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# Students' Feelings of Safety, Exposure to Violence and Victimization, and Authoritative School Climate

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**Abstract** Although many students feel unsafe at school, few malleable factors have been identified to increase students' feelings of safety. Drawing on criminological behavior control theories, this study posits authoritative school climate as one such factor. With data from two nationally representative datasets, this study uses path analysis to examine the relationship between authoritative school climate and feelings of safety, as well as the extent to which this relation is explained by exposure to violence and victimization. Across both datasets, a more authoritative school climate was associated with increased feelings of safety at school. Both models also indicated that this relationship was explained in part by reduced exposure to violence and victimization, although the strength of this indirect effect varied across models. These findings suggest that strengthening students' relationships with adults and increasing the fairness and consistency of rules in the school may both reduce exposure to violence and victimization and help students feel safer at school.

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Schools are one of the major socializing institutions for adolescents in the United States (Eccles & Roeser, 2011) and should function as places where students feel safe, welcome, and able to develop healthy patterns of behavior. However, national estimates from 2013 indicate that hundreds of thousands of students ages 12 to 18 reported that they sometimes or most of the time felt afraid that someone would attack or harm them at school (Robers, Zhang, Morgan, & Musu-Gillette, 2015). Although feeling unsafe at school is an important outcome on its own, it is also associated with other policy-relevant outcomes such as school attendance and academic achievement. In 2013, approximately half a million students nationwide avoided school activities or classes because they thought someone might attack or harm them, therefore missing key instructional time or other school activities because they did not feel safe (Robers et al., 2015). Additionally, increased feelings of safety at school are associated with more positive academic and psychosocial outcomes for students (Akiba, 2010; Lacoe, 2013; Nijs et al., 2014).

However, little is known about malleable school-level factors that might help students feel safer at school. In searching for ways to promote physical and emotional safety in schools, policymakers and practitioners have increasingly focused on how school climate might relate to violence, victimization, and bullying in schools (Espelage, Low, & Jimerson, 2014; Gregory et al., 2010; Pellegrini, 2002; Wang et al., 2014). School climate may be defined as "patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013, p. 2). Authoritative school climate theory is one framework for conceptualizing school climate that has received increased attention in recent years. An extension of the literature on authoritative parenting (Baumrind, 1971), an authoritative school climate is characterized by both high structure and support (Gregory & Cornell, 2009; Pellerin, 2005). Evidence suggests schools with a more authoritative school climates tend to have lower rates of victimization (Gerlinger & Wo, 2014; Gregory et al., 2010; Gregory, Cornell, & Fan, 2012), suggesting that students may feel safer in schools they perceive as having a more authoritative school climate; however, researchers have not yet examined this relation. The current study therefore seeks to extend the current body of literature on school climate by examining the relationship between students' perceptions of an authoritative school climate and their feelings of safety at school. We further seek to examine whether this association can be explained by a reduction in exposure to violence and victimization. Finally, this study replicates all analyses across two different datasets that use different samples and measure the constructs of interest in slightly different ways, thereby adding to the validity and generalizability of the findings.

## Authoritative School Climate Theory

Authoritative school climate theory has its origins in a rich parenting literature examining the relationship between parenting style and children's outcomes. In early research on parenting styles, Baumrind (1971) differentiated among several distinct clusters of behavior, including the constructs of discipline, obedience, order, acceptance, autonomy, and rejection. Authoritative parents direct children's behavior through

rational choices and action. These parents have a "give and take" with their children, share reasoning behind rules, and value autonomy and self-will. This style of parenting is differentiated from, on the one hand, authoritarian parents who value obedience and, on the other, permissive parents who are overly accepting and non-punitive. Baumrind (1971) found that authoritative parents tend to have children who are more competent and demonstrate more responsible behavior than children primarily raised using other parenting styles. These findings have been substantiated over multiple studies suggesting that authoritative parenting is associated with improved student achievement, fewer behavior problems, and more school engagement in those families that use that style (Gray & Steinberg, 1999; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992).

