic (72%), White (75%), and other racial/ethnic identity (71%) students agreed the SRO made them feel safer at school. Logistic regressions revealed that positive perceptions of the SRO and frequency of speaking with the SRO were associated with increased willingness to report a peer who brought a gun to school or talked about killing someone. Perceptions of the SRO interacted with student race/ethnicity such that favorable views reduced disparities in nonwhite students' willingness to report a peer with a gun. Although correlational, these results suggest that positive relationships with SROs encourage students to report threats of peer violence.

Paper 3: Anonymous Reporting Systems and Student Threat Reporting

Schools widely use anonymous reporting systems (ARSs) to identify students who threaten violence, but there is little empirical research on their impact. This study examined the association between ARS presence and student willingness to report threats, as well as the number of threat assessments (TAs) conducted by schools. A statewide sample of 106,865 students in 294 Virginia high schools rated their school climate and their willingness to report peer threats. The majority (91%) of schools used at least one ARS, most commonly internet tip lines (67%). School- and student-level regression models showed that ARS presence was not associated with student willingness to report threats or with number of TAs. However, student perceptions of supportive teachers and fair discipline were associated with greater willingness to report, and schools that instructed students about TA conducted more TAs. Findings suggest that positive school climates and education about TA might be more effective in encouraging students to report threats than ARSs alone.

Paper 1

Association of School Climate with Student Willingness to Report Threats of Violence

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Portions of these findings were presented as a poster at the 2019 American Psychological Association Convention in Chicago. Dr. Dewey Cornell discloses that he is the principal developer of a threat assessment program for schools, the Comprehensive School Threat Assessment Guidelines. This project was supported in part by grant NIJ 2017-CK-BX-0007 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The findings, conclusions, or recommendations expressed in this manuscript are those of the authors and do not necessarily reflect those of the U.S. Department of Justice or the Center for School and Campus Safety at the Virginia Department of Criminal Justice Services. The authors wish to thank Francis L. Huang for his statistical consultation.

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Abstract

School threat assessment hinges on students being willing to report threats to school adults. This study investigated student willingness to report threats in 85,750 high school students surveyed in 322 Virginia high schools. We examined personal characteristics and school climate conditions for 13,324 students (16%) who indicated that they would not report a peer's homicidal threat. Student-level hierarchical regressions revealed that students who were in a lower grade level, male, and non-White were less willing to report a peer's threat than other students. A series of ANOVAs determined that students unwilling to report threats were suspended more often, were less engaged in school, perceived teachers as less supportive, and perceived school discipline structure as less fair. Finally, school-level regressions found that staff perceptions of a supportive and structured school climate were associated with increased student willingness to report a homicidal threat.

Keywords: threat assessment, threat reporting, school safety, school climate

Public Significance Statement: School threat assessment is a violence prevention strategy that depends on the willingness of students to report a threat of violence. This study identified personal and school characteristics of high school students who were unwilling to report a peer's homicidal threat of violence. The findings suggest that school authorities could promote school safety by cultivating a school climate in which students feel supported and treated fairly in school disciplinary matters.

Association of School Climate with Student Willingness to Report Threats of Violence

Threat assessment has become a widely used violence prevention strategy in schools (Cornell et al., 2018; Federal Commission on School Safety, 2018; Pollack et al., 2008). Threat assessment depends on student reporting of peer threats to school staff (Pollack et al., 2008), but some students are unwilling to report. This is problematic because students are often aware of a peer's plans for a violent act (Daniels, 2007; O'Toole, 2000). Many school attackers told peers about their grievances against specific people or the school prior to the attacks (Vossekuil et al., 2002). In a review of 41 school attacks from 2008-2017, 31 (76%) of the attackers told others in-person about their intentions (U.S. Secret Service, 2019). Another examination of targeted school attacks found that the person most likely to have foreknowledge was the perpetrator's peer (28 of 30 cases) (Vossekuil et al., 2002).

Students have helped prevent multiple acts of school violence by reporting information about a peer's planned attack. In a study of 15 participants who had prior knowledge of potential threats at their schools, six shared information that helped avert the planned attacks (Pollack et al., 2008). Another study of averted attacks found the most common method by which plots were discovered was other students reporting information to school staff or police (Daniels, 2007). In half of the prevented plots, the reporting students were friends of the potential attacker and shared information with school staff after the potential attacker confided in them (Daniels, 2007). A more recent review of 51 incidents of averted school violence found that in the majority of these incidents, peers discovered and reported the plots (Daniels, 2019).

Barriers to Reporting

Although students are most likely to know about a threat, they are often reluctant to tell adults. Students worry that reporting will be seen as snitching (Oliver & Candappa, 2007). They

fear that they will be criticized and ostracized if they come forward with information about a peer's violent intentions (Madfis, 2014). Besides reluctance to break the code of silence, students also fear retaliation. In one study, bystanders who did not report information about a peer's plans to attack reported that they felt uncomfortable talking to anyone, thought that they would not be believed or would get in trouble, and thought that school staff would not keep their identities confidential (Pollack et al., 2008). In cases where a student came forward with information about a potential attack, there were often other students with the same information who remained silent (Madfis, 2014).

Demographic Differences in Help-Seeking

Help-seeking research has consistently found that male students are less likely than female students to seek help for all types of problems, including situations of potential violence. Although boys are more likely to report being threatened (Nekvasil & Cornell, 2012), girls are more likely to seek help for bullying and threats of violence (Eliot et al., 2010). Similarly, Millspaugh et al. (2015) found that female students were more likely to report threats than male students. Such gender differences might be partially attributed to male gender stereotypes associating help-seeking with personal weakness (Steinfeld et al., 2009). In schools in which students perceived a high degree of support from adults, the difference between girls' and boys' willingness to seek help was reduced by half, suggesting that a positive school climate might buffer boys' reluctance to seek help for threats of violence (Eliot et al., 2010).

Race is also a significant factor in a student's likelihood of seeking help. Black students were less likely than students in any other racial group to endorse willingness to seek help from adults at school (Eliot et al., 2010; Millspaugh et al., 2015). Black students were 40% less likely to report a peer bringing a gun to school and 22% less likely to report a peer threatening to kill

someone, and there were similar results for Hispanic students (Millspaugh et al., 2015). These racial differences persisted after controlling for students' aggressive attitudes and socioeconomic status. Other research suggests that non-White students' reluctance to report threats might be due to their distrust of school authority figures (Gregory et al., 2010; Marsh & Cornell, 2001).

In addition to gender and race, age affects students' willingness to report threats. Students' willingness to seek help from adults generally decreases as they grow older (Newman et al., 2001). Williams and Cornell (2006) found that middle schoolers in lower grades were more willing to seek help than students in higher grades. Oliver and Candappa (2007) found that 51% of fifth-graders responded that they would find it easy to report bullying to teachers, compared to only 31% of eighth-graders. However, threat reporting trends have not been examined in high school, where it has been found that student threats decrease across upper grade levels (Burnette et al., 2020).

There is little research comparing students who would or would not report threats. Brank et al. (2007) asked approximately 2,000 students in sixth, seventh, and eighth grades about their likelihood of reporting another student who brought a weapon to school. They found that students who received better grades were more likely to report a peer who brought a weapon to school. Additionally, students with trusted adults at school and students who talked with their parents more often were more willing to report the presence of weapons (Brank et al., 2007). Students with more delinquent peers and greater rates of self-reported delinquency were less willing to report (Brank et al., 2007).

School Climate

When education and law enforcement authorities initially recommended that schools use threat assessment to prevent violence, they cautioned that threat assessment relies on a positive

school climate where students feel comfortable turning to adults for help if they learn of a threat (Fein et al., 2002; O'Toole, 2000; Vossekuil et al., 2002). School climate is generally conceptualized as the quality of interpersonal relationships and interactions among students and school personnel (Cornell & Huang, 2016). Authoritative school climate is a conceptual framework for school climate characterized by high support provided to students and fair discipline structure. Support refers to student perceptions that teachers and staff respect them and want them to succeed. Structure refers to student perceptions of discipline structure as strict but enforced fairly. Authoritative school climate is associated with many healthy school outcomes, such as greater student engagement, better academic performance, and higher graduation rates (Cornell & Konold, 2018). It is also associated with behavioral outcomes such as fewer discipline problems, less peer aggression and bullying, and less aggression directed toward teachers. These findings are consistent across schools varying in size, SES, and student body racial composition (Cornell & Konold, 2018).

In school climates that support and encourage aggressive behavior, students are more reticent to report bullying victimization to staff. Unnever and Cornell (2003) identified a pervasive culture of bullying in middle schools. Most middle school respondents believed that teachers would not intervene to stop bullying, that teachers had done little to stop bullying, and that bullying could occur without intervention (Unnever & Cornell, 2003). Students who do not trust that school adults will believe them or will appropriately intervene are unlikely to report threats.

Students in schools with positive climates might feel empowered to ask adults for help without fear of being labeled snitches (National Threat Assessment Center, 2018). In their study of students who told school staff about peers' threats, Pollack et al. (2008) found that students

decided to come forward because they had positive relationships with adults at school and believed that school staff would take their information seriously and address the threat appropriately. Students who did not share information about planned attacks thought that school staff would disbelief or punish them (Pollack et al., 2008). In other words, students who perceived school staff as supportive and fair were willing to report.

Previous work demonstrates the association between positive school climate and student willingness to seek help from school adults. Bandyopadhyay et al. (2002) found that schoolwide willingness to seek help was associated with safer school conditions, such as lower bullying rates and more student help-seeking behaviors. A study by Eliot et al. (2010) found that ninth-graders who perceived their teachers as supportive were more willing to seek help for bullying. Eliot et al. (2010) measured willingness to seek help using scale scores and did not specifically focus on student willingness to report threats. Additionally, Eliot et al.'s (2010) measure of school climate was limited to student reports of feeling supported by teachers and did not consider discipline structure.

Another important methodological shortcoming of previous studies is reliance on student perceptions to measure both school climate and willingness to report threats. A lack of independence between school climate and student willingness to report threats is problematic because shared method variance and student response biases (e.g., halo effects, desirability bias) may inflate the association between perceptions of support and help-seeking. A study using independent measures is needed to demonstrate the relation between school climate and student willingness to report threats.

Current Study

The current study aimed to expand upon the existing, largely demographic findings regarding students' willingness to report threats. In contrast to case studies with small sample sizes (Daniels et al., 2010; Pollack et al., 2008; Vossekuil et al., 2002), we used a large statewide sample of high school students who indicated whether or not they were willing to report a homicidal threat. Two homicidal threats were used: a peer talking about killing someone and a peer bringing a gun to school. We considered two threats because there might be differences in the nature of the threat that influence student willingness to make a report. Two threats allowed us to consider the variation between a verbal threat to kill someone and a behavioral threat implied by bringing a gun to school. Furthermore, we examined whether student willingness to report a threat varied by both personal and school climate characteristics. Personal characteristics included grade level, race/ethnicity, and gender because previous studies have found associations among these factors and willingness to report. The individual-level characteristics included suspensions, academic engagement, and perceptions of support and structure as measures of how students experience the climate in their schools. The current sample covers grades nine through twelve, differing from previous studies that used younger students (Eliot et al., 2010; Millspaugh et al., 2015).

We examined school climate characteristics with two components of an authoritative school climate (student support and fair discipline structure) that are hypothesized to facilitate student willingness to report. Because students and teachers have different perspectives on school climate, Konold et al. (2018) recommended considering both teacher and student ratings to allow for more accurate and discriminating characterization of the school. Therefore, unlike previous studies, we obtained independent measures of school climate from staff that could be

compared to student reports of willingness to report threats. This is an important methodological improvement because it eliminates shared method variance that could inflate the association between school climate and student reporting of threats and threaten the validity of findings.

The first research question was: How do students who are unwilling to report threats (non-reporters) differ from students who would report threats (reporters) in terms of demographic and school experiential characteristics? We hypothesized that students who were older, non-White, and male would be less willing to report threats. We also hypothesized that non-reporters would be more likely to have been suspended, be less engaged in school, and have more negative perceptions of teacher support and school discipline structure. The second research question was: What is the association between teacher perceptions of school climate and student willingness to report violent threats? We hypothesized that teacher perceptions of strong support for students and fair discipline will be associated with greater student willingness to report violent threats.

Method

Participants

The sample comprised ninth through twelfth graders and school staff who participated in the 2018 Virginia Secondary School Climate Survey. All Virginia public high schools serving a general education population were eligible to participate. Of the 324 eligible schools, 322 schools (99.4% of eligible schools) administered the online survey to their students. This high participation rate was achieved with cooperation and endorsement of the Virginia Department of Criminal Justice Services and the Virginia Department of Education (VDOE). This study was approved by the University of Virginia Institutional Review Board.

Students

Schools had the option of inviting all high schoolers to complete the survey or randomly selecting at least 25 students from each grade. These options were intended to give administrators the flexibility to choose a more or less comprehensive assessment of their students. All students were eligible to participate except those unable to complete the survey because of limited English proficiency or an intellectual or physical disability. Principals sent information letters to students' parents and invited them to participate in the survey. The letter explained the purpose of the survey and offered parents the option to decline their children's participation.

The student participation rate was defined as the total number of students across all schools who participated in the survey divided by the total number of students invited to take the survey. Principals from 280 of 322 schools reported participation rates. There was a total of 75,457 student participants from a pool of 91,988 students who were asked to participate, giving an overall participation rate of 82%. The main reasons for nonparticipation reported by school principals were: the student was absent when the survey was administered (for reasons such as a schedule conflict or illness; whole grade 61%, random sample 73%), the student declined (whole grade 36%, random sample, 23%), or the parent/guardian declined (whole grade 3%, random sample 4%).

To improve data quality, the preliminary sample of 93,170 student surveys was screened for completion time and responses to validity items. Three hundred thirty-eight students (0.4%) who completed the survey in less than six minutes were excluded because it was judged that they would not have been able to read and carefully answer each question so quickly. An additional

7,082 students (7.6%) were excluded because they acknowledged not telling the truth in their responses to the validity items.

The final sample consisted of 85,750 (52.2% female) participants in the 9th (27.4%), 10th (26.3%), 11th (24.4%), and 12th (21.9%) grades. The racial/ethnic breakdown was 52.5% White, 15.1% Black or African American, 11.8% Hispanic, 4.5% Asian, 0.5% American Indian or Alaska Native, and 0.3% Native Hawaiian or Pacific Islander, with an additional 13.5% of students identifying their background as two or more races. Thirty-two percent of students (32.1%) were eligible for a free or reduced-price meal (FRPM) at school. As shown in Table 1, our final student analytic sample was similar to the state population as a whole based on gender and race/ethnicity (i.e., White compared to non-White). Although the percentage of White students in the current sample (52.5%) was close to the percentage in the state student population (50.8%), students in the sample (13.5%) were more likely to report multi-racial identities than in the state student population (4.7%).

Staff

All high school professional staff and teachers (hereafter staff) were invited to participate in the survey by their principals. Staff participation was voluntary. A total of 16,525 staff from 318 schools completed the survey, resulting in a participation rate of 45.5%. Staff participants were predominantly female (69.2%) and were 81.0% White, 9.1% Black or African American, 2.3% Hispanic, and 1.5% Asian, with 6.2% identifying as other/two or more races. Of the respondents, 12,839 (77.7%) were teachers and 3,431 (20.74%) were staff. Nearly half of the respondents had worked at their current school for one to five years (45.4%), 18.8% worked six to ten years, and 34.9% worked more than ten years (164 participants did not answer this question). In order to protect staff anonymity, limited demographic information was collected.

Measures

Two items assessed students' willingness to report violent threats. Students responded to: **"**If another student talked about killing someone, I would tell one of the teachers or staff at school" and "If another student brought a gun to school, I would tell one of the teachers or staff at school." Responses were a four-item Likert scale ranging from "Strongly disagree" to "Strongly agree." The correlation between these two items was .66 in the present sample. These items were chosen because both have been used successfully in previous studies of student threat reporting and help-seeking. Prior studies at the student and school levels have found that more aggressive attitudes were associated with decreased willingness to seek help for a student talking about killing someone or carrying a gun (Millspaugh et al., 2015; Williams & Cornell, 2006). Perceptions of teachers as supportive, however, were associated with greater willingness to tell a teacher about a peer who talked about killing someone or brought a gun to school (Eliot et al., 2010). Additionally, schools with overall greater willingness to seek help for the same threats had less bullying, less gang violence, and less exclusionary discipline (Bandyopadhyay et al., 2009).

