Is More Necessarily Better? School Security and Perceptions of Safety among Students and Parents in the United States

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Abstract

The use of security measures within schools has increased dramatically over the past few decades. These proliferations are often touted by teachers, school administrators, politicians, and the public as necessary for improving student safety. Though research in this area is growing, we know little about how increased use of school security measures relates to both student and parental perceptions of school safety. Using data from wave one of the 2002 Educational Longitudinal Study, the current study investigates the relationship between the use of security measures in schools and student and parent assessments of safety. Findings from multi-level models indicate that school security measures are, generally, related to decreased perceptions of safety by both parents and students. Implications of these findings are addressed.

Keywords

School safety; School security; Student safety; Parental perceptions of safety

Introduction

The use of security measures – such as metal detectors, security cameras, school resource officers and security guards, and drug-sniffing dogs – within the hallways of U.S. K-12 schools has increased dramatically over the past few decades (Robers, Kemp, Truman, & Snyder, 2014; Musu-Gillette et al., 2018). As a result, scholars have become concerned with the deleterious effect the use of security measures, and corresponding disciplinary policies, has had on students (Casella, 2001; Kupchik, 2010; LaRoque & Paternoster, 2011; Mowen & Brent, 2016; Nolan, 2011; Skiba et al., 2014; Townsend, 2000). Prior work (see Hirschfield, 2008) has documented seemingly unintended consequences of increases in school security and disciplinary strategies across the U.S. For example, more punitive disciplinary strategies and security measures tend to be disproportionately located in urban and lower income schools, as well as those with more minority populations (Casella, 2006;

Hirschfield, 2008; Kupchik & Ward, 2014). Additionally, schools with certain forms of security measures – such as school resource officers or security guards – tend to have higher rates of student arrest (Na & Gottfredson, 2013; Theriot, 2009) and discipline (Mowen, 2014) than schools without some of these measures. Furthermore, research has shown that school security measures influence student perceptions of the overall school environment and influence behavior (Fisher, Mowen, & Boman, 2018a; Fisher, Viana, Curran, Pearman, & Gardella, 2018b; Tanner-Smith, Fisher, Addington, & Gardella, 2018).

Prior research provides a great deal of knowledge about the general trends in school security use within K-12 schools across the U.S. (Casella, 2006; Robers et al., 2014; Musu-Gillette et al., 2018). However, little evidence that expansions in security result in actual improvement in safety, such as decreased victimization rates, within schools exists (Kupchik, 2016; Tanner-Smith et al., 2018). Yet, the limited research within this area tends to show that many teachers, school administrators, politicians, and members of the public believe the use of security measures is warranted because of the need to protect students and to make them feel safe (Addington, 2009; Kupchik, Brent, & Mowen, 2015). As the body of research on assessing some of the consequences of school security and discipline on student outcomes continues to grow (see, generally, Kupchik, 2010; Mowen & Manierre, 2017; Reyes, 2006; Skiba et al., 2014), important gaps within this literature still endure. Specifically, little research investigating the relationship between perceptions of safety and schools' adoption of security measures in a nationally-representative framework exists. Furthermore, the majority of the work done in this area ignores how parental perceptions regarding school safety are related to school security thereby overlooking an important stakeholder in conversations about school safety and policy. This current study addresses the link between school security use and student and parent perceptions of safety within a sample of 10th grade high school students across the U.S. using data from the Educational Longitudinal Survey: 2002.

School Security

Schools in the United States are, overall, using more security measures each year (Robers et al., 2014; Musu-Gillette et al., 2018). As of the 2016 school year (Musu-Gillette et al., 2018), 94% of all schools reported controlled access to the school building; 81% reported using security cameras; 53% reported a strict dress code; 68% required school personnel to wear badges; 25% reported using drug sniffing dogs; 21% required uniforms; and about half of all schools reported the presence of some sort of security personnel in the school (Musu-Gillette et al., 2018). These trends have not gone unnoticed by students; for example, in 2013, 77% of all students reported observing the use of one or more security cameras in their school, which is a 7 % increase from 2009, and a 38% increase since 2001 (Robers et al., 2014; Zhang, Musu-Gillette, & Oudekerk, 2016). These trends demonstrate that not only have the security measures within U.S. public schools increased since the 1980s, they continue to proliferate and students – along with parents, teachers, and administrators (Addington, 2009) – are aware of these changes.

Although the impetus for the increase in security measures cannot be explained through one single explanation (see generally Hirschfield, 2008; Kupchik, 2010), scholars have noted

that this rise in security has not grown out of escalations in threats to schools (Kupchik, 2016), nor has it grown out of surges in delinquency or victimization, as school violence has steadily declined over the past few decades (Robers et al., 2014). To explain the rise in school security measures, many scholars point to broader trends in crime control within the United States (e.g. Garland, 2001; Hirschfield, 2008), and intensification of teacher, administrator, parent, and politician demand for school security measures (Kupchik et al., 2015), often prompted by concerns over highly publicized school shootings (Addington, 2009). Overall, these bodies of scholarship have clearly demonstrated that there has been a concerted effort at nearly all levels of public schools across the United States to adopt school security measures (U.S. Department of Education Office for Civil Rights, 2014).