Several foundational papers that linked school climate research to the parenting literature defined authoritative schools as having both a high demand and high responsiveness (Gill, Ashton, & Algina, 2004; Pellerin, 2005). Gregory and Cornell (2009) suggested that schools should move towards an authoritative approach to discipline, one with high levels of both structure and support. Structure refers to discipline that is strict, fair, and consistent. This discipline occurs in a milieu where students know behavioral expectations and consequences and agree that consequences are fair. Support is evident in schools where students have at least one adult they trust within the school, are willing to seek help from an adult in the school, and feel their voices are heard in the school (Gregory & Cornell, 2009). Schools that demonstrate high levels of both support and structure are conceptualized as having a more authoritative school climate.

These dimensions of structure and support map closely onto criminological theories. For example, procedural justice theory indicates that people are most likely to follow rules that they perceive to be fair and consistently enforced (Tyler, 1990). This effect should be expected to extend into school settings; students who perceive that school rules are fair and consistently enforced are more likely to obey those rules and to be around other students who will obey those rules (Cook, Gottfredson, & Na, 2010; Gottfredson, 2001). Therefore, students are less likely to encounter negative experiences such as violence and victimization and have fewer reasons to feel unsafe in school. Within the context of authoritative school climate, schools where the rules are perceived as fair and consistently enforced are considered to have a high level of structure. Therefore, procedural justice theory would suggest that schools with a more authoritative school climate should have lower levels of student misbehavior because students will tend to view school rules as fair and consistently enforced. Similarly, Hirschi's (1969) social control theory suggests that adolescents are more likely to conform to traditional social norms when they are bonded to the social order. One way for this bonding to occur in schools is through developing positive relationships with adults in the school. Schools characterized by positive relationships between students and adults are expected to reduce students' engagement in problem behaviors and limit their risk of being exposed to violence and victimization, which in turn is expected to protect students from feeling unsafe at school. Together, these theories suggest that schools that foster a more authoritative school climate are likely to have lower levels of violence and victimization, which is expected to be associated with increased feelings of safety.

## Conceptualizing and Predicting Feelings of Safety at School

There is meaningful variation in how researchers operationally define perceptions of safety and there is no consensus on how best to measure it (Farrall, Bannister, Ditton, & Gilchrist, 1997; Gray, Jackson, & Farrall 2008). This variation is due in part to the lack of consistency and specificity in defining *safety* as construct (Ferraro & Lagrange, 1987). In particular, perceptions of safety are often confounded with perceived vulnerability or tolerance to contextual risk factors. A child may well feel unsafe at school but these evaluations may be consistent with a general tendency of feeling afraid regardless of the circumstance; consequently, these perceptions of the school as unsafe would have little to do with exposure to a dangerous object or a threatening encounter. Indeed, feelings of safety is a multidimensional construct (Ferraro & Lagrange, 1987; Fisher, Nation, Nixon, and McIlroy 2016) that encompasses a range of reactions to one's safety and includes judgments (e.g., cognitive appraisals about the severity or prevalence of crime), values (e.g., concern about crime), and emotions (e.g., feelings of fear). This study focuses primarily on the emotional dimension of perceptions of safety, which we refer to as *feelings of safety* throughout the manuscript. For the purposes of this study, we define feelings of safety as emotional reactions to relevant contextual factors that allow for a personal sense of security at school. We note here that our construct is actually broader than feelings of safety per se and indexes perceptions of safety that may or may not translate into an affective or behavioral response. For instance, students may feel unsafe at school even if they have not been exposed to serious acts of violence, but have experienced subtler episodes of violence including bullying, harassment, intimidation, and disrespect (Heaviside, Rowand, Williams, & Farris, 1998; Vossekuil, 2002). Similarly, witnessing incidents such as shouting matches between students and teachers and rumors spreading through the halls may shape students' feelings of safety in school (Steinberg, Allensworth, & Johnson, 2011).

A few trends have emerged in a growing body of research examining predictors of feelings of safety at school. For example, several studies have found that exposure to violence and victimization—whether experiencing, witnessing, or perpetrating it—predicted feeling less safe at school. Students who have been victimized tend to have lower feelings of safety at school (Bachman, Gunter, & Bakken, 2011; Bachman, Randolph, & Brown, 2011). In addition, witnessing others being victimized also predicts feeling less safe at school. For instance, a sample of elementary school students who had witnessed low-level aggression reported feeling less safe at school than their peers (Boxer, Edwards-Leeper, Goldstein, Musher-Eizenman, & Dubow, 2003). Finally, students who are the perpetrators of victimization also were found to feel less safe at school; middle and high school students who had engaged in bullying behaviors against other students perceived lower levels of safety at school relative to their peers (Goldweber, Waasdorp, & Bradshaw, 2013).