While a student who talks about killing someone may be simply be joking or expressing anger, such a statement nonetheless merits further examination to determine its intent. Similarly, a student who brings a gun to school may have no intent to shoot anyone, but the possession of a deadly weapon increases the risk for a lethal outcome. The U.S. Secret Service specifies that both verbal threats of violence and the behavior of bringing a weapon to school are concerning behaviors that warrant immediate intervention (NTAC, 2018).

Student Academic Engagement

Students responded to six items asking about their connectedness to school and their motivation to achieve academically. Items tapped both affective (e.g., "I feel like I belong at this school") and cognitive (e.g., "Getting good grades is very important to me") aspects of student engagement. Responses were a four-item Likert scale ranging from "Strongly disagree" to "Strongly agree." Previous confirmatory factor analysis of these items revealed student-level standardized pattern coefficients ranging from 0.68 to 0.93, with average student-level reliability of .80 (Konold & Cornell, 2015). Konold et al. (2018) showed that, controlling for validity indices, students' report of their engagement in school is related to academic grades and test performance.

Suspensions

Students were asked how many days they had been suspended out of school this year. Responses options ranged from "I have not been suspended from school this year" to "I have been suspended five or more days." Huang and Cornell (2017) previously found that self-reported suspensions were highly correlated with school suspension records *(r* = .83).

Student Perceptions of Supportive Teacher-Student Relationships

Four items assessed students' perceptions that adults at their school care about and respect them. An additional four items assessed students' willingness to seek help from teachers. Students responded to items such as "Teachers and other adults at this school care about students" and "There are adults at this school I could talk with if I had a problem." Responses were a four-item Likert scale ranging from "Strongly disagree" to "Strongly agree." Previous multi-level CFA of these items found student-level standardized pattern coefficients that ranged

from 0.63 to 0.87 and an average student-level reliability estimate of 0.80 (Konold & Cornell, 2015). Internal consistency of these items in the current sample was high (α = .88).

Student Perceptions of School Disciplinary Structure

Seven items measured students' perceptions that their school discipline is fair and consistently enforced. Students responded to items including "The school rules are fair" and "The consequences for breaking school rules are the same for all students." Responses were a four-item Likert scale ranging from "Strongly disagree" to "Strongly agree." Multi-level CFA analyses of these items revealed student-level standardized pattern coefficients ranging from 0.36 to 0.75, and average student-level reliability of 0.78 (Konold and Cornell, 2015). Internal consistency in this sample was fair (α = .79).

Staff Perceptions of Supportive Teacher-Student Relationships

Four items assessed staff perceptions of supportive relationships between teachers and students; six items assessed staff perceptions of students' willingness to seek help from teachers. Staff responded to statements such as: "Most teachers and other adults at this school care about all students" and "Students feel comfortable asking for help from teachers if there is a problem with a student." Responses were a six-item Likert scale ranging from "Strongly disagree" to "Strongly agree." Previous multilevel CFA of these items in a teacher sample revealed standardized pattern coefficients that ranged from .54 to .92, and a teacher-level reliability estimate of .86 (Huang & Cornell, 2016). The alpha coefficient for the scale in this sample was .90.

Staff Perceptions of School Disciplinary Structure

Nine items assessed staff perceptions of discipline structure. Teachers responded to statements such as: "The punishment for breaking school rules is the same for all students" and

"Students at this school are only punished when they deserve it." Responses were a six-item Likert scale ranging from "Strongly disagree" to "Strongly agree." Multilevel CFA of these items within a teacher sample revealed standardized pattern coefficients ranging from .63 to .82, and a teacher-level reliability estimate of .74 (Huang & Cornell, 2016). The alpha coefficient for the scale in this sample was .78.

Covariates

We were interested in whether student willingness to report threats differed across age, race/ethnicity, and gender. Therefore, the present study identified both student- and school-level demographic variables to examine as covariates.

Data Analysis

To investigate the first research question (How do non-reporters differ from reporters in terms of demographic and school experiential characteristics?), two linear regression models examined associations of grade level (entered as a continuous variable), gender, and race/ethnicity with student willingness to report threats (with four response options of strongly disagree to strongly agree). Models used school fixed effects to account for the nesting of students within schools in order to examine student-level effects (Huang, 2016). Next, to compare students who said they would or would not report a threat, responses were dichotomized into reporters (*strongly agree* and *agree*) versus non-reporters (*strongly disagree* and *disagree*). A series of three-way ANOVAs using dichotomized reporting status, race/ethnicity, and gender as predictors examined the outcomes of academic engagement, suspensions, perceptions of teacher support, and perceptions of discipline structure.

To address the second research question (What is the association between teacher perceptions of school climate and student willingness to report violent threats?), two school-level

linear regression models examined how staff perceptions of 1) support provided to students and 2) fair discipline structure were associated with student willingness to report threats. We used student enrollment, percent White students, and the percent of students who received free or reduced-price meals as covariates. Enrollment size is traditionally used as a covariate in school climate research (Leithwood & Jantzi, 2009) and is generally considered to influence how effectively the school environment is organized and monitored (Wang & Degol, 2016). We controlled for racial composition because other studies have found that students with marginalized racial identities are less likely to report threats (Millspaugh et al., 2015; Nekvasil & Cornell, 2012). The proportion of students eligible for free or reduced-price meals was used as a proxy for poverty in each school because lower SES in school composition predicts more aggression and peer victimization (Bradshaw et al., 2009; Carlson, 2006; Unnever & Cornell, 2003). We did not include proportion of students in each grade level or proportion of male students as covariates because there was little variation among schools.

Results

After controlling for school differences, the combined predictors of grade level, gender, and race/ethnicity were statistically related to student willingness to report talk about killing someone. Because these regressions used unstandardized predictors, unstandardized coefficients are reported in Table 2. Higher grade level was associated with an increased willingness to report talk about killing someone ($B = .01$, $p = .001$), meaning that with each increase in grade level, student willingness to report increased by .01 standard deviations. Being female was also associated with greater willingness to report a peer who talked about killing someone ($B = .29$, $p < .001$) such that female students were .29 standard deviations more willing to report. Non-White racial/ethnic identity was significantly associated with decreased willingness to report talk about

killing someone, with coefficients ranging from -.04 for Hispanic students ($p = .003$) to -.20 for Black students ($p < .001$). In other words, Black students were less willing to report by .20 standard deviations.

Similarly, after controlling for school differences, the combined predictors of grade level, gender, and race/ethnicity were statistically related to student willingness to report a peer bringing a gun to school (see Table 2). Higher grade level ($B = .01$, $p = .003$) was related to an increase in willingness to report the presence of a gun, i.e., each increase in grade level was associated with a .01 standard deviation increase in willingness to report. Female gender was also related to increased willingness to report a gun ($B = .26$, $p < .001$); female students were more willing by .26 standard deviations. Non-White racial/ethnic identity was associated with decreased willingness to report a gun. Coefficients ranged from -.06 for American Indian/Native Alaskan students ($p < .001$) to -.31 for Black students ($p < .001$). This can be interpreted as Black students were less willing to report by .31 standard deviations.

The effect sizes of racial/ethnic group on willingness to report each threat were small, but the practical significance of these results is illustrated in Table 3. We found that Black or African-American students were unwilling to report a peer talking about killing someone (21%) or a peer bringing a gun to school (16%). This contrasts with the 15% of non-Black students who would not report talk of killing someone and 7% who would not report presence of a gun.

Differences between Reporters and Non-Reporters

There was a moderate correlation between student willingness to report talk about killing someone and a peer bringing a gun to school, $r = .54$, $p < .001$, and high agreement (83%) on these items. While the vast majority of students were willing to report both types of threats, about 7% responded they would report neither, about 9% said they would only report someone

bringing a gun to school, and 2% said they would only report a peer talking about killing someone. A series of three-way ANOVAs using dichotomized reporting status (reporter vs. non-reporter), race/ethnicity, and gender found that non-reporters had more negative school experiences and more negative perceptions of school climate.

For both types of threats, the combined predictors of reporting status, race/ethnicity, and gender accounted for slightly over 7% of the variance in academic engagement (R^2 ranged from .071 for a peer bringing a gun to school to .079 for a peer talking about killing someone), about 2% of the variance in days suspended (R^2 ranged from .022 for presence of gun to .029 for talk about killing), about 7% of the variance in perceptions of teacher support (R^2 ranged from .066 for presence of gun to .073 for talk about killing), and about 6% of the variance in perceptions of fair discipline structure (R^2 ranged from .058 for presence of gun to .064 for talk about killing). As hypothesized, the significant main effects of reporting status revealed that non-reporters were less academically engaged, were suspended out-of-school for more days, perceived their teachers as less supportive, and perceived school discipline as less fair than did reporters.

Reporting status significantly interacted with race/ethnicity such that, except for Asian students, non-White non-reporters were less academically engaged, were suspended for more days, had lower perceptions of support from teachers, and perceived school discipline as less fair than White non-reporters. There was only one significant interaction between reporter status and gender. For talk about killing someone, reporting status significantly interacted with gender, $F(1, 85{,}718) = 4.52$, $p < .05$. The difference in academic engagement was greater for male non-reporters than for female non-reporters.

There were two significant three-way interactions of reporting status, race/ethnicity, and gender for suspensions (talk about killing: $F(7, 85{,}718) = 3.28$, $p = .002$; presence of a gun: $F(7,$

85,718) = 6.74, $p < .001$; see Figure 1). The difference in suspensions between reporters and non-reporters was greatest for non-White males. For talk about killing, about 9.8% of non-reporters had been suspended for at least one day, compared to only 4% of reporters. For bringing a gun, approximately 14% of non-reporters had been suspended for at least one day, versus only 4% of reporters. Finally, there was a significant triple interaction of reporting status, race/ethnicity, and gender on perceptions of support, $F(7, 85{,}718) = 3.01$, $p = .004$ (see Figure 2). The gap in perceived support between reporters and non-reporters was greater for American Indian/Native Alaskan and Hispanic/Latino students and was lesser for Black students.

Staff Perceptions of School Climate and Student Willingness to Report Threats

After controlling for student enrollment, percent White students, and percent students who received free or reduced-price meals, there was a significant association between staff perceptions of structure and student willingness to report talk about killing someone ($\beta = .17$, $p = .05$) and a nonsignificant association between staff perceptions of support ($\beta = .14$, $p = .09$) with student willingness to report talk about killing someone. This means that a one standard deviation increase in staff perceptions of structure was associated with a .17 standard deviation increase in student willingness to report a peer who talked about killing someone. Staff perceptions of support were significantly associated with student willingness to report someone bringing a gun to school ($\beta = .20$, $p = .004$) and staff perceptions of structure were not significantly associated with willingness to report someone bringing a gun to school ($\beta = .06$, $p = .371$). Therefore, a one standard deviation increase in staff perceptions of support was associated with a .20 standard deviation increase in student willingness to report a peer who brought a gun to school. We standardized all predictors, and thus report standardized coefficients in Table 4.

To illustrate the magnitude of these results, we looked at schools in the top and bottom quartiles for staff ratings of support and structure. In schools within the top quartile of support (n = 82), 94% were willing to report someone bringing a gun. However, in schools in the bottom quartile of support (n = 77), only 90% agreed they would report a gun. Similarly, in schools within the top quartile for staff ratings of structure (n = 79), 86% of students agreed they would report talk about killing, compared to 85% of students in schools in the bottom quartile (n = 80).

To better understand the impact of the concentration of poverty in schools on student willingness to report threats, we compared student willingness to report in schools at the top and bottom quartiles of percent of students receiving FRPM. Schools within the top quartile of FRPM (n = 80) had an average of 82% of students willing to report a peer talking about killing someone and 87% willing to report a peer bringing a gun. A higher proportion of students were willing to report threats in schools within the bottom quartile of FRPM (n = 80): 87% were willing to report talk about killing, and 95% were willing to report the presence of a gun.

Discussion

In order for threat assessment to be an effective strategy for violence prevention, students must be willing to report threats (Pollack et al., 2008). While the vast majority of students in the current study said they would report another student for talking about killing someone (about 85%) or report another student bringing a gun to school (about 92%), there remained a surprising number of students who said they were unwilling to report. About 16% of students disagreed that they would report a peer talking about killing someone and about 8% disagreed that they would report a peer bringing a gun to school. These percentages translate into approximately one to three students in an average Virginia high school classroom of 21 students (U.S. Department of Education, National Center for Education Statistics, 2017-2018). The current study sought

insight into students' unwillingness to report threats, examining both student- and school-level factors.

While many students may be reluctant to report peers' aggressive behavior (Syvertsen et al., 2009, Wilson-Simmons et al., 2006), it is especially worrisome when students are unwilling to report explicitly homicidal threats. These non-reporters are concerning because they might include the students with the most access to peer threats. Students who have behavior problems, feel marginalized from school, and have poor academic performance are more likely to associate with one another (Dishion et al., 2010). In their study of individuals who had advance knowledge of planned school attacks, Pollack et al. (2008) found that about two-thirds of bystanders were either friends or acquaintances of the attacker. Therefore, it is important to better understand these non-reporters in order to reach them with efforts to encourage students to report threats.

Although the majority of students in all racial groups were willing to report threats, students who were non-White were somewhat less willing than White students. The association between student race/ethnicity and willingness to report was largest for Black or African-American students, and there were similar findings for other race groups that were slightly smaller in magnitude (see Table 3). Slightly over 20% of Black students were unwilling to report talk about killing someone, and about 16% were unwilling to report a peer bringing a gun. This is consistent with Millspaugh et al.'s (2015) finding that students in middle schools with higher percentages of White students were more likely to report a classmate talking about killing someone and a classmate bringing a gun to school. Specifically, Millspaugh et al. (2015) found that Black students had 40% lower odds of reporting a gun at school and 22% lower odds of reporting talk about killing someone as compared to White students. Additionally, Eliot et al. (2010) found that Black students in ninth grade were less willing than students from any other

racial/ethnic group to seek help from adults at school. One possible explanation for these results could be a lower sense of belonging at school and perceptions of school discipline as less equitable in school discipline (Skiba, Chung, et al., 2014).

While the vast majority of both boys and girls were willing to report threats, male students were less willing to report than female students. Nearly 20% of boys said they would not report talk of killing someone and 11% of boys said they would not report the presence of a gun, as compared to 11.7% and 5.6% of girls, respectively. The finding that male students were less willing to report threats than female students is consistent throughout the help-seeking literature. Millspaugh et al. (2015) found that female seventh and eighth grade students were more likely to report both threats involving guns and threats to kill someone than male students. In their study of ninth graders, Eliot et al. (2010) found a small effect (d = .24) of gender in favor of girls being more willing to seek help from school adults than boys. Male gender roles as tough and self-sufficient are a likely contributor to boys' reluctance to seek help from teachers (Kessels & Steinmayr, 2013).

In contrast to other studies that looked at middle school (Millspaugh et al., 2015) and ninth grade (Eliot et al., 2010), the current study included students in grades 9-12. We found that 9th, 10th, and 11th grade students were less willing to report than students in 12th grade, (η_p^2 = .001). However, the differences were small: about 16% of 9th graders, 17% of 10th graders, and 16% of 11th graders would not report a peer talking about killing someone, as compared to 14% of 12th graders. Similarly, 8% of 9th graders, 8.9% of 10th graders, and 8.5% of 11th graders would not report someone bringing a gun to school, compared to 7% of 12th graders. Fewer high schoolers in the current sample were non-reporters than the seventh and eighth graders in Millspaugh et al.'s (2015) study. About 18% of middle schoolers disagreed they would report a

peer talking about killing someone and about 14% disagreed they would report a gun at school (Millspaugh et al., 2015), compared to 16% and 8%, respectively, of high schoolers.

Other studies have found that willingness to report declines across higher grade levels. In their study of how seventh through 12th graders would respond to a peer's dangerous plans, Syvertsen et al. (2009) found that high school students were less likely than middle school students to tell a teacher. Similarly, Brank et al. (2007) found that likelihood of reporting weapons decreased across sixth, seventh, and eighth grades. The current finding that older students were more willing to report peer threats is consistent with a linear increase in resistance to peer influences from early to late adolescence (Steinberg & Monahan, 2007). Students in the 12th grade are more mature and might feel a greater sense of responsibility for protecting their teachers and classmates.

Regarding student characteristics, non-reporters were less engaged in school and were less likely to feel like they belonged at their schools than reporters. Non-reporters were also more likely to be suspended than reporters. One plausible explanation is that exclusionary discipline leads students to feel alienated from their schools (Skiba, Arredondo, et al., 2014), and thus feel less responsible for reporting a threat or feel less confident that school staff would respond appropriately. There was only a small correlation between academic engagement and suspensions, $r = -.15$, $p < .001$, implying that academic engagement and suspensions contribute independently to willingness to report. By using exclusionary discipline, schools may estrange students who could contribute to school safety. Non-reporters also perceived their teachers as less supportive and were more likely to perceive the discipline practices at their schools as unfair. Taken together, these findings suggest that non-reporters are students who are not

academically engaged and who experience behavioral difficulties. They may be influenced by perceptions of teachers as uncaring and school discipline as unfair.