Even as schools persist in implementing various types of security measures, research investigating the impact of these policies on actual school safety remains limited and often produces mixed results (e.g., Tanner-Smith et al., 2018). Generally, the research appears to provide little-to-mixed evidence that increased security measures improve actual safety, such as decreases in victimization or violence levels, in school environments (e.g., Fisher et al., 2018a, cf. Servoss, 2014), and the majority of research is cross-sectional which limits the ability to make casual inferences. However, existing research does provide some insight. For example, Gramberg-Rademacker and colleagues (Granberg-Rademacker, Bumgarner, & Johnson, 2007) found that uniforms and cameras were related to lower numbers of sexual attacks, as well as weapons in school. Cameras were also associated with fewer school deaths. On the other hand, additional school counselors did not affect measures of school safety (Granberg-Rademacker et al., 2007). Jennings and colleagues (Jennings, Khey, Maskaly, & Donner, 2011) also found mixed support for the effect of various types of security measures on school safety. Although the presence and number of School Resource Officers was associated with decreases in serious school violence and weapon detection devices decreased general violence, security guards increased the levels of both general and serious violence and other security efforts (i.e., access control, outsider identification, critical incidence plans and practice of these plans) had no bearing on the levels of school violence (see also Tanner-Smith et al., 2018). While examining individual security measures can provide insight into important nuances regarding security measures, it fails to capture the overall approach that schools use in regard to school safety. It is likely that the total number of security measures used within the school capture the broader security atmosphere within the school (e.g., Fisher et al., 2018a; Mowen & Manierre, 2017).

Research also suggests that the 'overuse' of security is not without consequences. It often results in higher rates of arrest among students, especially among schools with school resource officers (Theriot, 2009, see also Wolf, 2014), and lower levels of student extracurricular participation, as well as reduced levels of some forms of parental involvement in schools with security guards (Mowen, 2015; Mowen & Manierre, 2017), irrespective of school delinquency and crime. Although some research shows that increased security use is associated with lower misbehavior (Servoss, 2014), other research has shown the opposite with high security environments tied to increased student victimization (Fisher et al., 2018a). Although there is some work on these important trends regarding actual safety, less attention has been devoted to understanding student and parental perceptions of school safety as they relate to school security measure uses. Given some of the negative

consequences of these effects on students and parents (e.g. Fisher et al., 2018a; Mowen, 2015; Theriot, 2009), the use of school security measures may significantly relate to perceptions of safety.

Perceptions of School Safety

As Thibodeaux (2013) notes, student perceptions of school violence and consequently, the issue of assessments of safety within schools more broadly, have become an increasingly central focus of both policy makers and researchers over the past two decades. Prior work shows that student perceptions of safety have important outcomes for youth; students who think their school is safe tend to report increased levels of academic success (Loukas, Roalson, & Herrera, 2010), lower levels of delinquency (Rodney, Johnson, & Srivastava, 2005), and better attendance within school (Barrett, Jennings, & Lynch, 2012). Students who feel safe in school tend to perform better in school and attend school more consistently (Ripski & Gregory, 2009). Prior work also shows that schools that are perceived as safe tend to have students who are more strongly attached to the school (Rodney et al., 2005), exhibit higher levels of parental involvement (Peterson & Skiba, 2001), and report lower levels of delinquency and victimization among their student body (Loukas et al., 2010).

Though student perceptions of safety relate to a whole host of positive outcomes and benefits, prior work also demonstrates that opinions regarding school safety vary by student and school, and are influenced by community factors. For example, male and female students tend to view school safety differently (Hong & Eamon, 2012; Varjas, Henrich, & Meyers, 2009). African-American and Hispanic students tend to feel more unsafe within the classroom, while White and Asian-American students feel more unsafe in the hallways (Lacoe, 2015). These findings reflect the fact that African-American students are more likely than Whites or Asian-American students to stay home from school because they feel unsafe and that racial tension, as reported by peers, at the school results in feeling less safe (Lacoe, 2015). Gang presence at school also results in students feeling less safe or worrying about crime (Alverez & Bachman, 1997; Schreck & Miller, 2003).

Differences between teacher and student perceptions of school safety also exist, with teachers tending to rate schools safer than students (see also Booren, Handy, & Power, 2011). However, Hernandez and colleagues (Hernandez, Floden, & Bosworth, 2010) found that although students and teachers shared comparable perceptions of safety, these did not necessarily correspond with law enforcement reports. Other aspects of the school environment such as teaching involvement and school rule enforcement increased opinions of safety, while the reverse effect was evident for observed weapon carrying, actual or perceived levels of victimization, larger class sizes, and school disorder (Hong & Eamon, 2012; Melde & Esbensen, 2009; Perumean-Chaney & Sutton, 2013). Not surprisingly, from a community or neighborhood perspective, students who report feeling safe in their community and who do not live in the central part of a city, tend to also report feeling safe in their school (Hong & Eamon, 2012; Kitsantas, Ware, & Martinez-Arias, 2004; Perumean-Chaney & Sutton, 2013).