Many contemporary theoretical models concerning the prediction and prevention of adolescent violence posit that various dimensions of school climate are related to perception of safety, with some even considering perceived safety another core element of school climate (Hawkins et al., 1998; Hong & Espelage, 2012; Roland & Galloway, 2002; Wang, Berry, & Swearer, 2013; Yoon, Barton, & Taiariol, 2004). Several studies have found a relationship between feelings of safety and various measures and indicators of school climate. For instance, connectedness to school life was associated with

increased feelings of safety in the presence of both benign and extreme threats of violence (Skiba et al., 2004; Skiba, Simmons, Peterson, & Forde, 2006). Additionally, a recent study of Chicago Public Schools found that the quality of relationships between students and staff, staff and parents, and among staff members themselves was predictive of greater feelings of safety among students (Steinberg et al., 2011), suggesting that—consistent with the authoritative school climate model—interpersonal relationships may be key in fostering feelings of safety in schools. To date, however, research has not examined the relation between authoritative school climate as indicated by high levels of structure and support and students' feelings of safety at school.

## Outcomes Associated with an Authoritative School Climate

The few studies that have empirically examined outcomes associated with authoritative school climate have consistently found that schools with a more authoritative school climate have improved outcomes at the student-, teacher-, and school-level. At the student-level, authoritative school climate is associated with reduced victimization and risk-taking behaviors. For instance, a national sample of secondary students who perceived higher levels of authoritative school climate were less likely to report experiencing verbal, physical, and relational bullying (Gerlinger & Wo, 2014). Similarly, Cornell and Huang (2016) found that students attending schools with authoritative school climates also engaged in less risky behavior such as drug use, suicide ideation, gang involvement, and weapon carrying. Authoritative school climate has also been linked with improvement in academic outcomes such as engagement, grades, and educational aspirations (Cornell, Shukla, & Konold, 2016). At the teacher level, a more authoritative school climate has been linked with decreased victimization (Gregory et al., 2012) and increased feelings of safety and job satisfaction (Berg & Cornell, 2016).

At the school level, authoritative school climate has been found to be associated with rates of behavioral infractions and patterns of school completion. Gregory et al. (2010), using a statewide sample of high schools in Virginia, found that consistent school discipline and availability of caring adults were associated with lower rates of bullying and victimization. Similarly, findings from studies of both high schools (Gregory et al., 2010) and middle schools (Cornell, Shukla, & Konold, 2015) indicated that schools with more authoritative school climates had lower rates of teasing and bullying behavior. Related research found that as the proportion of students who perceive their teachers as supportive increases, overall rates of high school non-completion go down (Jia, Konold, & Cornell, 2015). Nevertheless, despite a growing body of research at multiple levels of analysis, the only studies concerned with feelings of safety have examined these patterns at the teacher-level. Consequently, little is known about the relationship between authoritative school climate and students' feelings of safety at school.

## Decreased Victimization as a Pathway toward Increased Feelings of Safety

Research suggests that victimization may be an important factor in understanding the relationship between authoritative school climate and feelings of safety. In particular, an

authoritative school climate may help students feel safer at school by reducing the amount of victimization they experience. For instance, bullying is less likely to occur in spaces where teachers display warmth and responsiveness to children (Olweus, Limber, & Mihalic, 1999). Indeed, findings from a meta-analysis of 153 studies suggest that students' perceptions of respect, fair treatment, and sense of belonging in schools—all important attributes of an authoritative school climate—were inversely related ($r = -.16$) to their reports of experiencing victimization (Cook, Williams, Guerra, Kim, & Sadek, 2010). In addition, victimization may lead to students' feeling unsafe at school. For instance, cross-sectional studies indicate that victimization is associated with feeling less safe at school (Morrison, Furlong, & Smith, 1994), and this association holds across gender, race, and age (Bachman, Gunter, & Bakken, 2011; Bachman, Randolph, & Brown, 2011). Therefore, consistent with the theoretical framework outlined above, there is likely to be a positive relation between students' perceptions of an authoritative school climate and their feelings of safety at school, and this relation is likely explained in part by reductions in students' exposure to violence and victimization at school. However, these hypothesized relations have not yet been examined together empirically.