School Factors

Differences in school experiences were greater for non-reporters who were non-White. An unanticipated finding was that differences between reporters and non-reporters were greatest for American Indians/Native Alaskan (AI/NA) students. About 18% of AI/NA students would not report talk about killing someone and 14% would not report the presence of a gun, relative to 16% and 8% of all students, respectively. Reporting status interacted with racial/ethnic identity such that AN/NA non-reporters and reporters differed more in academic engagement, suspensions, perceptions of support from teachers, and perceptions of fair discipline structure than did students of other racial/ethnic groups. Eleven percent of AI/NA students had been suspended for at least one day, as compared to 4.9% of all students. Compared to all students who would not report talk about killing someone, AI/NA non-reporters were less academically engaged, perceived teachers as less supportive, and perceived discipline structure as less fair. The greater differences for AI/NA students relative to students of other races/ethnicities imply that school experiences could be stronger factors in AI/NA students' willingness to report threats than for other students.

One explanation may be that AI/NA students are a small minority within Virginia public schools. AI/NA high schoolers comprised just 0.5% (420 students) of the current sample. Though there are 11 federally recognized tribes in Virginia (Secretary of the Commonwealth, n.d.), there are no Bureau of Indian Education schools (U.S. Department of the Interior, n.d.), and so Virginian AI/NA students are incorporated in the public school system. Faircloth et al. (2010) proposed that a combination of institutional and student-level factors pushes AI/NA

students out of school, contributing to high school graduation rates well below the national average. The 2018 national high school graduation rate for AI/NA students was 74%, compared to 88% for all Virginia high school students and 85% for all U.S. students in public high schools (U.S. Department of Education, Office of Elementary and Secondary Education, 2018). Additionally, schools attended by AI students are more likely to be poor and rural, with lower academic achievement and higher rates of short-term suspensions and violent acts (Fuller & Davis, 2016). The national trend of AI/NA students' negative attitudes toward and experiences in school was reflected in the current study. The finding that AI/NA students had more negative school experiences than other non-White students underscores the idea that non-reporters are students who feel less connected to school.

We also looked at the relation between staff perceptions of school climate and student willingness to report threats. There were small but significant associations between staff perceptions of structure and students' willingness to report talk about killing someone and staff perceptions of support and students' willingness to report a peer bringing a gun to school. Though small, these associations suggest that the association of school climate with student reporting attitudes is not an artifact of shared method variance, which might have explained or contributed to previous study findings that used student report to measure both school climate and willingness to report (Eliot et al., 2010). Although staff perceptions of school climate contribute to the variance in student willingness to report threats, student perceptions are nonetheless the stronger predictor of student reporting attitudes.

Pollack et al. (2008) recommended that schools encourage student reporting by educating students about threat assessment. Stohlman and Cornell (2019) examined the effectiveness of an online training program about school threat assessment on middle and high school students. The

program consisted of slides narrated by students and a video vignette in which a student reports a classmate's threat. The program reinforced that schools are overall safe places, highlighted that violent events have been averted because students came forward to report threats, and emphasized that reporting threats is not snitching. Students who completed the program demonstrated increased knowledge of threat assessment and increased willingness to report a threat from pretest to posttest (Stohlman & Cornell, 2019).

Although several school-based programs have been found to increase students' help-seeking for mental health problems (Wei et al., 2013), there are few programs that seek to increase students' help-seeking for school violence. This is not due to lack of student interest; students believe that instruction about how to report and intervene in violence/bullying is important to school safety (Booren and Handy, 2009). The Chicago Police Department launched the Campaign to Break the Code of Silence in high schools in areas with high rates of community violence (Meinero, 2015). The program sought to increase students' awareness of the impact of youth violence on the community and distinguish between snitching and reporting crime. Developers did not conduct a controlled trial, but survey data indicated that 81% of participating students reported they were more likely to report bullying or someone with a gun (Meinero, 2015). There is a need for expanded, evidence-based programming that targets student help-seeking for school violence.

Anonymous reporting systems may remove some barriers to reporting for students who worry about identifying themselves. Students are more likely to report a peer, even a friend, for bringing a gun to school if they can do so anonymously (Brank et al., 2007). Brank et al. (2007) found that only about half of students were willing to report the presence of a gun if the offending peer might find out, and only half would report if other students might consider them a

snitch or tattletale. Therefore, states are increasingly using anonymous reporting systems for threats of school violence (Blad, 2018). For example, Colorado launched a phone tip-line after the Columbine shooting, but received few tips until they created Safe2Tell, a phone line and app that allows users to remain anonymous (Blad, 2018). However, if students are unwilling to report threats because they feel negatively about their schools, then anonymous systems might be insufficient. Students with delinquent peers and attitudes and were less likely to report even anonymously (Wylie et al., 2010). In contrast, Wylie et al. (2010) found that students with stronger relationships with adults were more willing to report anonymously. Future studies could compare students' willingness to report in schools that have implemented anonymous reporting systems and in schools without such systems in place.

A primary limitation of this study is that the findings are correlational. Therefore, we cannot conclude that student and school climate characteristics play a causal role in student willingness to report threats. A more rigorous test of this hypothesis would be a study to determine whether interventions that improved school climate and reduced school exclusion had an impact on student willingness to report threats.

Another important limitation is that the current study relied on student self-report of willingness to tell staff about threats rather than demonstrated behaviors of reporting. Although students might have been inclined to over-report their willingness to report threats, the survey was anonymous, which should have reduced a student's inclination to give a socially desirable response. We also show that there is a meaningful pattern of correlations between reporting and student characteristics. Nevertheless, it is not possible to know whether students who said they would report a threat would actually do so when given the opportunity. In a real threat situation, there may be multiple factors that influence a student's willingness to report, such as how well

they know the threatening student (Brank et al., 2007) and whether they believe the peer is serious about carrying out the threat (Nekvasil & Cornell, 2012). Future studies could examine how students decide whether to report a peer's threat and perhaps compare students who reported a threat of violence with those who knew of a threat, but did not report it.

Although talk about killing someone is more explicitly lethal, students were less likely to report such a threat than talk of bringing a firearm to school. It is possible that students are familiar with the prospect of a mass shooting and might be more willing to report a gun than statements about killing a particular individual. Willingness to report might vary based on the circumstances and lethality of a threat, e.g., a gun versus a knife, as well as the student's relationship with the threatening classmate (Brank et al., 2007). Future studies could include variations in threat scenarios, such as whether the student had the option of reporting anonymously or whether the student was friends with the threatening peer, and variations in the nature of the threat, such as the explicitness, specificity, and type of weapon. The present study made used data from a statewide school climate survey in which detailed questions about threat reporting were not feasible.

The present study supports the Secret Service's recommendation that schools foster a positive climate in which students feel comfortable reporting violent threats to school adults (Pollak et al., 2008). In order to reach non-reporters, schools could implement threat assessment education that encourages threat reporting (Stohlman et al. 2019). Efforts to encourage threat reporting must not only address reasons for making a report, but also help students feel more engaged and supported in school. They might use multi-tiered support programs (see Benner et al., 2013) and socioemotional curricula (see Domitrovich et al., 2017). It may be useful for

school authorities to use focus groups or classroom meetings to discuss the importance of threat reporting and encourage students to seek help to prevent acts of violence in their school.

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Table 1

Demographic Characteristics of Student Participants

	Current Sample N (column %)	Virginia student population N (column %)
Grade level		
9	23,467 (27.4)	103,925 (26.5)
10	22,555 (26.3)	99,531 (25.4)
11	20,935 (24.4)	94,858 (24.2)
12	18,793 (21.9)	93,131 (23.8)
Gender		
female	44,733 (52.2)	190,026 (48.5)
male	41,017 (47.8)	201,409 (51.5)
Race/ethnicity		
American Indian/Alaska Native	420 (0.5)	1,080 (0.3)
Asian	3,852 (4.5)	27,301 (7.0)
Black/African American	12,965 (15.1)	87,200 (22.3)
Hispanic/Latino	10,158 (11.8)	57,812 (14.8)
Native Hawaiian/Pacific Islander	218 (0.3)	583 (0.1)
Two or more	11,536 (13.5)	18,454 (4.7)
White	45,030 (52.5)	199,005 (50.8)
FRPM eligibility	27,555 (32.1)	140,570 (38.2)

Note. Statewide grade level, gender, and race/ethnicity data were from the 2017-2018 NCES Common Core of Data State Nonfiscal Public Elementary/Secondary Education Survey. Statewide FRPM eligibility data were from the 2017-2018 Virginia Department of Education National School Lunch Program Free and Reduced Price Eligibility Report.

Table 2

Regression Coefficients of Demographics on Student Willingness to Report Threats

	Willingness to report a student talking about killing someone				Willingness to report a student bringing a gun to school			
Variable	*B*	*SE*	R^2	ΔR^2	*B*	*SE*	R^2	ΔR^2
Grade level	.01**	.003			.01**	.003		
Female	.29***	.01			.26***	.01		
American Indian or Alaska Native	-.08***	.02			-.10***	.02		
Asian	-.09***	.01			-.06***	.01		
Black or African American	-.20***	.01			-.31***	.01		
Native Hawaiian or Pacific Islander	-.18***	.03			-.16***	.03		
Other	-.08***	.03			-.09***	.01		
Hispanic or Latino	-.04**	.01			-.11***	.01		
Total			.06***	.03***			.08***	.04***

Note. School dummy codes (i.e., school fixed effects) were entered in the first step to account for nesting of student data within schools. Outcome variables were standardized.

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

Table 3

Student Willingness to Report Threats by Grade Level, Race/Ethnicity, and Gender

Percent students who "Disagreed" or "Strongly disagreed" that they would report a peer talking about killing someone									
	Grade 9		Grade 10		Grade 11		Grade 12		Total
Race/Ethnicity	Male	Female	Male	Female	Male	Female	Male	Female	
American Indian or Alaska Native	23	13.6	10.5	20	13.3	14.3	31	22.2	18.3
Asian	17.7	12.7	19.4	11.5	12.9	12.5	17.6	12.6	14.5
Black or African American	27.3	16.7	28.5	16.9	26.9	16.3	25.9	12.7	21
Hispanic or Latino	19.3	11.7	20.6	13.3	19.1	11.2	18.2	8.8	15.3
Native Hawaiian or Pacific Islander	27	13.3	19.4	10.7	20	0	20	20	17.4
Other race	24.9	13.1	26.6	22	29.6	15.8	25	14.5	21.6
Two or more races	22.9	16.1	26.3	17.5	24.3	15.5	25	14.2	20.1
White	15.1	9.9	16.9	10.5	17.6	9.3	16.4	7.5	12.7
Total	19	12.3	20.7	13	20	11.3	19.4	9.6	15.5
Percent students who "Disagreed" or "Strongly disagreed" that they would report a peer bringing a gun to school									
American Indian or Alaska Native	15	11.9	7.5	8.9	15.6	11.4	28.6	11.1	13.6
Asian	7.6	4	6	3.8	4.3	3.1	6.2	2.7	4.7
Black or African American	21.8	11.2	21.8	12.0	22.5	11.6	20.3	7.6	15.7
Hispanic or Latino	12.4	7.6	13	7.4	11.1	7.1	11.9	4.8	9.4
Native Hawaiian or Pacific Islander	8.1	10	10	3.6	3.3	5.9	4	5	6.4
Other Race	13.2	7.8	17.1	12.1	17.7	6.8	12.8	9.9	12.22
Two or more races	14.4	8.3	16.3	9.1	15.8	7.7	14.4	6.6	11.6
White	6.1	3.6	7.6	3.7	8.1	3.1	6.2	2.5	5
Total	10.7	6.1	11.7	6.3	11.7	5.5	10.2	4.2	8.2

Table 4

Standardized Regression Coefficients of Staff Perceptions of Support and Structure on Student Willingness to Report Threats

	Willingness to report a student talking about killing someone				Willingness to report a student bringing a gun to school			
Variable	β	*SE*	R^2	ΔR^2	β	*SE*	R^2	ΔR^2
Student enrollment	.15*	.07			.23***	.06		
% White students	.39***	.07			.46***	.06		
% students FRPM	-.16*	.07	.23***		-.30***	.06	.45***	
Student enrollment	.22**	.07			.29***	.05		
% White students	.38***	.07			.47***	.06		
% students FRPM	-.14*	.07			-.26***	.06		
Staff perceptions of support	.14	.09			.20**	.07		
Staff perceptions of structure	.17*	.09	.31***	.08***	.06	.07	.51***	.06***

Note. Student enrollment, percent White students, and percent students receiving FRPM entered in step 1. Staff perceptions of support and structure entered in step 2.

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

Figure 1

Someone Bringing a Gun to School: Interaction of Reporting Status with Race/Ethnicity and Gender on Suspensions

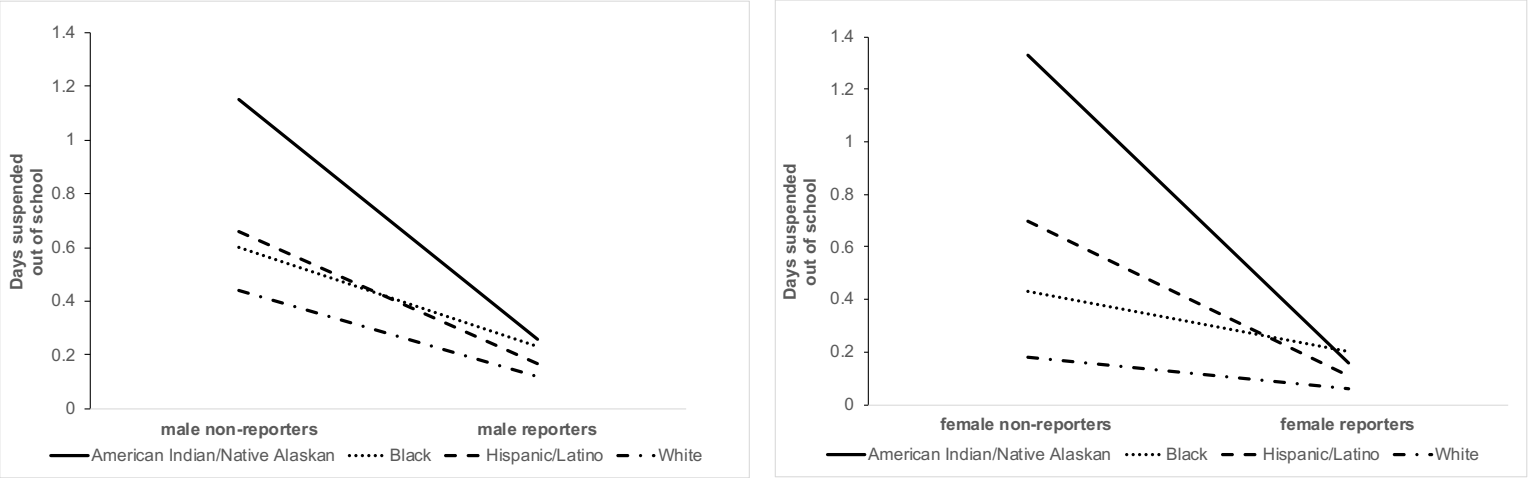
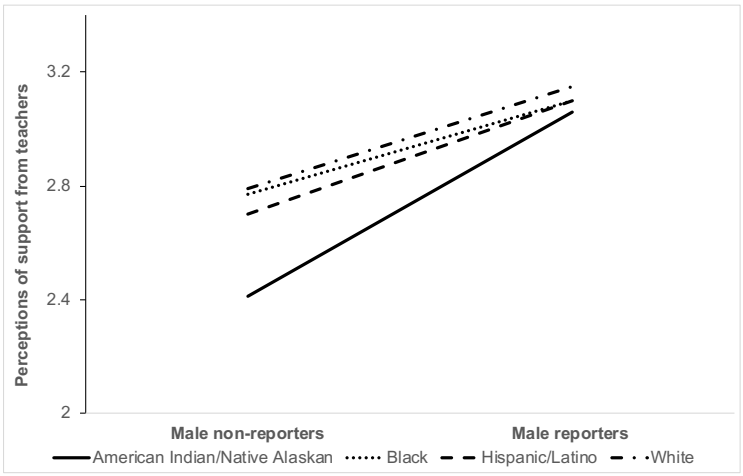
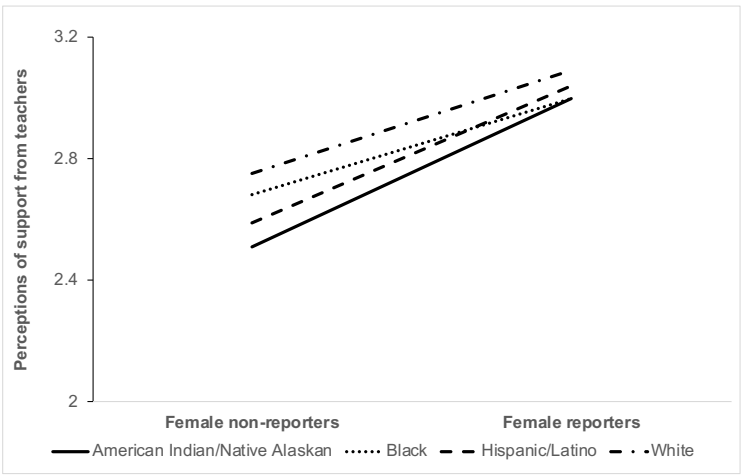


Figure 2

Talk about Killing Someone: Interaction of Reporting Status with Race/Ethnicity and Gender on Perceptions of Support





Paper 2

Student Perceptions of School Resource Officers and Threat Reporting

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Author Note

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Abstract

National debate over law enforcement in schools has largely overlooked student reporting of violent threats to school resource officer (SROs). This statewide assessment of Virginia high school students (n = 99,358) found that the majority of Black (64%), Hispanic (72%), White (75%), and other racial/ethnic identity (71%) students agreed the SRO made them feel safer at school. Logistic regressions revealed that positive perceptions of the SRO and frequency of speaking with the SRO were associated with increased willingness to report a peer who brought a gun to school or talked about killing someone. Perceptions of the SRO interacted with student race/ethnicity such that favorable views reduced disparities in nonwhite students' willingness to report a peer with a gun. Although correlational, these results suggest that positive relationships with SROs encourage students to report threats of peer violence.