Though these differences and trends are important, as Bracy (2011) notes, "Research on students' perceptions of school rules and security measures is scant yet important, particularly in light of the changes that public schools have undergone over the past few decades" (p. 368). Although research in this area has grown, findings on the relationship between school security and perceptions of safety are still relatively underdeveloped and mixed. Further, existing research tends to focus exclusively on student perceptions of safety, while parental assessments of school safety remain relatively nonexistent (see Mowen, 2015). Research that does exist presents some mixed findings in regard to the relationship between student perceptions and security (e.g., Cuellar, 2018). Bracy's (2011) results from an ethnographic study of two schools exemplifies the discordance found within the literature. On one hand, Bracy (2011) found that students tended to view their schools as relatively safe, at the same time, some students reported feeling powerless due to the harshness of school punishment and the use of security (Bracy, 2011).

Mixed findings are found in other research too, especially as it relates to the role of security and/or police officers. Johnson and colleagues (Johnson, Bottiani, Waasdorp, & Bradshaw, 2018) found that security officers were related to increased perceptions of safety. Similar findings were mirrored in Kupchik and Ellis' (2008) work which showed that students in schools that had security guards – and not police officers or school resource officers – saw school rules more positively. In contrast, Brown (2006) found that both police officers and security guards affected perceptions of safety positively for students, while McDevitt and Panniello (2005) found that if students felt positively about SROs, they felt safer at school. Perumean-Chaney and Sutton (2013) discovered that security guards did not change views regarding safety.

Other research findings suggest that many of the most common safety actions taken by schools have either a negative or no effect on students' perceptions of safety within the school environment. For example, metal detectors, security cameras, and the number of visible physical security measures tend to negatively affect perceptions of safety (Bachman, Randolph, & Brown, 2011; Gastic, 2011; Johnson et al., 2018; Perumean-Chaney & Sutton, 2013). Other studies (Kitsantas et al., 2004; Perumean-Chaney & Sutton, 2013) have examined the relationship between "school safety actions" (i.e., guards, security cameras, dress codes, bars/locked doors, visitor passes, restroom restrictions, locker checks, hall passes, and teacher supervision) on perceptions of safety and substance use. Findings show that safety actions by the school did not appear to influence student perceptions of school safety. On the other hand, Connell (2016) found that as knowledge of the number of safety measures increased, so did the students' feelings of safety. Due to the null relationship between a large number of common types of security measures and student perceptions of school safety, Kitsantas and colleagues (Kitsantas et al., 2004) suggest that schools should re-evaluate the types of "safety actions" used to enhance the feeling of safety within the school.

Similar null results emerged in a study examining the effects of zero tolerance and student perceptions of safety. McNeal and Dunbar (2010) found that zero tolerance punishment policies – and the security measures that often go hand-in-hand with zero tolerance and punitive school punishment – did not increase students' perceptions of safety within the

school. Through qualitative interviews with 90 students located in one urban high school in the Midwest, they found that students did not feel safe due, in part, to faulty security equipment and inadequate security staff. Further, although this school had security guards and a number of security instruments – such as metal detectors – students were concerned about the lack of consistency in policy enforcement. Like the findings of Bracy (2011) and Kupchik and Ellis (2008) and others, the findings from McNeal and Dunbar (2010) suggest that school security use has a direct effect, but yet perhaps not positive impact, on student perceptions of safety.

Although there seems to be broad support for enhancements in school security from politicians, communities, parents, and law enforcement (Kupchik et al., 2015), little evidence to suggest that increases in school security lead to either real or increased perceptions of safety among students exists (e.g. Bracy, 2011; McNeal & Dunbar, 2010). In fact, evidence seems to suggest that school security use and policies may result in decreases in student perceptions of the safety of the school environment. For example, Mukherjee and Karpatkin (2007) demonstrate that the use of police in New York public schools creates an atmosphere in which students feel unfairly treated by police. Further, other work indicates that families and parents may also perceive higher security school environments as less welcoming than lower security environments and that parents are less involved in schools with security guards (Kupchik, 2016; Mowen, 2015). This research proposes that not only could school security have an impact on student perceptions of school safety, but also suggests that certain types of security measures also affects parents' perceptions. Because parents are often the advocates of policies encouraging security measures in order to positively shape safety on school campuses, they represent an important stakeholder. Yet, existing scholarship has yet to assess the relationship between the number of school security measures and parental and student perceptions of safety within a national context.

Current Study

Prior research provides mixed evidence on the relationship between school security and student perceptions of safety. As increases in school security are often touted by many teachers, school administrators, politicians and the public as improving student safety (Kupchik et al., 2015), this gap in the literature is important to address, especially given that prior research suggests that the relationship between the use of school security measures and student outcomes is tenuous at best (e.g. Bracy, 2011; Kupchik et al., 2015; Mowen & Manierre, 2017; Phaneuf, 2009). The current project seeks to explore how this increase in the total number of school security measures influences both student and parent assessments of school safety. Specifically, we hypothesize that students, as well as parents with children in schools with higher levels of school security, will actually report lower levels of perceived safety.