## Current Study

In light of the identified gaps in the existing body of research, this study seeks to examine the extent to which students' perceptions of school climate relate to their feelings of safety, and whether their exposure to violence and victimization at school may be one pathway by which this relation occurs. Specifically, we pose the following hypotheses:

> *Hypothesis 1*: Students who perceive their school climate as more authoritative will have increased feelings of safety at school.
> *Hypothesis 2*: The relation between perceptions of authoritative school climate and feelings of safety at school will be explained in part by students' exposure to violence and victimization at school.

## Method

### Study Design

This study uses path models to examine the relationships among authoritative school climate, exposure to violence and victimization, and feelings of safety. In these models, authoritative school climate is the independent variable, feelings of safety is the dependent variable, and exposure to violence and victimization is the variable in the indirect path (see Fig. 1). These models compare the strength of the direct effect (i.e., the path leading directly from authoritative school climate to feelings of safety) to that of the indirect effect (i.e., the path leading from authoritative school climate to feelings of safety through violence and victimization). We test whether the relationship between authoritative school climate and students' feelings of safety can be explained by variation in the amount of victimization students experience at school. Additionally,
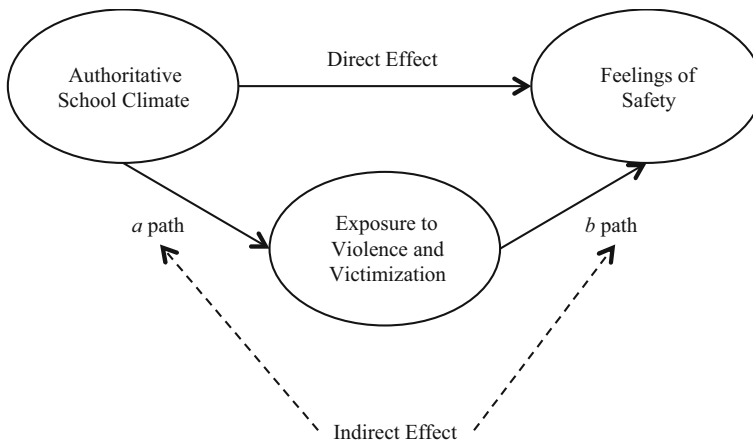
Fig. 1 Conceptual model of key variables of interest

this study makes use of two different nationally representative samples of students, using parallel measures and analytic strategies in an effort to cross-validate the findings.

## Participants and Data Sources

This study's first data source is the Education Longitudinal Study of 2002 (ELS:2002). The ELS:2002 is a nationally representative, longitudinal study of high school students who were in 10th grade in the spring of 2002. For the purposes of our study, we focus only on data from the base year (10th grade) of the ELS:2002 because several variables of interest were not available in subsequent survey waves. The ELS:2002 contains survey responses from 16,200 students, accessed via a random stratified sampling procedure that first sampled schools and then students within schools. Certain types of schools (e.g., private) and groups of students (e.g., Asians) were sampled at a higher rate (Ingels, Pratt, Rogers, Siegel, & Stutts, 2004). All analyses presented include the appropriate survey weights to account for these sampling strategies.

The second data source used in this study is the 2011 School Crime Supplement (SCS) to the National Crime Victimization Survey (NCVS). The NCVS comprises a nationally representative stratified random sample of households in which respondents were asked to report on their experiences of victimization. As a supplement to the NCVS, the SCS was administered to adolescents aged 12 to 18 who had been in school within the past six months and were living in NCVS households ($N = 5857$). The SCS included an oversample of small and underrepresented populations; survey weights were provided and included in all analyses to adjust for probability of selection based on both household- and individual-level factors.

Although earlier iterations of the SCS exist that are closer in time to the ELS:2002 data, the 2011 version was selected for two reasons. First, it provides relatively recent data that is likely to be more relevant to students and schools today, particularly when compared to data from the early 2000's. Second, the use of data collected at points nearly 10 years apart increases the generalizability of the findings rather than potentially capitalizing on idiosyncrasies that may have existed in a certain generation of students or in a few specific years. This may be particularly relevant in the early 2000's

when the school shooting at Columbine was part of the national conversation and school districts nationwide were trying to find new ways to keep school safe. Although prior research has shown that highly publicized school shootings have little effect on students' fear or perceptions of safety at school (Addington, 2003; Fisher, Nation, Gardella, & Nixon, 2016), the cultural zeitgeist in the years following Columbine may have led to unique dynamics pertaining to students' experiences of school climate, violence, and fear that were less likely to be present a decade later. In sum, drawing on datasets from a decade apart allows the results to (a) speak to the current generation of students and schools, and (b) guard against history effects that may have been present in the early 2000's.