Keywords: school resource officers (SROs), threat reporting, threat assessment, school safety

Student Perceptions of School Resource Officers and Threat Reporting

School resource officers (SROs) are widely used in U.S. high schools. The percentage of schools with security staff (i.e., security guards, SROs, or other law officers) rose from 42% in 2006 to 61% in 2018, and the majority (84%) of public high schools reported having security staff in 2018 (Wang et al., 2020). Nearly three-quarters of 12-18 year-olds reported having security staff at their schools (Wang et al., 2020). However, many schools are reconsidering the use of SROs due to concerns that they might criminalize student misbehavior, especially for non-White students (Cowan et al., 2021; National Association for School Psychologists, 2020). Although this is a serious concern, less attention has been given to student perceptions of SROs. Case studies have found that school attacks were averted because students reported threats to SROs (Allison et al., 2020). However, little research has examined factors that encourage student reporting of threats (Crichlow-Ball & Cornell, 2021). Therefore, the present study examined how students perceive SROs, specifically whether positive perceptions of SROs are associated with greater willingness to report threats of violence.

SRO Relationships with Students

SROs' role in school safety expanded during the 1990s following a series of highly-publicized school attacks (National Association of School Resource Officers, 2012). However, SROs were not placed in schools only to police student behavior. Organizations such as the National Association of School Resource Officers (NASRO; 2012) and the National Association of School Psychologists (NASP; 2020) endorsed a model for SROs in which SROs strive to establish positive relationships with students by serving as educators and informal counselors in addition to law enforcers. Because student bystanders are more likely to share information about threats when they have positive relationships with school staff (Pollack et al., 2008), SRO roles

as both officers and counselors position them as someone students could come to with concerns about violence.

Recent research has found that students generally view their SROs positively. For instance, Curran et al. (2020) found that students indicated SROs made them feel safer and believed SROs could deter and respond to violent incidents such as school shootings. Students agreed they could talk to SROs, trusted them, and felt they were fair. Those who trusted their SROs more felt safer at school and were less afraid of an attack. In contrast, Lindstrom Johnson et al. (2018) found that students in schools with more security officers felt safer in school, but did not perceive their schools to be more equitable or supportive than students in schools with fewer officers.

Research shows some racial differences in student perceptions of SROs. Pentek and Eisenberg (2018) found that White and Asian students perceived their SROs more positively than did Black, multiracial, and American Indian students. For all students, however, more positive perceptions of the SRO resulted in greater odds of feeling safe in school, and this association did not differ significantly across race groups (Pentek & Eisenberg, 2018). Curran et al. (2021) found few differences in associations between student interactions with SROs and student feelings of safety either by student race/ethnicity or school racial composition.

Less attention has been paid to student interactions with SROs, perhaps because student-SRO contact is infrequent. Theriot and Orme (2016) found that about half of students in their sample reported no interactions with the SRO in the past year, and student interactions with the SRO were unrelated to feeling safe in school. Paradoxically, Curran et al. (2021) found that students who interacted with the SRO more often indicated the SRO made them feel safer but did not feel safer in school overall.

SRO Presence, Student Discipline, and Referrals to Law Enforcement

Recent SRO research has found that increased SRO or security guard presence was linked to higher incidence of nonserious violent crime (Devlin & Gottfredson, 2018), bullying (Curran, 2020), drug crime (Gottfredson et al., 2020), and property crime (Devlin & Gottfredson, 2018). Officer presence is also related to more reports of violence (Crawford & Burns, 2015) and weapons violations (Gottfredson et al., 2020). Critics of SROs interpret these findings to mean that SROs are responding harshly to minor misbehavior, whereas proponents of SROs maintain they are detecting criminal behavior that was previously overlooked.

Findings that SRO presence is associated with more exclusionary discipline (Gottfredson et al., 2020; Sorensen et al., 2021; Weisburst, 2019) and referrals to law enforcement (Curran, 2020) generated concern that SROs criminalize misbehavior. However, these findings are inconclusive; much of the SRO literature relies on school or state records of student offenses or suspension rates as outcome measures. A limitation of these measures is the data do not specify whether the SRO was directly involved in detecting and punishing the problem behavior. For example, schools may employ SROs as part of a larger initiative to crack down on student misbehavior and offending. Thus, SRO presence may be a correlate rather than the driver of increased discipline rates.

Many stakeholders are reexamining SROs due to concerns that they criminalize students of color, thus exacerbating disproportionalities in exclusionary discipline and referrals to the juvenile justice system (Losen & Martinez, 2020; Skiba et al., 2014). Increased SRO staffing was followed by an increase in disciplinary offenses and exclusionary punishments for Black and Hispanic students, but not for White students (Crosse et al., 2021). Black students were also more likely to be assigned exclusionary discipline (Crosse et al., 2021; Weisburst, 2019) and

assigned longer suspensions or expulsions (Sorensen et al., 2021) when police were present in their schools. Furthermore, in schools with a heavier SRO presence, Black students were more likely to be referred to law enforcement (Curran, 2020; Sorensen et al., 2021) and arrested (Homer & Fisher, 2020) than students of other races/ethnicities. As noted above, an important caveat is these studies were unable to demonstrate a causal effect of SRO presence on these student outcomes, which is especially important for school disciplinary outcomes because they are determined by administrators rather than SROs.

Some evidence suggests that student experiences with SROs vary by gender. Boys consistently receive more frequent and severe school discipline than girls (Skiba et al., 2014). Furthermore, police presence was associated with higher arrest rates for boys than girls (Homer & Fisher, 2020). There is little research on boys' attitudes toward SROs, but studies of youth attitudes toward police suggest boys view police less favorably than girls (Taylor et al., 2001).

Student Threat Reporting

Threat assessment (TA) is a school violence prevention strategy that relies upon students reporting peer threats to staff (Pollack et al., 2008; Vossekuil et al., 2002). Case studies show that when students reported threats that helped avert attacks, they did so because they trusted staff to believe them and respond appropriately (Daniels, 2019; Pollack et al., 2008). Consistent with these case studies, research has found that students are more willing to report threats in positive school climates where students feel safe seeking help from staff (Crichlow-Ball & Cornell, 2021; Eliot et al., 2010).

Although most students say they would tell staff about a peer's threat (Crichlow-Ball & Cornell, 2021), student willingness to report varied by demographics. Girls were more willing to report threats than boys, and Black students were less willing than other students (Eliot et al.,

2010; Millspaugh et al., 2015). Among middle schoolers, willingness to seek help for threats decreased from sixth to eighth grade (Williams & Cornell, 2006), but among high schoolers, it increased with grade level (Crichlow-Ball & Cornell, 2021).

Proponents suggest that SROs can serve as trusted adults to whom students feel comfortable reporting threats. The FBI (Schweit & Mancik, 2017) and the Office of Community Oriented Policing (Daniels, 2019) recommended that SROs serve on school TA teams and build trusting relationships with students to encourage threat reporting. Although trusting relationships should lead to more student communication with SROs, no study has addressed the association of SROs with threat reporting. There is some evidence that SROs helped avert school attacks. In 12 cases of averted school violence (Allison et al., 2020), there were six cases in which the SRO received a student report about a threat.

Current Study The present study investigated whether students would be more willing to report a threat if they had positive perceptions of their SROs and interacted more frequently with them. The predictors of primary interest were 1) student feelings that the SRO made them safer at school and 2) frequency of student conversations with the SRO in the past school year. Student gender, racial/ethnic identity, and grade level were used as covariates because previous studies found these characteristics to be associated with reduced likelihood of threat reporting (Eliot et al., 2010; Millspaugh et al., 2015). Familial socioeconomic status (SES) was used as a covariate because youth from low-SES backgrounds are less willing to report crime to law enforcement (Slocum et al., 2010).

The outcomes of primary interest were student willingness to report two threats: 1) a peer who talked about killing someone and 2) a peer who brought a gun to school. These scenarios allowed for differences in how students might gauge each threat's plausibility and severity.

We asked three primary research questions:

1) How are student perceptions that the SRO makes them feel safe at school associated with their willingness to report threats?

2) How is frequency of student interactions with the SRO associated with their willingness to report threats?

3) How do these associations differ by student racial/ethnic identity and gender?

We hypothesized:

H1: Student feelings that the SRO makes them safer at school will be associated with greater willingness to report a peer who talked about killing someone or brought a gun to school.

H2: Frequency of student conversations with the SRO will be associated with greater willingness to report a peer who talked about killing someone or brought a gun to school.

H3: White students will have more positive perceptions of SROs and interact with them more frequently than non-White students.

H4: Male students will have less favorable perceptions of SROs and interact with them less frequently than students of other genders.

Method

Participants

Participants were 106,865 9th-12th graders in 282 Virginia public schools who completed the Virginia Secondary School Climate Survey in spring 2020. Out of 326 eligible schools, 299 schools participated, yielding a school participation rate of 91.7% and a student participation rate of 71%.[1] The final analytic sample consisted of 99,358 students in 258 schools with SROs and

[1] See Cornell et al. (2020) for sampling and screening procedures.

455 students in six schools without SROs (see Table 2). This study was approved by the University of Virginia Institutional Review Board.

Measures

Students responded to: "The school resource officer (SRO) makes me feel safer at school." Response options ranged from "strongly disagree" to "strongly agree" and included "this school does not have an SRO."

Students were asked: "Over the past school year, about how often have you spoken with the school resource officer who works in your school?" Response options were "never," "once or twice a semester, "about weekly," and "every day."

Two items assessed students' willingness to report violent threats: **"**If another student talked about killing someone, I would tell one of the teachers or staff at school" and "If another student brought a gun to school, I would tell one of the teachers or staff at school." Response options ranged from "strongly disagree" to "strongly agree." These items were used in previous studies of student threat reporting (Eliot et al., 2010; Millspaugh et al., 2015).

Students provided their gender, racial/ethnic identity, and grade level. Students could report their gender as 1) male, 2) female, 3) prefer not to answer, or 4) prefer to self -describe. Because males are known to be less willing to seek help from school adults, we dichotomized gender responses into male and other (female, prefer not to answer, and prefer to self-describe).[2] As a proxy for family socioeconomic status, students reported their free-or-reduced-price meal (FRPM) status and parent education level. Finally, students indicated how many times they physically fought on school property in the past 12 months (response options ranged from "0 times" to "12 or more times") and how many days they were suspended out-of-school that year

[2] We ran analyses with only students who identified as either female or male and found a similar pattern of results as results using male and other grouping.

(response options ranged from “I have not been suspended this year” to “I have been suspended for five or more days”).

Data Analysis

Because only 455 students from six schools did not have SROs, initial (linear) regressions determined whether SRO presence was associated with student willingness to report threats. SRO presence was significantly associated with student willingness to report talk about killing someone (B = .19, p = .01, Wald χ^2 = 6.63), but not willingness to report a gun (B = .10, p = .12, Wald χ^2 = 2.39). We turned next to variations across schools with SROs.

Because most students agreed (52%) or strongly agreed (20%) that the SRO made them feel safer, we dichotomized this item into positive (“strongly agree” and “agree”) and negative (“strongly disagree” and “disagree”) feelings for simplicity of interpretation. Similarly, because few students spoke with the SRO daily (3%) or weekly (4%), we dichotomized the item into students who spoke to the SRO at least once or twice per semester (“once or twice a semester,” “about weekly,” and “every day”) and those who never spoke to the SRO. As the outcomes of interest were binary, two logistic regression models used generalized estimating equations (GEE; Liang & Zeger, 1996). GEE models using exchangeable working correlation matrices (Ballinger, 2004) and cluster robust standard errors accounted for the clustering of students within schools (Huang, 2021). Finally, chi-square tests and ANOVAs examined gender and race differences in student feelings about the SRO and frequency of student conversations with the SRO.

Model covariates included student gender, racial/ethnic identity, grade level, and family SES. Finally, students’ physical fights at school and out-of-school suspensions were entered as covariates to control for students who interacted with the SRO through misbehavior or disciplinary action. We dichotomized the dependent variables of student willingness to report

threats into students who agreed ("strongly agree" and "agree") versus disagreed ("strongly disagree" and "disagree"). We present odds ratios (ORs) which can be interpreted as effect sizes where ORs > 1 indicate a higher likelihood and ORs < 1 indicate a lower likelihood of an event occurring.

Results

Nearly three-quarters (72%, n = 71,952) of students perceived the SRO made them feel safer in school (Table 1). Most students (71%, n = 70,749) never spoke with the SRO, and less than a third (29%, n = 28,609) spoke with the SRO at least once or twice a semester. Student perceptions of the SRO differed significantly by race, $F(3, 99{,}358) = 237.68$, $p < .001$, such that White students (75%) perceived the SRO as making them feel safer than Black students (64%), Hispanic/Latino students (72%), and students of other races (71%) (Table 2). Perceptions also differed significantly by gender, $X^2(1, n = 99{,}358) = 41.55$, $p < .001$. More male students (73%) perceived the SRO as making them feel safer than other students did, including females (73%), those who preferred not to provide their gender (59%), and those who preferred to self-describe their gender (57%; Table 2). Frequency of speaking with the SRO also significantly differed by race, $F(3, 99{,}358) = 57.73$, $p < .001$. White students spoke with their SROs more often than Hispanic/Latino students or students of other races, but not more than Black students. Male students spoke with the SRO more frequently than female students, $X^2(1, n = 99{,}358) = 36.53$, $p < .001$.

Research Question 1 asked how student perceptions that the SRO makes them feel safe at school were associated with their willingness to report threats. As shown in Table 3, after controlling for student demographic characteristics and behavior problems, students who felt that the SRO made them feel safer in school were more willing to report a peer who talked about

killing someone (OR = 2.88, $p < .001$, 95% CI = 2.68 - 3.08) or brought a gun to school (OR = 2.11, $p < .001$, 95% CI = 1.91 – 2.33) than students who did not feel that the SRO made them safer.

Research Question 2 asked whether the frequency of student conversations with the SRO was associated with willingness to report threats. As displayed in Table 3, after controlling for student demographics and behavior problems, students who spoke with the SRO at least once or twice a semester were more willing to report a peer with a gun (OR = 1.11, $p = .01$, 95% CI = 1.03-1.21) than students who never spoke with the SRO. However, speaking with the SRO was not associated with willingness to report a peer who talked about killing someone (OR = 1.05, $p = .18$, 95% CI = 0.98-1.14).