Methods

Data

Data for this project came from wave one of the Educational Longitudinal Study (ELS: 2002, National Center for Education Statistics, 2002) collected in 2002 when students were

in the 10th grade. The ELS: 2002 data were collected by the Research Triangle Institute for the National Center for Education Statistics of the United States Department of Education. The overall objective of the ELS: 2002 project was "…to monitor the transition of a national sample of young people as they progress from 10th grade through high school and on to postsecondary education and/or the world of work" (National Center for Education Statistics, 2002, p.7). The primary unit of analysis for these data are 10th grade students in the United States, but data were also collected from parents, school administrators, teachers, librarians, and the ELS surveyors on site. Of those selected for the survey, a total of 15,362 students completed the questionnaire, which also included 13,488 parents, 7135 teachers, 743 principals, and 718 librarians, nested within 750 schools across the U.S.

Dependent Variables: Perceptions of Safety (Level 1)

The ELS: 2002 contains multiple measures of perceptions of safety collected from students and a measure of safety collected from parents. Students were asked two questions concerning their perceptions of safety within the school, and students could choose between a four item scale (strongly agree, agree, disagree, strongly disagree). Responses were coded such that higher scores indicated more positive perceptions of safety. Specifically, these questions asked students: (1) if they felt safe at the school (mean = 3.27, standard deviation = .724), and (2) if they believed the school was free of gangs (mean = 2.94, standard deviation = .903). We use each measure as a dependent variable because general perceptions of safety and perceptions of gangs represent distinct theoretical concepts of safety (e.g. Alverez & Bachman, 1997; Lacoe, 2015). Second, in addition to student responses, parents were also asked – along the same four point scale – how safe they considered their child's school. This measure has a mean of 3.06, standard deviation of .634, and ranges from 1 to 4.

Independent Variable: Security Measures (Level 2)

The key independent variables used in this analysis are school security measures. School administrators were asked to complete a questionnaire concerning security procedures in place at the school including: controlled access to the building, controlled access to the grounds, closed campus for lunch, use of metal detectors on students, use of metal detecting wands on students, random use of drug sniffing dogs, random sweeps for contraband, random drug testing on students, requirement of uniforms, enforcement of a strict dress code, requirement of students to wear IDs, requirement of staff to wear IDs, use of security cameras to monitor students, use of paid security officers, and/or the presence of an emergency button in the classroom. These 15 items were summed to create a count variable representing the total number of security measures used by each school to capture the broader security atmosphere within the school. This count measure has a mean of 5.63, standard deviation of 2.39, and ranges from 0 to 12 (see Table 1). This measure could have ranged from 0 to 15, but no school reported the use of all 15 security measures.

Level 1 Control Variables

Guided by prior research, we control for a number of important dimensions that may impact student perceptions of safety. To account for the influence of sex, a variable representing that the student is female (male contrast) is used. In addition, there may be differences in perceptions of safety by race/ethnicity (e.g. Kupchik & Ellis, 2008; Lacoe, 2015). To

account for this, a series of dummy variables representing whether the student is Black (13.3%), Hispanic (14.5%), Asian-American (9.6%), or Other Race(5.7%), in contrast to White (57.2%) are included.

In addition to sex and race/ethnicity, socioeconomic status of the student represents another control variable. The Educational Longitudinal Survey of 2002 data contain a socioeconomic status composite measure consistent with prior measures used in similar data bases (see Nakao & Treas, 1992). This standardized scale is based on equally weighted measures including the father's/guardian's education, mother's/guardian's education, mother's occupational prestige score, father's occupational prestige score, and total family wealth.

Finally, since it is likely that students who are victimized may perceive their school as less safe than students who are not victimized, a student victimization measure is included. To account for this influence, a scale comprised of eight measures was created. Students were asked to report (yes/no) if they had experienced any of the following within the last year at school: had something stolen; was offered drugs; was threatened; got into a fight; was hit; was forced to do something against their will; had property damaged; or was bullied. This scale has a mean of 1.61, standard deviation of 2.12, ranges from 0 to 8, and has an alpha of .733 (see Table 1).

Level 2 Control Variables

In addition to student (level 1) dimensions, we also control for a host of school (level 2) effects. First, we control for the school type by including a dummy variable representing whether the school is private (public school contrast), as prior work shows there are often key differences in safety between public and private schools (Morgan, 1983). Prior works also find important differences in both in safety and security strategies due to school urbanicity (Hong & Eamon, 2012; Kupchik & Ward, 2014). To account for this, dummy variables representing whether the school is located in either an urban or rural setting (suburban school contrast) were created. This variable could also serve as a proxy for racial/ethnic school composition, as the data does not include this potentially important variable and urban schools tend to reflect more racial/ethnic diversity than those in rural areas.

Student assessments of safety and the use of security may also relate to school size. To account for this influence, we use a seven item measure provided to ELS researchers indicative of school size where one represents schools with less than 100 students, and seven represents schools with more than 799 students. This measure has a mean of 3.48 (indicating the mean size of the school is between 300 and 400 students) and standard deviation of 1.86 (see Table 1). In addition, as school security efforts are often correlated with financial status of the school (see Casella, 2006), we control for the percent of the school receiving free and reduced lunch. This concept is also measured along a seven point scale with one = 0–5% receive free/reduced lunch, and seven = 76% or more receive free and reduced lunch. This measure has a mean of 3.17, and standard deviation of 1.94 (see Table 1).