## Measures

**Authoritative School Climate** In the ELS:2002, 11 items measured authoritative school climate. There were five items about relationships with adults including: (a) Students get along well with teachers; (b) Teachers are interested in students; (c) When I work hard on schoolwork, my teachers praise my effort; (d) In class I often feel "put down" by my teachers; and (e) I go to school because my teachers expect me to succeed. There were six items about school rules including: (a) Misbehaving students often get away with it; (b) Everyone knows what the school rules are; (c) The school rules are fair; (d) The punishment for breaking school rules is the same no matter who you are; (e) The school rules are strictly enforced; and (f) If a school rule is broken, students know what kind of punishment will follow. All items in the ELS:2002 data were measured on a scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Notably, five of the six items measuring perceptions of school rules in the ELS:2002 were also used in the SCS. Exploratory factor analysis of the 11 items revealed a single factor with an eigenvalue above one (eigenvalue = 2.65; factor loadings ranged from 0.34 to 0.62). We used confirmatory factor analysis to create a single factor score for these 11 items.

There were 14 items from the SCS that measured authoritative school climate. These items represented two dimensions of authoritative school climate: students' relationships with adults in the school and their perceptions of school rules. There were nine items about relationships with adults including: (a) Teachers treat students with respect; (b) Teachers care about students; (c) Teachers do or say things that make students feel bad about themselves (reverse coded); (d) There is an adult at school who really cares about you; (e) There is an adult at school who notices when you are not there; (f) There is an adult at school who listens to you when you have something to say; (g) There is an adult at school who tells you when you do a good job; (h) There is an adult at school who always wants you to do your best; and (i) There is an adult at school who believes that you will be a success. There were five items about school rules including: (a) Everyone knows school rules; (b) The school rules are fair; (c) The punishment for breaking rules is the same no matter who you are; (d) The school rules are strictly enforced; and (e) If a school rule is broken, students know what kind of punishment will follow. All items were measured on a scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Exploratory factor analyses indicated that there were two factors with eigenvalues above one, with values of 5.57 and 1.03. Given the pattern in factor loadings (ranging from 0.33 to 0.79 on the first factor and

−0.29 to 0.38 on the second factor), we retained only a single factor, creating factor scores using confirmatory factor analysis.

**Violence and Victimization** There were eight items from the ELS:2002 that measured exposure to violence and victimization. These items included: (a) I had something stolen from me at school; (b) Someone offered to sell me drugs at school; (c) Someone threatened to hurt me at school; (d) I got into a physical fight at school; (e) Someone hit me; (f) Someone used strong-arm or forceful methods to get money or things from me; (g) Someone purposely damaged or destroyed my belongings; and (h) Someone bullied me or picked on me. The response options in the ELS:2002 were ordinal, including 1 = *Never*, 2 = *1 to 2 times*, and 3 = *more than 2 times*. Exploratory factor analysis indicated that there was one factor with an eigenvalue above one (eigenvalue = 2.21; factor loadings ranged from 0.39 to 0.66). Therefore, we created a single factor score for these items using confirmatory factor analysis.

There were also eight items in the SCS that measured students' exposure to violence and victimization. These items were measured by dichotomous (0 = *No*, 1 = *Yes*) responses to questions including: (a) Have you been in one or more physical fights at school? (b) Has another student: made fun of you, called you names, or insulted you, in a hurtful way? (c) spread rumors about you or tried to make others dislike you? (d) threatened you with harm? (e) pushed you, shoved you, tripped you, or spit on you? (f) tried to make you do things you did not want to do? (g) excluded you from activities on purpose? (h) destroyed your property on purpose? Exploratory factor analysis indicated that there was only one factor with an eigenvalue above one (eigenvalue = 2.23; factor loadings ranged from 0.32 to 0.67). Therefore, we created a single factor score for these items using confirmatory factor analysis.