Research Question 3 asked how the associations between student feelings toward the SRO and willingness to report threats differed by student racial/ethnic identity and gender. As shown in Table 3, there were significant interactions among positive feelings about the SRO and students' racial/ethnic identities on willingness to report a peer with a gun (Black students: OR = 1.21, $p = .004$, 95% CI = 1.07–1.38; Hispanic/Latino students: OR = 1.46, $p < .001$, 95% CI = 1.29-1.65; other non-White students: OR = 1.28, $p < .001$, 95% CI = 1.14-1.43). For willingness to report a peer who talked about killing someone, only Hispanic/Latino ethnicity significantly interacted with positive feelings about the SRO (OR = 1.13, p = .014, 95% CI = 1.03-1.25).

Positive feelings about the SRO were associated with reduced racial/ethnic disparities in willingness to report a peer who brought a gun to school. To better understand these interactions, we examined the percentages of students in different subgroups who indicated they would report a threat (see Table 4). Black and White students who did not feel that the SRO made them safer differed in willingness to report a gun by 15 percentage points. However, for Black and White

students who felt that the SRO made them safer, the gap in their willingness to report dropped to seven points. There was a similar pattern for Hispanic/Latino students. Hispanic/Latino students who did not feel that the SRO made them safer differed from White students in willingness to report a gun by 10 percentage points. For students who felt that the SRO did make them safer, the difference fell to two percentage points. Among students who did not feel that the SRO made them safer, there was a six-point gap in the percentages of Hispanic/Latino versus White students who would report a peer who talked about killing someone. However, among students who agreed that the SRO made them safer, the gap between Hispanic/Latino and White students was only two points.

Male gender significantly interacted with feelings about SROs on willingness to report a gun (OR = 1.13, $p < .001$, 95% CI = 1.03-1.24; see Table 3). Positive feelings about the SRO were related to a 50% reduction in the gap between male and other students in willingness to report a gun.

Research Question 3 also asked how the associations between frequency of conversations with the SRO and willingness to report threats differed by student racial/ethnic identity and gender. Speaking with the SRO did not interact with student racial/ethnic identity on willingness to report a peer who talked about killing someone. However, for willingness to report a gun, speaking to the SRO significantly interacted with Hispanic/Latino ethnicity (OR = .85, p = .012, 95% CI = .75-.97; see Table 3). Speaking with the SRO increased the gap between the percentages of White and Hispanic/Latino students willing to report a gun by two percentage points. Gender did not significantly interact with speaking to the SRO on willingness to report either threat.

Regardless of how they perceived the SRO (Table 3), Black, Hispanic/Latino, and other non-White students were less willing than White students to report a peer who talked about killing someone (Black: OR = .63, $p < .001$, 95% CI = .57-.68; Hispanic/Latino: OR = .80, $p < .001$, 95% CI = .73-.87; other non-White: OR = .72, $p < .001$, 95% CI = .66-.78) or a peer who brought a gun (Black: OR = .43, $p < .001$, 95% CI = .39-.47; Hispanic/Latino: OR = .61, $p < .001$, 95% CI = .55-.67; other non-White: OR = .62, $p < .001$, 95% CI = .57-.69). Relative to White students (Table 4), the gap in willingness to report a peer who talked about killing someone was largest for Black students (10 percentage points), followed by other non-White students (five percentage points) and Hispanic/Latino students (three percentage points). For willingness to report a peer who brought a gun, the gap was greatest between Black and White students (11 percentage points), and smaller for Hispanic/Latino (four percentage points) and other non-White (three percentage points) students.

Male students were significantly less willing to report both talk about killing (OR = .69, $p < .001$, 95% CI = .64-.73) and the presence of a gun (OR = .67, $p < .001$, 95% CI = .62-.72) than non-male students. The differences were small: a five-point difference for talk about killing and a three-point difference for bringing a gun.

Discussion

In light of the national concern about law enforcement in schools, this study brings attention to student perceptions of SROs and the association with their willingness to report threats. To our knowledge, this is the first empirical study of student willingness to report a threat to their SROs. As hypothesized, student feelings that the SRO made them safer at school predicted willingness to report a peer who talked about killing someone or who brought a gun to school. Feeling that the SRO made them safer was associated with an 18-point increase in the percent of students

willing to report a peer who talked about killing someone and a 12-point increase in the percent of students willing to report a peer who brought a gun to school. This suggests that in school climates where students trust the SRO to keep them safe, they are more willing to ask the SRO for help. This is consistent with prior findings that students who feel supported by staff are more willing to come forward with concerns of violence (Crichlow-Ball & Cornell, 2021; Eliot et al., 2010). Trust in SROs seems especially important for reporting threats since SROs would be expected to respond to a student with a gun or a student threatening to kill someone.

There were small but statistically significant racial/ethnic differences in student willingness to report a threat. However, positive perceptions of the SRO reduced racial/ethnic disparities in willingness to report a peer who talked about killing someone and a peer with a gun. Because non-White students, particularly Black students, have been found to be less willing to report threats (Eliot et al., 2010; Millspaugh et al., 2015), this suggests that positive perceptions of the SRO could be a useful inroad for encouraging threat reporting among students of color.

The hypothesis that student contact with the SRO would predict willingness to report threats was partially supported. Speaking with the SRO at least once or twice a semester was associated with greater willingness to report a peer for bringing a gun to school, but not for talking about killing someone. Crichlow-Ball and Cornell (2021) previously found that more students were willing to report the presence of a gun (92%) than a classmate who talked about killing someone (85%). Students might interpret a peer talking about killing someone as an ambiguous situation or as hyperbole, and therefore be reluctant to report it.

Speaking with the SRO did not significantly interact with race/ethnicity on willingness to report either type of threat, with one exception: among Hispanic/Latino students, speaking with the SRO was associated with slightly lower willingness to report the presence of a gun. Ninety

percent (n = 11,380) of Hispanic/Latino students who did not speak to the SRO agreed they would report the presence of a gun. However, the percentage was 88% (n = 3,786) among students who spoke to the SRO at least once or twice per semester. Hispanic/Latino students might be wary of interacting with law enforcement depending on their family's immigration status. In Virginia, about 1 in 20 children live with at least one undocumented family member (American Immigration Council, 2020). Fear of deportation can pose a barrier to reporting victimization to police (Messing, 2015).

Consistent with previous findings (Pentek & Eisenberg, 2018), White students perceived SROs as making them safer than Black students. Three-quarters of White students agreed that SROs made them feel safer in school as compared to 64% of Black students. This may reflect Black youths' more negative perceptions of law enforcement in general (Wu et al., 2015), as well as Black students' greater likelihood of receiving harsh discipline in school (Losen & Martinez, 2020). However, White students interacted with SROs no more frequently than Black students. For both Black and White students, 70% did not speak with the SRO, and 30% spoke with the SRO at least once or twice a semester.

An unexpected finding was that male students perceived SROs as making them feel safer and interacted with SROs more frequently than students of other genders. Because we controlled for student fights and suspensions, it is unlikely these differences were due to boys dealing with SROs more often over disciplinary matters. As boys are more likely to experience physical peer victimization than girls (Hong & Espelage, 2012), it may be that boys in the current study felt like the SRO helped keep them safe from peer aggression.

Limitations

These findings were based on a statewide sample of public school students in a single mid-Atlantic state and might not generalize to other states or private schools. An important limitation of this study was that results are correlational. We cannot conclude that students' positive perceptions of their SROs or interactions with their SROs cause them to be more willing to report threats. An experimental study could measure students' willingness to report threats before and after an intervention designed to improve SROs' relationships with students. For example, Espelage et al. (2021) found that security personnel who participated in an intervention designed to improve relationships with students scored higher on measures of trauma-informed care.

Another limitation is that our study examined students' feelings that the SRO made them safer at school, but not other aspects of their attitudes toward SROs. There might be differences between students' feelings of safety at school and their beliefs that the SRO makes them safer at school. For example, although students believed SROs could protect them, SRO presence made students feel they were in greater danger at school (Curran et al., 2021).

Lastly, we studied students' self-reported willingness to tell school staff about threats, not their reporting behaviors. Although surveys were anonymous, student self-report may have been susceptible to social desirability. Additionally, students might think they would be willing or unwilling to report a threat, but act differently if the occasion arose. Future studies could use school threat assessment records to see how often students reported threats in schools that differed in SRO relationships.

Implications

This study has practical implications for the role of law enforcement officers in schools from the standpoint of school safety and violence prevention. Results suggest that if SROs can establish good relationships with students, it could increase student willingness to report threats. Notably, these findings were somewhat stronger among non-White and male students who are generally less willing to report threats than White and female students.

SRO involvement in student discipline could damage student relationships with SROs, thus reducing the likelihood that students would go to SROs with concerns about violence. In fact, schools with SROs who primarily focused on law enforcement had a greater increase in crime, whereas schools with SROs who engaged in relationship-building in addition to law enforcement had the largest decrease in crime (Devlin & Gottfredson, 2018). Although professional guidelines (NASRO, 2012) and agreements between school districts and police departments (e.g., Virginia Department of Criminal Justice Services, 2017) explicitly prohibit SRO involvement in student discipline, SROs commonly participate in student discipline (Correa & Diliberti, 2020). Administrators and SROs must work together to ensure that SRO duties are consistent with best practices.

We found that the association between student perceptions of SROs and their willingness to report threats was strongest among non-White students. If SROs can foster positive relationships with students of color, they might help reduce some barriers to threat reporting and help seeking that have been found among these groups of students. Unfortunately, there is some evidence that SROs are more likely to function in enforcement roles in schools serving non-White and lower-SES students than in predominantly white, higher-SES schools (Curran et al., 2020; 2021).

Administrators and SROs working with students of color must be vigilant that SROs do not participate in discipline beyond the scope of their role.

If SROs build rapport with students in non-disciplinary contexts, SRO-student relationships might become more positive, which could lead more students to report threats. Given the growing number of schools adopting positive behavioral interventions and supports (PBIS), administrators might consider how to situate SROs within a PBIS framework. McCurdy et al. (2019) suggested that SROs primarily function at the universal prevention level by proactively establishing rapport with students and teaching classes. SROs also need professional development about responding to misbehavior within a PBIS framework (McCurdy et al., 2019). Espelage et al. (2021) developed SRO training that included modules on trauma-informed care, social-emotional learning, restorative problem-solving, and cultural competence.

Research on SROs must consider more than their impact on student discipline and arrests, such as their influence on student feelings of safety and safe behaviors. SROs were placed in schools in large part to maintain a safe environment and prevent serious acts of violence. They frequently serve on threat assessment teams, which depend heavily on student threat reporting. We found that most students perceive that SROs increase their safety and are willing to report threats. These findings support FBI recommendations that SROs can contribute to school safety by building ongoing relationships with students, communicating positively with students, and teaching students about their role in school safety (Schweit & Mancik, 2017).

Conclusion

Our statewide study of Virginia high schools found that the vast majority of students reported the SRO made them feel safer in school, although fewer than a third of students spoke with the SRO at least once or twice per semester. After controlling for student demographics and

behavior problems, students who felt the SRO made them safer were more willing to report peer threats than students who did not feel the SRO made them safer. Positive feelings about the SRO were associated with reduced racial/ethnic disparities in willingness to report a peer who brought a gun to school. Additionally, students who spoke with the SRO at least once or twice per semester were more willing to report a peer who brought a gun to school than students who never spoke with the SRO. When students trust SROs to keep them safe, they are more willing to share concerns about violence. This finding was strongest for non-White students who are otherwise less likely to report threats. Overall, these results support the importance of SROs working to build positive, trusting relationships with students in order to identify violent threats.

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Table 1

Frequency and Descriptive Statistics of Key Predictor and Outcome Variables

	n (%)	M (SD)
Student perceptions that the SRO makes them feel safer at school		
Agree	71,957 (72)	
Disagree	27,406 (28)	
Student interactions with the SRO		
Spoke to the SRO ≥ 1-2x per semester	28,609 (29)	
Never spoke to SRO	70,754 (71)	
Student willingness to report a peer talking about killing someone		3.24 (.82)
Strongly agree	44,220 (44)	
Agree	39,034 (39)	
Disagree	12,596 (13)	
Strongly Disagree	3,968 (4)	
Student willingness to report a peer bringing a gun to school		3.5 (.73)
Strongly agree	61,609 (62)	
Agree	29,661 (30)	
Disagree	5,646 (6)	
Strongly Disagree	2,902 (3)	

Note. Percentages may >100 due to rounding.

Table 2

Analytic Sample Characteristics (N = 99,358)

	Sample n	Agree that SRO makes them feel safer n (%)	Disagree that SRO makes them feel safer n (%)
Gender			
Female	49,910	36,546 (73)	13,364 (27)
Male	43,627	32,044 (73)	11,583 (27)
Prefer to self-describe	3,683	2,111 (57)	1,572 (43)
Prefer not to answer	2,138	1,251 (59)	887 (42)
Race/ethnicity			
Black	13,278	8,492 (64)	4,786 (36)
Hispanic/Latino	16,898	12,114 (72)	4,784 (28)
Other non-White	16,517	11,721 (71)	4,796 (29)
White	52,665	39,625 (75)	13,040 (25)
Grade level			
9	28,441	21,137 (74)	7,304 (26)
10	26,649	19,263(72)	7,386 (28)
11	24,212	17,268 (71)	6,944 (29)
12	20,056	14,284 (71)	5,772 (29)
Receives FRPM	31,303	22,126 (71)	9,177 (29)
Parent education			
Did not graduate from high school	8,384	5,777 (69)	2,607 (31)
Graduated from high school	27,782	19,758 (71)	8,024 (29)
Graduated from 2-year program	12,534	8,914 (71)	3,620 (29)
Graduated from 4-year college	27,643	20,526 (74)	7,117 (26)
Completed post-graduate studies	23,015	16,977 (74)	6,038 (26)
Days suspended out-of-school			
None	95,024	69,463 (73)	25,561 (27)
At least one	4,334	2,489 (57)	1,845 (43)
Physical fights on school property			
None	93,305	68,479 (73)	24,826 (27)
At least one	6,053	3,473 (57)	2,580 (43)
Total	99,358	71,952	27,406

Note. Percentages may >100 due to rounding.

Table 3

Odds Ratios for Student Perceptions of SROs and Conversations with SROs on Willingness to Report Threats (n = 99,358)

Variable	Agree to report a student talking about killing someone		Agree to report a student bringing a gun to school	
	OR	95% Confidence Interval	OR	95% Confidence Interval
SRO makes student feel safer at school	2.88***	2.68 - 3.08	2.11***	1.91 - 2.33
Student spoke with SRO at least once or twice a semester	1.05	.98 - 1.14	1.11**	1.03 - 1.21
Male gender	.69***	.64 - .73	.67***	.62 - .72
Black or African-American race/ethnicity	.63***	.57 - .68	.43***	.39 - .47
Hispanic or Latino ethnicity	.80***	.73 - .87	.61***	.55 - .67
Other non-White race/ethnicity	.72***	.66 - .78	.62***	.57 - .69
Higher grade level	1.05***	1.03 - 1.10	1.06***	1.03 - 1.21
Receives free-or-reduced-price meal	1.05*	1.01 - 1.10	.99	.94 - 1.04
Higher parent education level	1.02*	1.00 - 1.03	1.07***	1.05 - 1.09
At least one physical fight on school property this school year	.50***	.47 - .54	.46***	.43 - .50
At least one day suspended out-of-school this school year	.64***	.59 - .70	.52***	.48 - .57
SRO makes student feel safer x male gender	1.01	.94 – 1.08	1.13**	1.03-1.24
SRO makes student feel safer x Black or African-American race	.98	.89 – 1.09	1.21**	1.07 – 1.38
SRO makes student feel safer x Hispanic or Latino ethnicity	1.13*	1.03-1.25	1.46***	1.29 - 1.65
SRO makes student feel safer x Other non-White race	1.07	.96 – 1.18	1.28***	1.14-1.43

Student spoke with SRO at least once or twice a semester x male gender	1.05	.97 – 1.13	.92	.84 – 1.01
Student spoke with SRO at least once or twice a semester x Black or African-American race/ethnicity	.99	.89 – 1.11	1.03	.90 – 1.18
Student spoke with SRO at least once or twice a semester x Hispanic or Latino ethnicity	.91	.81 – 1.03	.85*	.75 - .97
Student spoke with SRO at least once or twice a semester x Other non-White race/ethnicity	.97	.87 – 1.08	.93	.81 – 1.06

Note. Generalized estimating equations using cluster robust standard errors accounted for clustering of students within schools.