Since a significant relationship between school security efforts and student perceptions of safety is expected, we control for the overall delinquency within the school as delinquency

may contribute both student perceptions of school safety, as well as the use of security measures. To account for this, the school administrator was asked a series of questions about delinquency within the schools, listed below and measured from 1) happens daily; 2) happens at least once a week; 3) happens at least once a month; 4) happens on occasion; and, 5) never happens. Variables used to construct this measure include how often each of the following is an issue in the school: class cutting, vandalism, use of illegal drugs, use of alcohol, possession of weapons, physical abuse of teachers, student bullying, verbal abuse of teachers, disorder in the classrooms, student disrespect for teachers, gang activity, physical conflicts, and student use of drugs/alcohol. These 13 items were reverse coded such that higher values represent greater frequency of negative behaviors within the school and summed. This composite index has a Cronbach alpha of .852, a mean of 27.4, standard deviation of 5.9 and ranges from 13 to 51 (see Table 1).

In addition, neighborhood dimensions may relate to school security use, whereby schools located in perceived unsafe neighborhoods may be more likely to use security (see Nolan, 2011). To account for this, we rely on an administrator response to a question assessing levels of crime within the neighborhood (1 = very low and 4 = very high).

Missing Data

As with most large scale-quantitative data sets, missing data are present in the ELS: 2002. There are missing data in student, parent, and administrative responses. To account for this, we use multiple imputation in Stata 14SE using chained equations (MICE, or ICE) using all complete variables in the data set (see Azur, Stuart, Frangakis, & Leaf, 2011). To impute data, ICE matches variables with missing data to variables without missing data. Then, using the variance among these measures, ICE generates imputations by performing a series of univariate regressions. Using the results of these chained equations, missing data are imputed on a case-by-case basis using sampling weights using 30 imputations (see Royston & White, 2011; White, Royston, & Wood, 2011). One important consideration when using imputation concerns the decision of whether or not to impute the dependent variable (see Von Hipple, 2007 for an overview). Failure to include the dependent variable in the imputation models artificially reduces the variation between the dependent and independent variables, and thus, researchers may fail to find significant relationships. On the other hand, including cases in which the dependent variable was originally missing in the regression analysis artificially increases the variance between the independent variables and dependent measure and thus, may lead researchers to find significant relationships when none exists. Thus, following the recommendation of Von Hipple (2007), we include the dependent variables (student perceptions of safety) in the imputation analysis (e.g. to create the imputed data), but drop all cases in which the dependent variables were originally missing from the regression analysis. With the use of imputation, the total sample size encompasses 14,040 students nested in 748 schools across the United States.

Analytic Strategy

Because of the sampling strategy used by ELS: 2002 in which students are nested in schools, the data violate the assumption of independence made by other forms of regression such as Ordinary Least Squares. That is, students within schools may be more similar than students

between schools, and therefore, present a correlated error term (see Raudenbush & Bryk, 2002). This effect, often referred to as a nesting or clustering, requires using multi-level modeling in which a random intercept is introduced that accounts for this clustering effect (Rabe-Hesketh & Skrondal, 2012). Therefore, we use multi-level modeling in Stata 14SE by nesting students within schools (Rabe-Hesketh & Skrondal, 2012). This approach is a mixed-effects linear regression model with a random intercept included for each school.

As student and parental perceptions of safety are measured along a four point scale, and the combined student perception of safety scale is measured along an eight point scale, we used mixed-effects regression models. We note that an additional way to model the data would be a multi-level ordered logistic regression model; however, multilevel ordered logistic regression is not supported with multiple-imputed data. Therefore, we treat each dependent variable as a continuous measure to fit a mixed effects regression model (see also Mowen, 2015).

Results

The results of the multi-level regression analysis, including effect sizes, on student perceptions of safety are shown in Table 2.[1] The results of the first model examining general student perceptions of safety within the school reveal that schools with greater counts of security measures have students who report significantly lower levels of perceived school safety, net the effects of the other variables in the model.

Females, relative to males, report lower perceptions on the school safety measure. Hispanic and Asian-American students also score lower on perceptions of school safety relative to White students. Black students and other race/ethnicity students, on the other hand, report no difference in perceptions of school safety from White students. Age relates to lower perceptions of safety and victimization is negatively related to perceptions of safety. On the other hand, youth from higher SES backgrounds report significantly higher perceptions of safety.

Next, we examined the influence of the independent variables on student perceptions of gang-free schools. Positive coefficients show increased perceptions that the school is gang-free, while negative coefficients indicate that a student reports that the school is not gang-free. Results reveal that the number of security measures used within the school is not significantly related to student perceptions of gang presence within school.

Turning to results of the models, findings reveal that females, compared to males, are significantly more likely to agree that the school is gang-free. In addition, students who report higher levels of victimization are significantly less likely to believe that the school is gang-free. Unlike the prior analysis, results reveal no significant race or social class effects. Turning to school effects, results show that students in private schools and students in rural schools are far more likely than their counterparts to report that the school is gang-free.