**Feelings of Safety** As noted, this study focuses in particular on feelings of safety, which is one of the several dimension of the broader construct of perceptions of safety. In the ELS:2002, feelings of safety was measured with a single item, which is a limited but unfortunately common way of measuring this construct (e.g., Bachman, Gunter, & Bakken, 2011; Beran & Tutty, 2002; Ozer & Weinstein, 2004). Students responded to a survey item "I don't feel safe at this school" on a scale of 1 (*strongly agree*) to 4 (*strongly disagree*). Because the distribution of this variable was highly skewed, we converted this measure to a binary indicator of whether or not the student felt safe at school by grouping categories 1 and 2 and categories 3 and 4.

There were 12 items from the SCS that measured students' feelings of safety. The first item was measured on a scale from 1 (*Never*) to 4 (*Most of the time*): How often are you afraid that someone will attack or harm you in the school building/property? The remaining 11 items were measured by dichotomous (0 = *No*, 1 = *Yes*) responses to questions about avoidance behaviors that students engaged in as a result of their fear. These included the following questions: Did you ever stay away from any of the following places: (a) shortest route to school; (b) the entrance into the school; (c) any hallways or stairs in school; (d) parts of the school cafeteria; (e) any school restrooms; (f) other places inside the school building; (g) school parking lot; (h) other places on school grounds; (i) Did you avoid any activities at your school because you thought someone might attack or harm you? (j) Did you avoid any classes because you thought someone might attack or harm you? (k) Did you stay home from school because you

thought someone might attack or harm you? Exploratory factor analyses indicated that there was only one factor with an eigenvalue above one (eigenvalue = 2.98, factor loadings ranged from 0.37 to 0.60). Therefore, we created a single factor score for these items using confirmatory factor analysis.

**Control Variables** We included a variety of control variables in our models to adjust for potential confounding influences. These control variables were categorized as (a) student- and school-level demographic variables; (b) neighborhood safety variables; and (c) school security measures. In the ELS:2002, student-level demographic control variables included gender, race, English as second language status, a socio-economic status composite variable, and a composite of math and reading scores. School-level demographic control variables included the total enrollment in the school, urbanicity, and region of the country. Community safety control variables included urbanicity and region of the country. Finally, there were 16 different school security measures, including the use of student and faculty ID's, metal detectors, and drug sweeps. Descriptive statistics for the control variables from the ELS:2002 are shown in Table 1.

In the SCS, student-level demographic control variables included students' race, age, gender, and family income. School-level demographic control variables included the region of the country. Community safety control variables included students' perceptions of safety and crime in their home neighborhoods and region of the country. School security variables included the presence of seven different school security measures such as metal detectors, surveillance cameras, and security personnel. Descriptive statistics for the control variables from the SCS are shown in Table 2.

### Data Analysis

We used path analysis to examine the models from each data source separately but in parallel fashion. First, we examined the total effect of authoritative school climate on feelings of safety, and then examined the direct and indirect pathways with victimization included in the model. We added control variables to the models in a stepwise fashion; the first models were unadjusted, then we added student- and school-level demographic controls, followed by neighborhood safety controls, and finally school security measure controls. To estimate the standard error and confidence intervals of the indirect path, we used the bootstrapping technique recommended by Preacher and Hayes (2004).

### Missing Data

Data were missing on key variables in both the SCS and the ELS:2002. The amount of missing data ranged from 0% to 21% in the SCS and from 0% to 19% in the ELS:2002. However, the pattern of missingness in the items representing the variables of interest (i.e, the items used to create factor scores) varied across the two datasets. In the ELS:2002, 13% of the observations were dropped because they were missing data on one of the dependent variables (i.e., exposure to violence and victimization or feelings of safety). In the SCS, however, the rate of missingness was much lower, ranging from 0.9% to 1.7% on the items used to calculate factor scores. Therefore, multiple