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

Table 4

Student Perceptions of the SRO and Willingness to Report Threats by Race/Ethnicity

		Peer talked about killing someone		Peer brought gun to school	
		Would not report (%)	Would report (%)	Would not report (%)	Would Report (%)
All	SRO does not make me feel safer.	8,111 (30)	19,295 (70)	4,617 (17)	22,789 (83)
	SRO makes me feel safer.	8,341 (12)	63,616 (88)	3,864 (5)	68,903 (95)
Black/African-American	SRO does not make me feel safer.	1,739 (36)	3,047 (64)	1,265 (26)	3,521 (74)
	SRO makes me feel safer.	1,426 (17)	7,066 (83)	973 (12)	7,519 (89)
Hispanic/Latino	SRO does not make me feel safer.	1,507 (32)	3,277 (69)	984 (21)	3,800 (79)
	SRO makes me feel safer.	1,444 (12)	10,675 (88)	748 (6)	11,371 (94)
Other non-White	SRO does not make me feel safer.	1,563 (33)	3,233 (67)	879 (18)	3,917 (82)
	SRO makes me feel safer.	1,530 (13)	10,191 (87)	674 (6)	11,047 (94)
White	SRO does not make me feel safer.	3,302 (25)	9,738 (75)	1,489 (11)	11,551 (89)
	SRO makes me feel safer.	3,941 (10)	35,684 (90)	1,469 (4)	38,156 (96)

Note. Percentages may >100 due to rounding

Table 5

Student Conversations with the SRO and Willingness to Report Threats by Race/Ethnicity

		Peer talked about killing someone		Peer brought gun to school	
		Would not report (%)	Would report (%)	Would not report (%)	Would report (%)
All	Did not speak to SRO this school year	8,111 (30)	19,295 (70)	5,985 (9)	64,769 (92)
	Spoke to SRO ≥ 1-2x per semester	8,341 (12)	63,616 (88)	2,496 (9)	26,113 (91)
Black/African-American	Did not speak to SRO this school year	2,293 (25)	7,036 (75)	1,594 (17)	7,735 (83)
	Spoke to SRO ≥ 1-2x per semester	872 (22)	3,077 (78)	644 (16)	3,305 (84)
Hispanic/Latino	Did not speak to SRO this school year	2,200 (17)	10,416 (83)	1,231 (10)	11,385 (90)
	Spoke to SRO ≥ 1-2x per semester	751 (18)	3,536 (83)	501 (12)	3,786 (88)
Other non-White	Did not speak to SRO this school year	2,295 (19)	9,738 (81)	1,100 (9)	10,933 (91)
	Spoke to SRO ≥ 1-2x per semester	798 (18)	3,686 (82)	453 (10)	4,031 (90)
White	Did not speak to SRO this school year	5,249 (14)	31,527 (86)	2,060 (6)	34,716 (94)
	Spoke to SRO ≥ 1-2x per semester	1,994 (13)	13,895 (88)	898 (6)	14,991 (94)

Note. Percentages may >100 due to rounding.

Figure 1

Interaction of Perceptions of SRO with Race/Ethnicity on Willingness to Report a Peer Who Brought a Gun

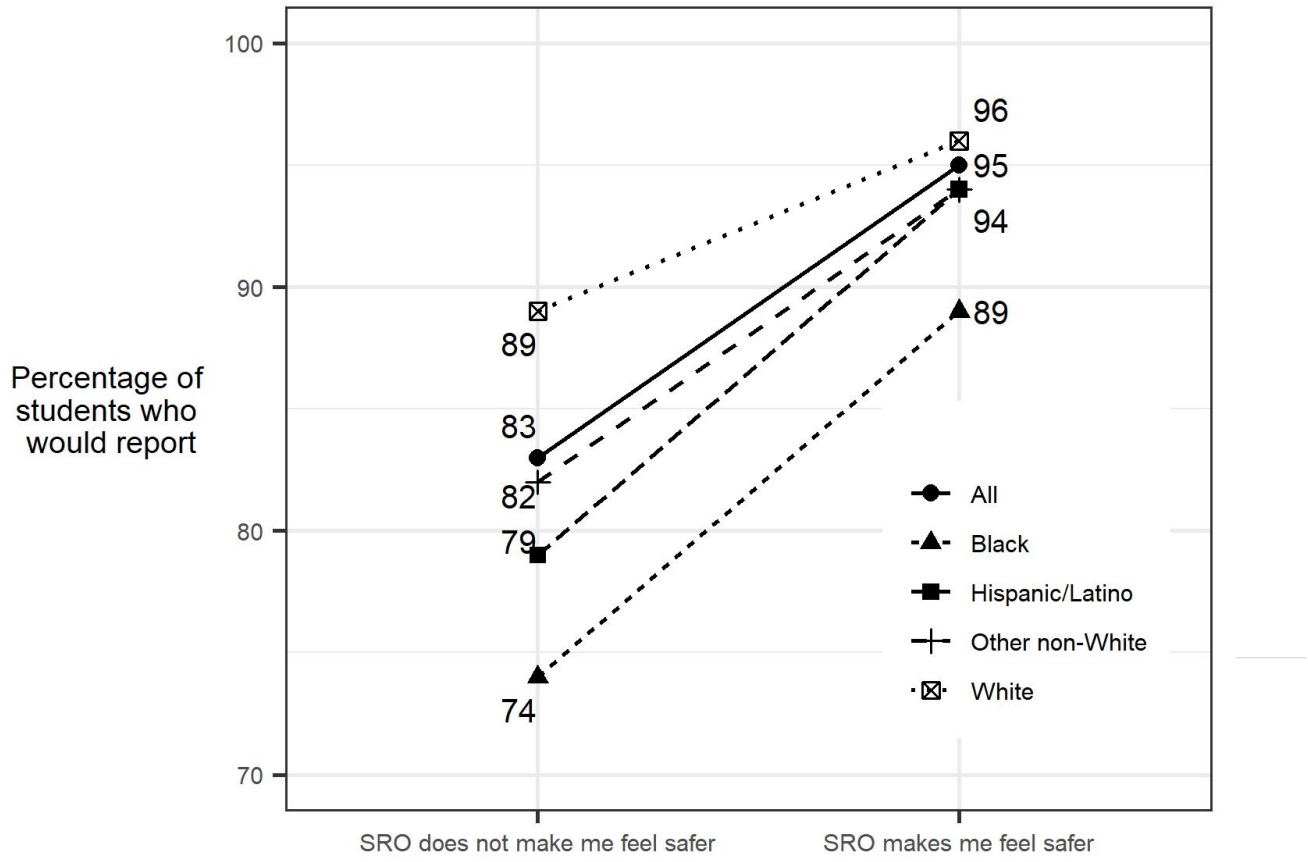
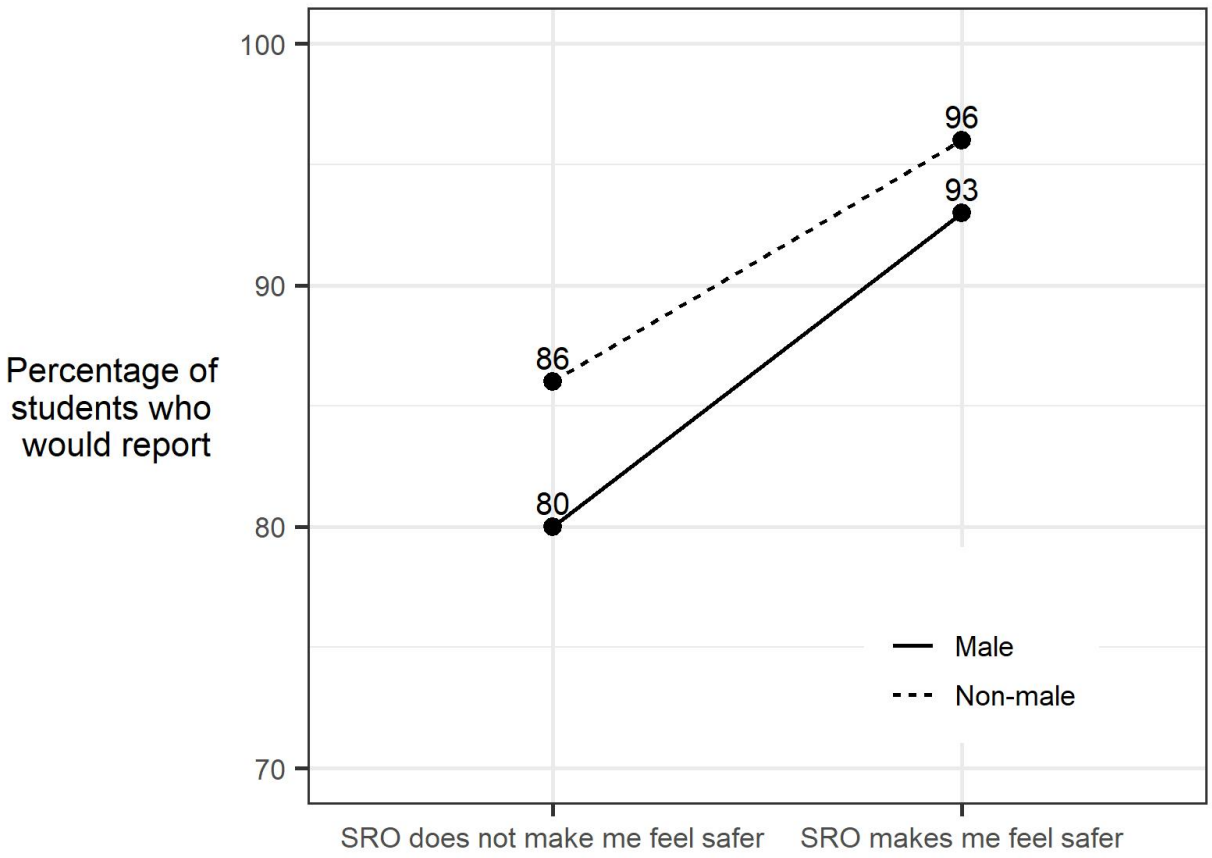


Figure 2

Interaction of Perceptions of SRO with Gender on Willingness to Report a Peer Who Brought a Gun



Paper 3

Anonymous Reporting Systems and Student Threat Reporting

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Author Note

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Abstract

Schools widely use anonymous reporting systems (ARSs) to identify students who threaten violence, but there is little empirical research on their impact. This study examined the association between ARS presence and student willingness to report threats, as well as the number of threat assessments (TAs) conducted by schools. A statewide sample of 106,865 students in 294 Virginia high schools rated their school climate and their willingness to report peer threats. The majority (91%) of schools used at least one ARS, most commonly internet tip lines (67%). School- and student-level regression models showed that ARS presence was not associated with student willingness to report threats or with number of TAs. However, student perceptions of supportive teachers and fair discipline were associated with greater willingness to report, and schools that instructed students about TA conducted more TAs. Findings suggest that positive school climates and education about TA might be more effective in encouraging students to report threats than ARSs alone.

Keywords: anonymous reporting systems, tip lines, threat reporting, threat assessment, school safety

Anonymous Reporting Systems and Student Threat Reporting

In response to concerns about school attacks, U.S. schools are adopting anonymous reporting systems (ARSs) to allow students to report a classmate threatening violence. A recent survey of secondary school principals found the majority of middle and high schools currently operate tip lines (Planty et al., 2020). Tip line usage is relatively new in schools; most schools reported their tip lines had been in use for fewer than three years (Planty et al., 2020). As of 2019, 12 states had established statewide school safety tip lines, and three additional states had tip lines for specific subsets of schools, e.g., public schools in a certain city (Gourdet et al., 2021).

Usage rate data show that ARSs generate tips about potential school attacks. In its first six months of operation, Pennsylvania's Safe2SayPA received 607 reports of threats to schools, and from 2017 to 2020, SafeOregon received 278 reports of threats to schools (Kingkade, 2020). Case studies (Payne & Elliott, 2011) and news reports (Stallings & Hall, 2019) suggest that tipsters have helped avert school attacks by using ARSs (Kaplan, 2020). In one incident, callers told the hotline operator they were thankful for a way to make an anonymous report because they lived in a small town and worried the would-be attacker would retaliate if he discovered their identities (Payne & Elliott, 2011).

Student Threat Reporting

Experts have recommended that schools implement ARSs as a way to encourage students to share information that can be used in threat assessment (Langman & Straub, 2019; National Threat Assessment Center (NTAC), 2019; Pollack et al., 2008). Threat assessment (TA) is a strategy for preventing violence and managing threats that begins when a threat or threatening behavior is reported. Students are the ones most likely to be aware of a peer's violent plans or

worrisome behavior (Vossekuil et al., 2002), and students have helped avert attacks by telling school adults about their concerns (Daniels, 2019; Pollack et al., 2008; Stallings & Hall, 2019). In order for schools to use TA to prevent violence, students must be willing to tell school staff about their concerns (Pollack et al., 2008). However, codes of silence among students (Oliver & Candappa, 2007), i.e., anti-snitching attitudes, as well as fear of ostracization (Madfis, 2014) or retaliation (Pollack et al., 2008) present barriers to threat reporting. A potential way to overcome these barriers is offering students an ARS.

There is limited research on students' likelihood of reporting threats when they can do so anonymously. Brank et al. (2007) found the proportion of middle schoolers who indicated they would report a peer for carrying a weapon increased from 70% to 83% under the condition of anonymity. Furthermore, the percentage who would report a friend increased from 58% to 70% if they could do so anonymously (Brank et al., 2007). Wylie et al. (2010) found that younger middle schoolers were more likely than older middle schoolers to report a peer carrying weapons if they could do so anonymously. Based on these findings, Brank et al. (2007) and Wylie et al. (2007) recommended that schools implement anonymous reporting systems.

Anonymous Reporting Systems

Recent research on anonymous reporting shows that many stakeholders perceive tip lines as a useful school safety strategy. Principals think tip lines are effective, and over half of principals surveyed indicated their schools' tip lines had prevented violent incidents (Planty et al., 2020). Espelage et al. (2021) conducted focus groups with parents, school staff, and school administrators about tip lines. Parents and school personnel agreed that any threat to a school or student safety should be reported, and parents thought tip lines could also be useful for reporting mental health concerns, particularly suicidality (Espelage et al., 2021). School safety experts also

agreed that tip lines are an appropriate technology for preventing frequent forms of school violence such as bullying or carrying weapons (Schwartz et al., 2016). While these studies are encouraging, they rely on student and staff perceptions of tip lines rather than a more direct measure of effectiveness.

One example of a successful anonymous reporting system is Safe2Tell in Colorado. Between 2004 and 2010, Safe2Tell received 361 tips regarding threats of violence and 210 tips regarding guns or other weapons (Payne & Elliott, 2011). Follow-up data on the tips combined with data on school and law enforcement responses show that 83% of tips resulted in intervention, including 28 investigations that Payne and Elliott (2011) judged to have prevented school attacks. Payne and Elliott (2011) believed that legal protection of tipsters' anonymity was essential to breaking the code of silence among students and that training students in Safe2Tell empowered them to come forward. However, despite the authors' call for scientific studies of Safe2Tell's effectiveness more than a decade ago, our review of the literature revealed no empirical study of Safe2Tell or other tip lines.

Although researchers, administrators, and staff agree that tip lines are a promising violence prevention strategy, they also emphasize that student awareness and knowledge of tip lines are essential to their effectiveness. Payne and Elliott (2011) found that informational sessions with students and staff about Safe2Tell generated higher call volume. They also credited promotional materials and merchandise for an increase in Safe2Tell usage. However, most schools do not offer in-person instruction about tip lines, or do so only once per year (Planty et al., 2020). School personnel agreed that training students about tip line usage and educating students about what situations to report would increase the feasibility of tip lines (Espelage et.

al., 2021). Simply making tip lines available may not be sufficient to encourage student reporting.

Differences in Mechanisms

Most schools with ARSs provide multiple ways for students to submit tips. For example, secondary school principals indicated over half of their schools had phone (57%) or website (56%) submission options; half had an email submission option, and just under half allowed for submission via text (42%) or app (40%; Planty et al., 2020). Findings about different reporting systems are largely descriptive, but they suggest that student usage varies by mechanism, with students more often using web-based reporting platforms, such as websites or apps. For example, the 2020-2021 Safe2Say Something Pennsylvania annual report stated that out of the 10,495 tips received, about 75% were submitted via mobile apps, about a quarter were submitted via website, and only 2.8% were via phone calls. Administrators have observed that ARSs with online options are used more frequently than systems that provide only a phone hotline (Payne & Elliott, 2011; Schwartz et al., 2016). In focus groups, students said they would be more likely to share sensitive information via text than over the phone (Kingkade, 2020). Furthermore, some students might be intimidated by phone hotlines that automatically forward calls to 911 (Blad, 2018). A key feature of internet tip lines or text lines is that they allow users to submit additional media with their tips, such as screenshots, photographs, and social media posts (Planty et al., 2021). In addition to studying the effectiveness of anonymous reporting, researchers also need to consider which methods students are most likely to use.