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[1]Although a number of the effect sizes for some of these relationships are small, the results of each analysis remained substantively identical across a widerange of bootstrapped samples in both imputed and non-imputed data demonstrating strong stability in the findings.

Similar to the previous model it is, perhaps, unsurprising that students attending schools in higher crime neighborhoods, and students in schools with greater levels of delinquency, are significantly less likely to report that the school is gang-free. Next, we turn to parental perceptions of safety, shown in Table 3.

Results from the multilevel regression model predicting parental perceptions of safety mirror those of the students showing that parents perceive less safe environments for their child in schools with higher counts of security measures (See Table 3). Results show that more school security measures relate to lower parental perceptions of safety. Similar to the first analysis, results also indicate that a parent with a female student, compared to a parent with a male student, perceives significantly lower levels of safety, net the effect of the other covariates within the model. Although Asian-American parents, compared to White parents, report higher levels of perceived safety, we do not observe other differences in parental perceptions of safety by race or ethnicity. In addition, parents with a child who reports higher levels of victimization demonstrate lower levels of perceived safety. On the other hand, parents with higher socioeconomic status report higher levels of perceived safety.

Turning to the school level factors, parents with a child in private school, compared to parents with a child in public school, report significantly greater levels of perceived safety. In addition, parents with a child in a rural school—relative to a parent with a child in a suburban school—describe higher levels of perceived safety. Parents with a child that attends school in a higher crime area, a school with greater levels of delinquency, a smaller school, or a school with higher proportions of students who receive free and/or reduced lunch report significantly lower levels of perceived safety relative to their counterparts.

Discussion and Conclusion

In the wake of increased concern about students' safety over the last several decades, amplification in the number of security measures within schools has been touted by teachers, administrators, politicians, parents, and the public as necessary to improve safety within the learning environment (Addington, 2009; Kupchik et al., 2015). Understanding the effects of these changes is important. As Casella (2006) demonstrates, many schools in the U.S. now resemble a pseudo-branch of national security, as they use many of the same "weapons" as police departments and branches of the military to maintain a safe environment. Armed personnel, including teachers, metal detectors, x-ray machines, surveillance equipment, and the use of canines are all representative of high security environments and policing strategies. Although politicians and members of the public alike may call for increases in school security and safety measures (Addington, 2009), prior academic scholarship suggests enhancements in school security may present negative outcomes for students (Kupchik, 2010) and parents (Mowen, 2015).

As the calls for more school security increase, especially in the wake of yet more school shootings, this research sought to examine whether these increased security measures influenced students' and parents' feelings of safety within the school environment. Higher numbers of security measures did not positively influence perceptions of safety for either parents or students. In fact, students in schools with more security measures in place felt less

safe, even when controlling for elements that would generally diminish feelings of safety like victimization, increased delinquency, and neighborhood crime rates. Furthermore, results demonstrated similar results across gender, socioeconomic status, and victimization in relation to various assessments of safety by parents and students with females and students who are victimized tending to report lower levels of perceived safety. On the other hand, students from higher socioeconomic status backgrounds reported more positive opinions of safety across each model. In addition, students or parents with students in private schools relative to those in public schools, reported more positive feelings of safety. Although mixed, the findings tended to show that the number of school security measures relate to lower student and parental perceptions of general safety, but not assessments of gang presence, indicating that perhaps these measures are tapping into different constructs of well-being.

Unfortunately, the unintended consequence of enhancing security measures is that it might create the impression that a need for more security exists, indicating that the school is unsafe when in fact it may not be. This could result in an increase in fear of crime (Ferraro, 1995) and could negatively impact students' social and educational development, as well as perpetuate a never-ending loop of more and more severe security policies based on parents', schools', and community advocacy to improve the safety of the school environments (see also Tanner-Smith et al., 2018). Future research needs to more fully explore the reasons behind "why" increased security measures leads to perceptions of decreased safety for us to completely understand this relationship. Additionally, without addressing those elements that also contribute to feelings of being unsafe such as victimization, neighborhood crime levels, and school delinquency, increasing security measures will likely not be successful in improving students' or parents' feelings of safety.

One of the limitations of this study and others is the lack of continuity in measuring different types of security measures. Research in this area rarely makes a distinction between various levels of security and this might matter significantly. For example, dress codes might be seen as very different from metal detectors. Perumean-Chaney & Sutton (2013) did in fact find that non-physical security measures such as hall passes, visitor check in, dress code, and campus limitations did not affect perceptions of safety, while physical types such as officers, metal detectors, cameras, and bars/locked doors did. However, without further research and standardization, delineating security measures into various levels would be somewhat arbitrary and thus we used a count or the total number of security measures present in the school environment, thus encompassing all kinds of security. Just as there may be a difference between dress codes and metal detectors, having five versus 15 different security measures in place might impact individual's perceptions of safety. Thus, utilizing a count instead of looking at the independent impact of specific security measures allows for examining the broader security environment within schools and furthers our knowledge regarding the complex relationship between school security measures and perceptions of safety.