| | Full Sample |
|---|---|
| **Table 1** Descriptive statistics for covariates in the ELS | |
| **Student and school** | |
| Female | 0.50 |
| Black | 0.17 |
| Asian | 0.07 |
| Hawaiian Pacific Islander | 0.02 |
| Native American | 0.06 |
| Hispanic | 0.15 |
| English as second language | 0.13 |
| Math/Reading composite score | 50.41 |
| | (9.92) |
| **Income** | |
| < 20,000 | 0.14 |
| 20,001 to 35,000 | 0.18 |
| 35,001 to 50,000 | 0.20 |
| 50,001 to 75,000 | 0.21 |
| 75,000> | 0.26 |
| Enrollment | 371.58 |
| | (238.27) |
| Urban | 0.30 |
| Suburban | 0.51 |
| Northeast | 0.18 |
| Midwest | 0.25 |
| South | 0.34 |
| **Neighborhood** | |
| Neighborhood Crime (1–3) | 1.14 |
| | (0.38) |
| Neighborhood Unsafe (1–4) | 1.38 |
| | (0.58) |
| Building Access | 0.75 |
| Grounds Access | 0.46 |
| Metal Detector at Door | 0.03 |
| Random Metal Detector | 0.11 |
| Closed Lunch | 0.69 |
| Uses Dogs | 0.47 |
| Drug Sweeps | 0.25 |
| Drug Testing | 0.14 |
| Uniforms | 0.09 |
| Dress Code | 0.51 |
| Clear Bags | 0.10 |
| Student IDs | 0.18 |
| Faculty IDs | 0.44 |
| Cameras | 0.52 |
| Telephones | 0.56 |

Sample sizes rounded to nearest ten. Standard deviations in parentheses for continuous variables only. Means calculated using imputed data and standard deviations calculated using imputed data except for the neighborhood safety variables for which the standard deviation is calculated using non-imputed data

**Table 1**  (continued)

|  | Full Sample |
|---|---|
| Emergency Button | 0.58 |
| Authoritative school climate factor | −0.04 |
|  | (0.88) |
| Victimization Factor | 0.03 |
|  | (0.89) |
| Feels Safe | 0.88 |
| $n$ | 13,050 |

imputation was used to account for the missing data in the primary variables of interest in the SCS, the control variables in the SCS, and the control variables in the ELS:2002. Specifically, we imputed 20 datasets and conducted all analyses with these imputed datatsets using Rubin's rules (Yuan 2010). Multiple imputation has been shown to provide estimates at least as good as those using other techniques for handling missing data, including listwise deletion (Allison 2001). Because the proper approach to implementing the bootstrapping technique for indirect effects recommended by Preacher and Hayes (2004) when using multiple imputation is being actively discussed in the literature (Wu & Jia, 2013), we report standard errors and $p$-values from the non-bootstrapped estimates. A visual comparison to the bootstrapped results for each imputed dataset confirmed qualitatively similar results.

## Results

The left half of Table 3 displays the model results from the ELS:2002 data. Column (1) displays the model results without any control variables, Column (2) adds student- and school-level controls, Column (3) adds neighborhood-level controls, and Column (4) adds school security controls. As shown, the total effect (i.e., the sum of the direct and indirect effects) was fairly consistent, ranging from 0.066 to 0.071 and achieving statistical significance across all model specifications. These values indicate that a one standard deviation unit increase in authoritative school climate was associated with about a seven percentage point increase in the probability of students feeling safe at school. The direct and indirect effects were similarly consistent across model specifications. The direct effect ranged from 0.043 to 0.045 and the indirect effect ranged from 0.023 to 0.026; both were statistically significant across all model specifications. These values suggest that approximately 35% of the relationship between authoritative school climate and feelings of safety can be explained by a reduction in victimization. This indirect effect can be further understood by examining the $a$ and $b$ coefficients. The $a$ coefficient represents the relation between authoritative school climate and exposure to violence and victimization whereas the $b$ coefficient represents the relation between exposure to violence and victimization and feelings of safety (see Fig. 1). As shown in Table 3, the $a$ coefficient (ranging from −0.314 to −0.291 and consistently statistically significant) was larger in magnitude than the $b$ coefficient (ranging from −0.082 to −0.078 and consistently statistically significant) across all model specifications, indicating that the indirect effect can be