Present Study

Nearly all Virginia high schools use some kind of ARS. However, no study has examined whether ARS presence is associated with greater student willingness to report violent threats. We

investigated the prevalence of ARSs in Virginia high schools and ARS associations with threat reporting. School administrators indicated the presence of various reporting mechanisms in their schools, such as tip lines, email, written comments, and hotlines. We measured potential threat reporting with two independent indicators: 1) student willingness to tell school staff about a peer threat, as reported on a school climate survey, and 2) number of threat assessments a school conducted, according to a state annual report completed by school administrators. These outcome variables provided a more objective assessment of ARS outcomes than prior studies which relied on stakeholder perceptions of ARS effectiveness.

Previous studies have demonstrated the association between authoritative school climate and greater student willingness to seek help from school staff (Crichlow-Ball & Cornell, 2021; Eliot et al., 2010). Authoritative school climate is a conceptual framework for school climate characterized by a high level of support provided to students and a fair, consistently enforced discipline structure (Gregory & Cornell, 2009). Parents and school personnel indicated school climate as a factor in students' decision to report (Espelage et al. 2021). Consequently, we used student perceptions of support and structure as covariates in order to compare the associations for school climate versus ARSs in student willingness to report. Because Payne and Elliott (2011) suggested that educating students about threat reporting is key to increasing their use of ARSs, we also examined whether schools instructed their students about threat assessment.

Finally, earlier work has demonstrated that student threat reporting varies by grade level, gender, race/ethnicity, and socioeconomic status (SES). Older high schoolers may be slightly more willing to report than younger high schoolers (Crichlow-Ball & Cornell, 2021). Multiple studies have found that male and non-White students are less willing to report threats than their female and White counterparts (Eliot et al., 2010; Millspaugh et al., 2015). Findings regarding

SES are mixed. Some studies have found no association between SES and willingness to report threats (Crichlow-Ball & Cornell, 2021), whereas others have found that students who received free-or-reduced-price meals (FRPM) were more willing to report (Crichlow-Ball et al., 2022). Therefore, we included these student demographic characteristics in our analyses.

Our research questions asked:

1) What kinds of anonymous reporting systems do Virginia high schools use?

2) How is the presence of anonymous reporting systems related to student willingness to report peer threats of violence?

3) How is the presence of anonymous reporting systems associated with the number of threat assessments conducted in a school?

4) How do anonymous reporting systems compare to other aspects of school climate, particularly student instruction about threat assessment, in their association with threat reporting?

Because anonymity has been found to make a difference in student decisions to report a threat (Brank et al., 2007), we hypothesized that ARS presence would be associated with 1) greater student willingness to report a peer's threat and 2) more threat assessments conducted in schools.

Method

Our sample included 106,865 students in 282 high schools who completed the 2019-2020 Virginia Secondary School Climate Survey. Students were distributed across the ninth (29%), tenth (27%), eleventh (24%), and twelfth grades (20%). The majority of students identified their gender as female (50%) or male (44%), and smaller groups preferred to self-describe (4%) or not indicate (2%) their gender. Most students reported their racial/ethnic identity as White (64%), followed by Black or African-American (20%), Asian (9%), American Indian or Alaska Native

(4%), Native Hawaiian or Pacific Islander (2%), and an additional 15% who described their race/ethnicity as Other. About 17% of students reported their ethnicity as Hispanic or Latino, and about a quarter (26%) indicated they spoke a language other than English at home. About a third (32%) of students reported they received a free or reduced-price meal from school.

Measures

The independent variable of primary interest was the ARS used in each school. Virginia high school administrators who completed an annual school safety survey during the 2019-2020 academic year responded to: "What kind of anonymous report methods were available at your school for reporting threats/aberrant behavior?" The response options were school-based web-based tip line, web-based tip line provided by the school division, phone-based hotline, email, written (i.e., note, comment box), other, or none. Administrators were instructed to select all methods their school used. Administrators who indicated their school used another report method were asked to describe that method.

As an independent check of administrator report of internet tip lines, we viewed all 294 school websites to confirm whether they included functioning links to online ARSs. Websites were confirmed if 1) the link to the ARS worked and navigated the user to a report submission form (i.e., broken links or links to the ARS company with no clear reporting mechanism were excluded), 2) the user could submit a report via a website (i.e., the ARS did not only use a telephone or texting hotline), and 3) the user had the option of submitting an anonymous report (i.e., confidential reporting systems were excluded).

The dependent variables were 1) student willingness to report threats to school staff and 2) the number of TAs conducted in each school. Students responded to two School Climate Survey items that measured their willingness to report violent threats: **"**If another student talked

about killing someone, I would tell one of the teachers or staff at school" and "If another student brought a gun to school, I would tell one of the teachers or staff at school." Responses were a four-item Likert scale ranging from "strongly disagree" to "strongly agree." These items have been previously used in studies of student threat reporting (Bandyopadhyay et al., 2009; Eliot et al., 2010; Millspaugh et al., 2015). School administrators reported the number of TAs conducted at their school during the 2019-2020 school year on the school safety survey. The count of TAs was limited to cases involving threats to harm others (excluding threats only to harm self).

Covariates

Administrators responded to one item asking: "How did your school inform students about threat assessment teams and their role in the school?" Response options were assembly/classroom, classroom or small group, email/text, other written format (brochure, letter), school policy, student handbook/code of conduct, counseling services, website/social media, and with individual students and/or families. Administrators also had the option to indicate whether their school informed students about TA teams via another method, or if their school did not inform students about TA teams. Respondents were instructed to select all response options that applied. Student information about TA was dichotomized into schools that informed their students about TA and schools that did not (0 = did not inform; 1 = informed).

Administrators from the vast majority of schools (n = 257, 87%) indicated their schools informed students about TA teams and their roles, and most (n = 175, 60%) did so using more than one method. The most frequent methods of informing students about TA were student handbooks or codes of conduct (n = 166, 57%), followed by school policies (n = 112, 38%), and informing individual students or families (n = 103, 35%). Less common methods were counseling services (n = 85, 29%), assemblies/classes (n = 77, 26%), and classrooms or small

groups (n = 52, 18%). Few schools used websites or social media (n = 28, 10%), written formats (brochure, letter; n = 24, 8%), emails or texts (n = 14, 5%), or another method (n = 7, 2%). Only 37 schools (13%) did not inform their students about TA.

School Climate Indicators.

Students completed two scales measuring their perceptions of teacher support and school discipline structure, two core features of authoritative school climate (Gregory & Cornell, 2009). Students responded to eight items asking about support they received from teachers and their willingness to seek help from teachers (sample items: "Most teachers and other adults at this school care about students," "There are adults at this school I could talk with if I had a personal problem"). Response options were a four-item Likert scale ranging from "strongly disagree" to "strongly agree." Previous multilevel confirmatory factor analysis of these items in a student sample (Konold et al., 2014) revealed intraclass correlation coefficients ranging from .02 to .06 and student-level reliability estimates of .87 (Factor 1, Respect for Students) and .69 (Factor 2, Willingness to Seek Help). The alpha coefficient for the scale in this sample was .87.

Students answered seven questions concerning whether the discipline structure at their schools is fair (sample items: "Students at this school are only punished when they deserve it," "Students are treated fairly regardless of their race or ethnicity"). Response options were a four-item Likert scale ranging from "strongly disagree" to "strongly agree." Multilevel confirmatory factor analysis of these items within a student sample revealed intraclass correlation coefficients ranging from .02 to .06 and a student-level reliability estimate of .77 (Konold et al., 2014). The alpha coefficient in this sample was .80.

Demographic Characteristics.

Finally, students reported their gender, grade level, race/ethnicity, and FRPM status. Students could report their gender as male, female, prefer not to answer, or prefer to self-describe. Because male students are known to be less willing to seek help from school staff, we dichotomized gender responses into male and other (female, prefer not to answer, and prefer to self-describe).

Data Analysis

To answer RQ 1 (What kinds of ARSs are used in Virginia high schools?), we examined frequencies on administrator reports of ARSs in their schools. We reviewed administrator responses of "other" anonymous reporting methods and excluded invalid responses (i.e., responses that were not anonymous reporting methods, such as face-to-face communication) and recoded responses that fit into an existing response category.

RQ 2 examined how the presence of ARSs (0 = not present, 1 = present) was related to student willingness to report peer threats (a peer who talked about killing someone and a peer who brought a gun to school). We evaluated this question through two sets of regression models in order to examine school-level outcomes (i.e., school average willingness to report a threat) in relation to school-level covariates, and student-level outcomes in relation to both student- and school-level covariates. The school-level only models were examined through single-level ordinary least squares regression on the 282 school-level means. The single-level school analyses were conducted in SPSS version 28.0,

We next conducted multilevel linear regression models looking at individual students' willingness to report threats in order to determine whether school-level analyses averaged out individual differences in student willingness to report threats, and to consider individual students' demographic characteristics. Student willingness to report threats was examined

through two-level multilevel models (i.e., students nested within schools) with cross-level interactions. The cross-level interactions examined how presence of an anonymous reporting system at the school level interacted with student-level predictors in explaining individual students' willingness to report threats. Student-level predictors in the multilevel models were school-mean-centered at the within-school level (i.e., level 1), and school averages of these variables were included at the school level (i.e., level 2) of the model. Student-level regressors included grade level, male gender, race/ethnicity, FRPM status, perceptions of support, and perceptions of structure; school-level regressors included ARS presence, student instruction about TA, perceptions of support, perceptions of structure, enrollment, and percentage of students who received FRPM. Multilevel models were estimated with lme4 in R (version 4.1.3).

We tested RQ 3 (How is the presence of ARSs associated with the number of TAs conducted in a school?) with school-level regression models. Because the dependent variable—number of threat assessments conducted—was a count variable with a non-normal distribution (Figure 1), we used negative binomial regression. Covariates in the model were student instruction about threat assessment, student perceptions of support and structure, school enrollment size, percentage White students, and percentage students who received free or reduced-price meals. These covariates were entered as Z-scores.

Because negative binomial models produce regression weights (B) that are interpreted in relation to the natural log of the outcome (i.e., a one-unit change in the predictor is associated with B log change in the outcome), we obtained more familiar results by exponentiating (2.718^{B}) the resulting coefficients (B). For example, a coefficient of $B = .76$ can be interpreted as a log outcome increase for a one-point change in the predictor, holding all else constant. Whereas, $\exp(B)$ (i.e., $2.718^{.76} = 2.14$) can be interpreted to indicate that for every one-point increase in the

predictor, the outcome is expected to increase by a multiplicative factor of 2.14 (Huang & Cornell, 2012). To further facilitate model interpretations, continuous predictors were in Z-score form so that a one-point increase was equivalent to a one standard deviation increase, and model coefficients could be interpreted when other continuous variables in the model were at mean values.

Finally, we considered RQ 4 (How do ARSs compare to other aspects of school climate in their association with threat reporting?) by comparing our negative binomial regression coefficients for presence of ARS to the regression coefficients for student perceptions of support and structure.

Results

Anonymous Reporting Systems Used in Schools

Administrators from 273 schools (93%) reported that their school used at least one ARS. After removing five responses indicating that a school's only threat reporting method was in-person (i.e., not anonymous) communication, the remaining 268 schools (91%) used at least one ARS. Internet tip lines (n = 198, 67%) were the most common ARS, followed by email (n = 178, 61%), written comments (n = 134, 46%), and telephone hotlines (n = 83, 28%). Nearly three-quarters of schools (n = 215, 72%) indicated using more than one ARS.

Administrators from 40 schools (14%) indicated their schools used another method of threat reporting. Of these "other" responses, two were recoded as school-based internet tip lines, one was recoded as a division-provided tip line, and one school did not specify its other reporting method. Examination of the remaining 36 "other" responses revealed that the majority (n = 11, 31%) were in-person communication, and therefore not anonymous reporting systems. Nine schools used text lines, four schools used an app, three schools used telephone calls (which the

respondent did not indicate as a telephone hotline), and two schools each used law enforcement tip lines and social media. Five schools gave responses of "other" that were not methods of threat reporting (e.g., surveillance software).

Internet tip lines

Because administrator report revealed that internet tip lines were the most common ARS, we investigated whether the tip lines were available via school websites. An independent check of all 294 Virginia high school websites revealed that 98 school websites (33%) contained functioning links to online ARSs. Within these 98, the most frequent ARS platforms were SchoolMessenger Quick Tip (n = 26, 9%), AnonymousAlerts Report It (n = 13, 4%), Sandy Hook Promise Say Something (n = 11, 4%), Google form (n = 10, 3%), and Vector Solutions Safe Schools Alerts (n = 10, 3%).

The majority of school websites (n = 196, 67%) did not have functioning links to online ARSs. Of school websites without online ARSs, most (n = 158, 54%) did not contain any information about a reporting system. About 5% (n = 16) contained functioning links to an online reporting system that was confidential, but not anonymous. About 4% (n = 13) contained information about reporting systems that were not internet-based (e.g., telephone hotline, text hotline), and another group (n = 9, 3%) contained links that were either broken or directed the user to a site where they could not submit a report (i.e., the reporting system's company website).

Agreement between administrator report of online tip lines and our independent check of school websites with online ARSs was moderate (36.7%, $\kappa = .35$, SE = .04, $p < .001$). Out of the 198 schools that indicated they used internet tip lines, about half (48%) had websites with online ARSs, and the other half (52%) did not. The other. In order to compare with results using

administrator report of online tip line presence, we also ran analyses using the independent variable of school websites with online ARSs and obtained a similar pattern of results.

Anonymous Reporting System Availability and Student Willingness to Report Threats

To determine whether ARS presence was related to student willingness to report peer threats of violence, school-level linear regression models revealed that presence of an ARS was not significantly associated with student willingness to report either a peer who talked about killing someone or a peer who brought a gun to school (Table 1). However, there were significant positive associations between student perceptions of a supportive school climate and willingness to report both a peer who talked about killing someone ($B = .75$, $p < .001$) and a peer who brought a gun to school ($B = .64$, $p < .001$). Here, a one-point increase in perceptions of support was associated with a .75-point increase in student willingness to report a peer who talked about killing someone, as well as a .64-point increase in student willingness to report a peer who brought a gun to school.

School enrollment was also associated with student willingness to report talk about killing someone ($B = .01$, $p < .05$) and the presence of a gun ($B = .02$, $p < .001$). A one decile increase in enrollment was related to a .01-point increase in willingness to report a peer who talked about killing someone and a .02-point increase in willingness to report a peer who brought a gun to school. Finally, the percentage of White students was associated with student willingness to report a peer who talked about killing someone ($B = .26$, $p < .001$) or brought a gun to school ($B = .36$, $p < .001$). A one percent increase in White students was associated with a .26-point increase in willingness to report a peer who talked about killing someone and a .36-point increase in willingness to report a peer who brought a gun.

Multilevel Model

Multilevel linear regression models yielded similar findings as school-level models; the presence of ARSs was not significantly associated with student willingness to report threats (Table 2). As in school-level models, individual student perceptions of supportive relationships with teachers (talk about killing: $B = .47$, $p < .001$; report a gun: $B = .41$, $p < .001$) were related to student willingness to report threats. Additionally, student perceptions of fair discipline structure were associated with greater student willingness to report (talk about killing: $B = .18$, $p < .001$; report a gun: $B = .11$, $p < .001$). Within schools, a one-point increase in perceptions of support was associated with a .47-point increase in willingness to report a peer who talked about killing someone and a .41-point increase in willingness to report a peer who brought a gun to school. Regarding discipline structure, a one-point increase in perceptions of fair discipline was related to a .18-point increase in willingness to report talk about killing and a .11-point increase in willingness to report presence of a gun, within schools.

In terms of student demographics, being in a grade level above 9th grade was associated with greater willingness to report threats, male gender was associated with lower willingness to report (compared to other genders), and Black race was associated with lower willingness to report (compared to students who indicated their race/ethnicity as "Other"). Specifically, compared to the 9th grade, being in the 12th grade was associated with a .05-point increase in willingness to report a peer who talked about killing someone and with a .04-point increase in willingness to report a peer who brought a gun to school. Males were .19-point less likely than other genders to report a peer who talked about killing someone and .14-point less likely than other genders to report a peer who carried a gun. Finally, compared to students who indicated their race/ethnicity as "Other," Black students were .09-point less willing to report a peer who

talked about killing someone and .16-point less willing to report a peer who brought a gun to school.