Given the increased national conversation about school safety and security recently (e.g. Addington, 2009; Kupchik et al., 2015), another possible limitation might be that data from 2002 does not fully capture the effect of school security on student perceptions in the

contemporary United States. For example, Kupchik and colleagues (Kupchik et al., 2015) found that following the school shooting at Newtown, CT, members of the general public, politicians, and teachers alike called for increased security in schools across the U.S. On the other hand, there has been some movement recently to decrease the role and scope of school security – especially SROs – in schools (see Intergovernmental Agreement, 2013). This demonstrates that much has happened in terms of the national debate about school security since the ELS data were originally collected and reflects the call for consideration of context in relationship to this type of research (Connell, 2016). As a result, some have argued that perhaps in light of these events, students may becoming increasingly desensitized to school security measures as they become more commonplace (Bracy, 2011; Connell, 2016). Unfortunately, even though this data does reflect the historical setting after another high profile school shooting, Columbine, the results of this study do not bear out this line of thinking – even if security measures have become "normalized," they still impact how safe students feel at school.

Finally, another limitation of this study concerns the cross-sectional data. While the ELS: 2002 is a longitudinal dataset, school security measures – as well as perceptions of safety – were only assessed at wave one. This limits the ability of this study to make casual conclusions. For example, a competing explanation to our results could be that students perceptions of safety are due to a real lack of safety and the use of security is also due to a real lack of safety. Yet, in a recent longitudinal analysis, Fisher et al. (2018) found that youth in schools with more security measures actually experienced more victimization than schools with less security measures over time irrespective of levels of crime within the school. The authors suggest that school security measures may deteriorate the school climate and allow for offending to occur (see also Fisher et al., 2018b). Thus, while we are unable to make firm claims regarding our results due to the cross-sectional nature of our data, some evidence that school security measures may be responsible for the findings in our study do exist.

Outside of the limitations noted above, results of this study carry some considerations for policy. Overall, findings from this study suggest that more security measures may not be the answer to improving perceptions of safety within the school environment. While actual safety on school grounds is important to assess, it is equally important to examine students' perceptions of safety, as prior work notes positive effects on educational and social outcomes for youth when students feel safe within the school environment (Barrett et al., 2012; Loukas et al., 2010; Peterson & Skiba, 2001; Ripski & Gregory, 2009; Rodney et al., 2005). Even with the important note that our study is cross-sectional and the relative small effect size of security measures on perceptions of safety, our findings certainly demonstrate that increased security use does not relate to positive evaluations of student safety.

In addition to student outcomes, findings from this study also highlight the role of parents. That is, parents, as important stakeholders, represent a strong influence on school policy and they often advocate for increased security. Research has shown that parent advocacy for more security is not necessarily based on measures of actual safety, but instead centered on their perceptions of how safe their child is within the school environment (e.g., Addington, 2009). Results of our study suggest that more security measures may not be an appropriate

response to parental concerns over safety. Findings from this study highlight this as an interesting juxtaposition. That is, parents – who tend to form the tax base for schools – advocate for increased security (Kupchik et al., 2015). But our findings highlight that security measures do not necessarily guarantee that perceptions of safety among parents improve. In fact, increased security might relate to decreased parental perceptions of safety. While our cross-sectional analysis limits our ability to make casual claims, it is possible that the very group that advocates for increased security (parents) to improve safety actually experience a decrease in their perceptions of safety as a result. It is possible that this cycle is cyclical; parents may lobby for increased security and subsidize it via taxes, experience a decrease in perceptions of safety due to more security, and, consequently, seek more security measures (see a similar argument on "responsive responses" by Kupchik et al., 2015). As prior work has shown that security measures can significantly impact parents (e.g. Mowen, 2017), future research should explore how the implementation of security relates to parental perceptions of safety over time and across diverse populations.

This research just begins to scratch the surface regarding the relationship between the amount of security measures and perceptions of safety. However, it begins to call into question the feasibility of many of the security measures that schools have added to their campuses. Children spend a considerably amount of their day within the school environment and parents and administrators alike want to ensure that they are safe during this time. However, the unintended consequences of these types of policies meant to make students and parents feel safer might result in a negative impact for everyone within the school walls. Thus, to fully understand this relationship, more research exploring the outcomes and consequences of security measures on the school environment and those within it is needed to ensure the actual safety and perceived well-being of all.

Acknowledgments

Biography

Dr. Thomas J. Mowen is an Assistant Professor in the Department of Sociology at Bowling Green State University. His research examines the effect of punishment on youth and family outcomes and the role of family within the process of reentry from prison. Tom's recent research has appeared in Criminology, Journal of *Quantitative Criminology, and Journal of Research in Crime and Delinquency*.

Dr. Adrienne Freng is a Professor and Chair of the Department of Criminal Justice and Sociology at the University of Wyoming. Her research and teaching focuses on juvenile delinquency, gangs, ethics, and race and crime issues. Dr. Freng's publication record includes numerous articles and invited chapters dealing with program evaluation, methodological issues, gang membership, theory testing, juvenile delinquency, as well as a book examining youth violence.

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Table 1

Educational longitudinal survey: 2002 sample characteristics (n = 14,040 10th grade students nested in 748 schools)

Variable description	Mean	Std. Dev.	Range
Perceptions of safety (Level 1)			
Perception of safety within the school	3.27	0.724	1–4
Perception of gang-free school	2.94	0.903	1–4
Parental perception of school safety	3.06	0.634	1–4
Student demographics (Level 1)			
Female student	0.502	0.500	0, 1
Male student	0.498	0.499	0, 1
White student	0.572	0.351	0, 1
Black student	0.133	0.339	0, 1
Hispanic student	0.145	0.353	0, 1
Asian-American student	0.096	0.294	0, 1
Age	16.39	0.611	14–19
Other race student	0.057	0.231	0, 1
Socioeconomic status	0.039	0.721	−2.11–1.82
Victimization	1.61	2.12	0–8
School characteristics (Level 2)			
Count of security measures	5.63	2.39	0–12
Public school	0.788	0.409	0, 1
Private school	0.212	0.409	0, 1
Suburban school	0.479	0.499	0, 1
Urban school	0.339	0.473	0, 1
Rural school	0.182	0.386	0, 1
Neighborhood Crime levels	1.53	0.859	1–4
School delinquency	27.4	5.90	13–51
School size	3.48	1.86	1–7
% Free/reduced lunch	3.17	1.94	1–7

Table 2

Results of multilevel regression on student perceptions of safety ($n = 14,040$ 10th grade nested in 748 schools)

Variable	Perception of safety				Perception of gang-free school			
	β	Std. Err.	Lower CI	Upper CI	β	Std. Err.	Lower CI	Upper CI
Count of security measures	−0.024	0.008**	−0.041	−0.007	−0.015	0.013	−0.041	0.011
Student-level								
Female student	−0.032	0.005***	−0.043	−0.020	0.029	0.005***	0.009	0.041
Black student	−0.014	0.007	−0.029	0.001	0.015	0.008	−0.002	0.032
Hispanic student	−0.021	0.007***	−0.035	−0.006	−0.005	0.008	−0.022	0.012
Asian student	−0.037	0.007***	−0.051	−0.023	−0.010	0.008	−0.026	0.006
Other race student	−0.002	0.006	−0.014	0.011	−0.005	0.007	−0.019	0.008
Age	−0.014	0.006*	−0.026	−0.002	0.006	0.007	−0.008	0.019
SES	0.043	0.006***	0.030	0.056	0.002	0.008	−0.013	0.017
Victimization	−0.192	0.005***	−0.203	−0.180	−0.180	0.006***	−0.193	−0.167
School-level								
Private school	0.075	0.010***	0.055	0.096	0.105	0.017***	0.070	0.140
Urban school	−0.002	0.009	−0.019	0.015	−0.006	0.015	−0.009	0.004
Rural school	0.018	0.007*	0.002	0.034	0.029	0.013*	0.002	0.055
Neighborhood crime levels	−0.030	0.009***	−0.048	−0.012	−0.045	0.016***	−0.078	−0.013
School delinquency	−0.041	0.011***	−0.063	−0.019	−0.044	0.016**	−0.076	−0.012
School size	−0.008	0.011	−0.029	0.013	−0.233	0.017***	−0.268	−0.199
% Free/reduced lunch	−0.030	0.010**	−0.050	−0.010	−0.099	0.017***	−0.133	−0.065
Intercept	3.244	0.007			2.881	0.013		
Standard deviation (Intercept)	0.129	0.008			0.299	0.01		
Standard deviation (Residual)	0.657	0.004			0.723	0.005		
Intra-class correlation	0.128				0.116			

β = standardized coefficient, Lower CI = lower bound 95% confidence interval, Upper CI = upper bound 95% confidence interval

***
$p < .001$,

**
$p < .01$,

*
$p < .05$

Table 3

Results of multilevel regression on parental perceptions of safety ($n = 14{,}040$ students nested in 748 schools)

Variable	β	Std. Err.	Lower CI	Upper CI
Count of security measures	−0.017	0.008[*]	−0.034	−0.002
Student-level				
Female student	−0.022	0.005[***]	−0.034	−0.011
Black student	0.000	0.007	−0.014	0.014
Hispanic student	−0.002	0.007	−0.016	0.012
Asian-American student	0.012	0.008[*]	0.004	0.028
Other race student	−0.003	0.006	−0.015	0.010
SES	0.056	0.006[***]	0.043	0.068
Age	−0.009	0.005[***]	−0.020	0.002
Victimization	−0.055	0.006[***]	−0.068	−0.043
School-level				
Private school	0.130	0.009[***]	0.111	0.148
Urban school	−0.009	0.008	−0.024	0.006
Rural school	0.017	0.006[*]	0.003	0.030
Neighborhood crime levels	−0.018	0.008[**]	−0.034	−0.002
School delinquency	−0.038	0.009[***]	−0.056	−0.019
School size	−0.048	0.009[***]	−0.067	−0.030
% Free/reduced lunch	−0.039	0.009[***]	−0.058	−0.021
Intercept	3.006	0.007		
Standard deviation (Intercept)	0.097	0.008		
Standard deviation (Residual)	0.567	0.004		
Intra-class correlation	0.031			

β = standardized coefficient, Lower CI = lower bound 95% confidence interval, Upper CI = upper bound 95% confidence interval

[***] $p < .001$,

[**] $p < .01$,

[*] $p < .05$