To represent findings of school-level and multilevel regression models in practical terms, we compared the percentages of students who indicated they would report a threat in schools with support or structure scale scores at least one standard deviation above the mean (high support; high structure) and in schools with support or structure scale scores at least one standard deviation below the mean (low support; low structure). In high support schools, 87% of students indicated they would report a peer who talked about killing someone, as compared to 78% of students in low support schools. For a peer who brought a gun to school, 94% of students in high support schools would report, versus 86% of students in low support schools. In schools with high structure, 88% of students indicated they would report a peer who talked about killing someone, but only 79% of students in low structure schools indicated they would report. Lastly, nearly all (95%) students in high structure schools indicated they would report a peer who brought a gun to school, versus 87% of students in low structure schools.

In sum, at both the school- and student-levels, presence of an ARS did not predict greater student willingness to report threats. However, student perceptions of supportive relationships with teachers predicted greater willingness to report threats in both school-level and student-level models, and student perceptions of fair discipline structure predicted greater willingness to report threats at the student level.

Association of ARSs with Number of TAs Conducted

In addition to the coefficients for the regression of ARS presence on number of TAs conducted, we also report the exponentiated forms of these coefficients (Table 3). This allows for an interpretation of the intercept value of 4.52 to reflect the average number of threat

assessments conducted in schools without ARSs (= 0), without student information about TA (= 0), and with average values for the other covariates (Zs = 0). Moreover, exponentiated predictors greater than 1 are associated with more TAs, and exponentiated predictors less than 1 are associated with fewer TAs.

ARS presence was not significantly associated with number of TAs conducted (B = -.40, p = .089). Schools that used ARSs but did not inform students about TA conducted an average of (4.52 x .67 =) 3.03 TAs, which does not significantly differ from 4.52 TAs. However, student information about TA was significantly associated with number of TAs (B = .45, p = .035). Without an ARS and when all other variables equaled average values, schools that informed their students about TA conducted an average of (4.52 x 1.57 =) 7.10 TAs. That is, schools that informed students about TA conducted (7.10 – 4.52 =) 2.58 more TAs on average than schools that did not inform students about TA. Neither student perceptions of support (B = -.22, p = .078) nor structure (B = .02, p = .885) were significantly associated with number of TAs. Regarding school demographic characteristics, enrollment size (B = .08, p = .479) was not associated with number of TAs, but percentage White students (B = -.36, p < .001) and percentage students who received FRPM (B = -.37, p < .001) were both associated with number of TAs. In schools without ARSs or student information about TA, and holding other variables at average, as percentage White students increased by one standard deviation, the number of TAs decreased to (4.52 x .70 =) 3.16; as percentage students who received FRPM increased by one standard deviation, the number of TAs decreased to (4.52 x .69 =) 3.12.

In sum, ARS presence was not significantly associated with number of TAs, but informing students about TA was associated with a greater number of TAs conducted.

Percentage White students and percentage students who received FRPM were associated with fewer TAs conducted.

Discussion

This study investigated associations between the presence of anonymous reporting systems in Virginia high schools and student willingness to report threats, as well as with the number of threat assessments schools conducted. We found that although ARSs are common in schools, ARS presence was not associated with student willingness to report threats or the number of TAs conducted in a school.

The majority of schools (91%) indicated they used ARSs, and internet tip lines (67%) were the most common type. Only nine percent of schools indicated they did not have an ARS. However, not all schools that indicated they had an internet tip line had an online ARS available on their school website. While it is possible that schools might have online ARSs that are not available to the public (e.g., via student or parent portals), it is still concerning that administrators from 198 schools indicated their school used an internet tip line, and yet an online ARS was available on only 98 school websites. All Virginia high schools should have at least one method for students to anonymously report threats, and schools that rely on online tip lines must ensure these tip lines are readily available and functional for student use.

Our hypothesis that ARS presence would be associated with greater student willingness to report threats was not supported. The availability of ARSs was not significantly associated with student willingness to report a peer who talked about killing someone or a peer who brought a gun to school, when measured at either the individual student or the school level. Despite findings that students are more willing to report peers' dangerous behavior when they can do so anonymously (Brank et al., 2007) and expert suggestions that students might be more willing to

report threats under anonymity (NTAC, 2019; Pollack et al., 2008), we found that providing students with an anonymous reporting option did not influence their willingness to report threats. Similarly, the hypothesis that ARS presence would be associated with a greater number of TAs conducted in schools was also not supported. Availability of ARSs was not significantly associated with more TAs conducted. These findings suggest that simply equipping schools with ARSs is not enough to encourage their use. Future studies could look at whether ARS presence is associated with a greater number of tips reported to schools.

Regarding how ARSs compare to other aspects of school climate in their association with threat reporting, we found that student perceptions of supportive relationships with teachers predicted greater willingness to report a threat at both the school- and student-levels. These school-level findings suggest that school climate can make meaningful differences in student threat reporting; willingness to report threats is not merely a matter of individual student dispositions. Furthermore, student perceptions of fair, consistently enforced discipline predicted greater threat reporting willingness at the student-level. Taken together, these findings suggest that student perceptions of school staff were more influential in their threat reporting willingness than whether they had the option to report threats anonymously. This is consistent with reports that students decided to tell school staff about peer threats because they trusted staff would believe them and respond appropriately (Pollack et al., 2008). Additionally, these results support previous findings that students are more willing to report peer threats in supportive school climates (Crichlow-Ball & Cornell, 2021; Eliot et al., 2010).

Although perceptions of support and structure were associated with greater student willingness to report threats, they were not significantly related to the number of TAs conducted. It may be that student self-report of willingness to tell school staff about a hypothetical scenario

measures a different construct than the number of TAs conducted by schools; correlations between student willingness to report threats and number of TAs conducted were nonsignificant (report a peer who talked about killing someone: $r = -.06$, $p = .34$; report a peer who brought a gun: $r = -.03$, $p = .662$). Schools with students who were more willing to seek help from school adults are not necessarily the same schools that conducted more TAs. It might be that schools with less supportive climates have higher levels of school violence and disorder, and therefore must conduct more TAs. Future studies of ARS effectiveness could also consider school levels of school disorder and violence.

The lack of association between ARS presence and student threat reporting is consistent with the body of evidence suggesting that many school security measures are ineffective (King & Bracy, 2019; Reingle Gonzalez et al., 2016). However, it is important to distinguish ARSs –part of the threat management process—from target hardening, (i.e., security measures intended to make schools more difficult to attack). Much of the school safety literature focuses on target hardening measures (e.g., security personnel, security cameras, and metal detectors), which are more commonly found in schools with higher proportions of low-income and Black students, as well as in larger schools and in schools with higher levels of disorder (Steinka-Fry et al., 2016). Additionally, target hardening has been associated with increased student exposure to school crime and violence (Tanner-Smith et al., 2018), worse academic outcomes (Tanner-Smith & Fisher, 2016), and weaker student-teacher relationships (Fisher et al., 2019). Less research has considered the effectiveness of violence prevention strategies such as ARSs on school safety or student academic outcomes. While we did not find that ARSs predicted student threat reporting willingness or number of TAs, future studies could look the effect of ARS presence on other

school safety outcomes, such as bullying, fighting, and sexual harassment, and academic outcomes.

Another possible explanation for why ARSs were not associated with threat reporting outcomes is that even though ARSs were developed in response to concerns about school shootings, they serve a broader range of concerns. ARSs are used far more often to report suicidality and bullying rather than threats of mass violence (Kingkade, 2020; Planty et al., 2020). For example, out of the 10,495 legitimate tips submitted via Pennsylvania's Safe2Say Something program during the 2020-2021 school year, the most common reports concerned bullying (13.9%) or suicidality (13.3%); threats of mass violence were not among the top ten most frequent report types (Office of the Attorney General, n.d.). Future studies could look at the associations between ARS availability and numbers of tips reported for suicidality and bullying.

The average school conducts few TAs in a school year. In our sample, 20% of schools conducted no TAs for threats to others, and the median number of TAs conducted was three. Furthermore, most threats are determined to be not serious (Burnette et al., 2018). Because school attacks are so infrequent, it is likely that tips regarding mass attacks will only ever comprise a small fraction of all tips reported to ARSs. It would be beneficial for Virginia to collect data on the content of tips submitted to ARSs and how they were resolved (i.e., which led to TAs and which were resolved another way).

No matter how rare, it is still crucial that schools know about threats of mass violence in order to respond appropriately. For example, Hendrix et al. (2022) reviewed 6,006 reports to the SafeOregon tip line from February 2017 through August 2020 and identified 228 tips (about 4%) regarding threats of mass attacks. They found that schools responded to those threats most often by contacting law enforcement (42%), meeting with the student who made the threat (26%), or

contacting the parents of the threatening student (21%). If an anonymous tip helps avert even one attack in a school, then the ARS was well worth the resources. Ultimately, even if ARSs are not primarily used to report threats of school violence, usage rate data suggest they can be effective in obtaining help for students with all manner of safety concerns.

While not a primary focus of this study, we found that most schools (87%) informed their students about threat assessment, and student information about TA predicted a greater number of TAs conducted at school. While education about threat assessment is distinct from education about anonymous reporting systems, this finding is consistent with Payne and Elliott's (2011) recommendation that awareness of and education about ARSs are essential to student use. It may be that some schools are more committed to both teaching their students about and implementing threat assessment. Nonetheless, student instruction about TA was not associated with greater student willingness to report threats.

A possible explanation for the lack of relationship between student TA information and student willingness to report threats is that student handbooks and codes of conduct - the most common TA information methods in our sample – do not adequately teach students about TA, perhaps because students are unlikely to reference these resources regularly. Payne and Elliott (2011) emphasized that publicizing Colorado's Safe2Tell telephone hotline and educating students about it was key to its success. Rather than relying on students to educate themselves about TA by reading school materials, Colorado schools trained their students in Safe2Tell using real-life scenarios and discussion (Payne & Elliott, 2011). Furthermore, schools promoted Safe2Tell by printing the hotline number on student identification cards, posters, and merchandise (e.g., bracelets, stickers, key fobs).

It is possible that schools could positively influence student willingness to report threats by actively teaching students about TA in an engaging way and widely publicizing their ARSs to increase student awareness. In their School Safety Tip Line Toolkit, Planty and colleagues (2021) offer approaches for publicizing ARSs, such as a logo that appeals to students and an easy-to-remember telephone/text number. There is some evidence that informing students about TA is associated with greater threat reporting willingness. Students who completed an online educational program emphasizing students' role within threat reporting demonstrated greater knowledge about TA and willingness to report threats (Stohlman & Cornell, 2019).

Limitations

A primary limitation of this study was administrator report of which ARSs their schools used. Response options for this item were undefined and did not specify how mobile apps or text lines – common reporting tools-- should be categorized. Consequently, administrators could have variously classified apps or text lines as a web-based tip line, phone-based hotline, or email. Indeed, our review of administrator free-responses of "other" reporting methods revealed that administrators endorsed face-to-face communication as an anonymous reporting method and did not know how to classify apps or text lines. This limitation was addressed by excluding responses of face-to-face communication and recoding answers that fit within another category, but we cannot account for the validity of administrator report, particularly how they categorized mobile apps and text lines.

Similarly, the ARS data did not include information about the quality of these tools and how actively the school promoted them. This study partially addressed this limitation by checking whether schools that indicated having web-based tip lines provided online ARSs on

their websites. Additionally, regression models covaried for informing students about TA student to control for schools who informed their students about TA.

Another limitation was that the data on the number of threat assessments conducted in schools did not specify the context of the threats. First, data did not include information about how the threat reached the attention of the TA team; the threats that led to TAs could have been reported by students or other individuals (e.g., parents, staff). Second, the number of TAs did not distinguish cases in which non-students (e.g., alumni, parents), made threats. Therefore, the number of TAs was an indirect measure of the number of threats reported to school officials. We could not precisely test whether ARS presence directly resulted in students reporting more threats.

Finally, these results are correlational. We cannot conclude that student perceptions of support from teachers and of fair discipline increased their threat reporting willingness, nor that student instruction about TA increased the number of TAs. Future studies could consider quality of reporting systems, student education about and training in those reporting systems, and how schools process tips after they are reported.

Implications

Results suggest that equipping high schools with ARSs will not lead to greater student threat reporting. However, schools might be able to encourage students to report by teaching them about TA and by fostering school climates with supportive teacher-student relationships and fair, consistently enforced discipline. Schools need guidance (such as Planty et al.'s 2021 School Safety Tip Line Toolkit) on implementing ARSs, particularly to ensure that online tip lines are easily accessible and functional, and on educating students about their use. When deciding whether to implement ARSs, schools should bear in mind that tips related to serious

threats of mass attacks would be highly rare, as these are infrequent events. Nonetheless, other data suggest that ARSs could help students who are struggling with other safety concerns, particularly bullying and suicidality.

Conclusion

Anonymous reporting systems are used in most Virginia high schools, but their presence was not linked with either greater student willingness to report threats or the number of threat assessments conducted. While it might be disappointing that such an appealing violence prevention strategy was not associated with greater threat reporting outcomes, it is reassuring that student perceptions of supportive teachers and fair discipline remain significant predictors of their willingness to report threats. Additionally, this study found evidence that schools can encourage student threat reporting by educating their students about the threat assessment process. Further studies of ARS effectiveness are needed - particularly those looking at various types of ARSs, ARS effects on reports of bullying and suicidality, and negative outcomes of ARS presence - before we can recommend whether all schools should invest human effort and funding in ARSs. Our findings suggest that in their eagerness to keep students safe, schools should not underestimate the power of teachers building trusting relationships with students such that students will come to them for help.

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Table 1

School-Level Unstandardized Regression Coefficients of Anonymous Reporting System Presence on School Average Student Willingness to Report Threats

	Mean student willingness to report a peer who talked about killing someone			Mean student willingness to report a peer who brought a gun to school		
Predictor	*B*	*SE*	R^2	*B*	*SE*	R^2
Anonymous reporting system present in school	.02	.02		.02	.02	
School informed students about threat assessment	-.01	.02		-.02	.02	
Student perceptions of support	.75***	.09		.64***	.09	
Student perceptions of structure	.11	.07		.08	.07	
School enrollment	.01*	.004		.02***	.004	
Percentage White students	.26***	.04		.36***	.04	
Percentage students who received FRPM	-.03	.04		-.12**	.04	
			.61			.65

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

Table 2

Multilevel Regression Unstandardized Coefficients of Anonymous Reporting System Presence on Student Willingness to Report Threats

	Student willingness to report a peer who talked about killing someone			Student willingness to report a peer who brought a gun to school		
Predictor	*B*	*SE*	R^2	*B*	*SE*	R^2
School level predictors						
Anonymous reporting system present in school	.02	.03		.01	.03	
School informed students about threat assessment	-.01	.02		-.02	.02	
School mean perceptions of support	.64***	.09	.01	.63***	.09	.01
School mean perceptions of structure	.14*	.06		.07	.06	
School enrollment size (deciles)	-.00	.00		.00	.00	
Percentage students who received FRPM	.09**	.03		.23***	.03	
Student level predictors						
10th grade	.02	.02		.02	.02	
11th grade	.04*	.02		.01	.02	
12th grade	.05*	.02		.04*	.02	
Male gender	-.19***	.01		-.14***	.01	
Black	-.09***	.02		-.16***	.02	
Hispanic ethnicity	-.0002	.02		-.04	.02	
White	.04	.02		.06***	.02	
Received FRPM	.02	.02		.02	.01	
Perceptions of support	.47***	.02		.41***	.01	
Perceptions of structure	.18***	.02		.11***	.01	
ARS available x 10th grade	-.01	.02	.16	-.001	.02	.15
ARS available x 11th grade	-.02	.02		.005	.02	

ARS available x 12th grade	-.03	.02	-.02	.02
ARS available x male gender	.01	.01	-.005	.01
ARS available x Black race	-.03	.02	.01	.02
ARS available x Hispanic ethnicity	-.01	.02	-.003	.02
ARS available x White race	.01	.02	.02	.02
ARS available x FRPM	-.03	.02	.01	.02
ARS available x structure	-.02	.02	-.001	.01
ARS available x support	-.01	.02	-.03	.02

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

Table 3

School-Level Negative Binomial Regression Coefficients of Anonymous Reporting System Presence on Number of Threat Assessments Conducted

	N threat assessments conducted in school	
Predictor	*B*	*B* exponentiated
Intercept	1.51***	4.52
Anonymous reporting system present in school	-.40	.67
School informed students about threat assessment	.45*	1.57
Student perceptions of support	-.22	.80
Student perceptions of structure	.02	1.02
School enrollment	.08	1.08
Percentage White students	-.36***	.70
Percentage students who received FRPM	-.37***	.69

Note. Student perceptions of support, student perceptions of structure, school enrollment, percentage White students and percentage students who received FRPM were all centered through use of standardized Z-scores. Regression coefficients are unstandardized.

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