**Table 2** Descriptive statistics for covariates in the SCS

| | Mean (SD) |
|---|---|
| **Student and School** | |
| Female | 0.50 |
| Black | 0.12 |
| Asian | 0.04 |
| American Indian/Alaska native | 0.01 |
| Hawaiian/Pacific Islander | 0.004 |
| Age | 14.77 |
| | (1.87) |
| **Income** | |
| < 20,000 | 0.14 |
| 20,000–35,000 | 0.18 |
| 35,001–50,000 | 0.18 |
| 50,000–74,999 | 0.17 |
| 75,000 > | 0.34 |
| Northeast | 0.14 |
| Midwest | 0.24 |
| South | 0.37 |
| West | 0.25 |
| **Neighborhood** | |
| Low Neighborhood Crime | 1.94 |
| Neighborhood Feels Safe | 1.66 |
| **Security** | |
| Building Access | 0.71 |
| Metal Detectors | 0.16 |
| Locker Checks | 0.69 |
| Security Guards or Police Officers | 0.71 |
| Hallway Supervision | 0.90 |
| Visitors Required to Sign In | 0.97 |
| Student IDs | 0.25 |
| Cameras | 0.87 |
| Authoritative school climate factor | 0.00 |
| | (0.96) |
| Victimization Factor | 0.00 |
| | (0.87) |
| Feelings of Safety Factor | 0.00 |
| | (0.89) |
| *N* | 5857 |

Standard deviations in parentheses for continuous variables only. Means and standard deviations calculated using imputed data

explained more by the negative association between authoritative school climate and exposure to violence and victimization than the negative association between exposure to violence and victimization and feelings of safety.

**Table 3** Regression coefficients from models predicting feelings of safety from authoritative school climate through exposure to violence and victimization

|  | ELS:2002 | | | | SCS | | | |
|---|---|---|---|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| a coefficient | −0.314* | −0.292* | −0.292* | −0.291* | −0.107* | −0.108* | −0.099* | −0.096* |
|  | (0.016) | (0.015) | (0.015) | (0.015) | (0.014) | (0.014) | (0.016) | (0.016) |
| b coefficient | −0.082* | −0.078* | −0.078* | −0.079* | −0.373* | −0.371* | −0.370* | −0.373* |
|  | (0.006) | (0.006) | (0.006) | (0.006) | (0.030) | (0.031) | (0.030) | (0.030) |
| Indirect effect | 0.026* | 0.023* | 0.023* | 0.023* | 0.040* | 0.040* | 0.037* | 0.036* |
|  | (0.002) | (0.002) | (0.002) | (0.002) | (0.005) | (0.007) | (0.006) | (0.006) |
| Direct effect | 0.045* | 0.043* | 0.043* | 0.043* | 0.021 | 0.022 | −0.002 | −0.001 |
|  | (0.005) | (0.005) | (0.005) | (0.005) | (0.014) | (0.014) | (0.015) | (0.015) |
| Total effect | 0.071* | 0.066* | 0.066* | 0.066* | 0.061* | 0.062* | 0.035* | 0.035* |
|  | (0.005) | (0.005) | (0.005) | (0.005) | (0.015) | (0.015) | (0.016) | (0.016) |
| Student and School Controls |  | X | X | X |  | X | X | X |
| Neighborhood Controls |  |  | X | X |  |  | X | X |
| School Security Controls |  |  |  | X |  |  |  | X |
| N | 13,050 | 13,050 | 13,050 | 13,050 | 5857 | 5857 | 5857 | 5857 |

* Statistically significant at 0.05 level. Sample sizes for ELS:2002 rounded to nearest 10 to comply with restricted use data requirements

The results of the models using the SCS data are displayed in the right half of Table 3. Column (5) displays the model results without any control variables, Column (6) adds student-level controls, Column (7) adds neighborhood-level controls, and Column (8) adds school security controls. Although the total effect was statistically significant across all model specifications, it decreased from 0.062 to 0.035 after adding neighborhood safety controls. These numbers indicate that a one standard deviation unit increase in authoritative school climate was associated with an increase in feelings of safety by 0.062 and 0.035 standard deviation units, respectively. The direct effect followed a similar pattern, although it was not statistically significant across any model specifications. Specifically, the point estimate decreased from 0.022 to −0.002 after adding neighborhood controls. The indirect effect, on the other hand, remained relatively consistent, ranging from 0.036 to 0.040 and achieving statistical significance in all model specifications. In the models without controls and with only student controls, the indirect effect explained approximately 67% of the total effect, whereas in the models incorporating neighborhood and school security controls, the indirect effect explained 100% of the total effect. An examination of the *a* and *b* coefficients indicates that this indirect effect was largely driven by the negative association between exposure to violence and victimization and feelings of safety (i.e., the *b* coefficient), which ranged in magnitude from −0.373 to −0.370 and was statistically significant across models. The *a* coefficients, on the other hand, were smaller, ranging from −0.108 to −0.96 while also achieving statistical significance across all models.

Although there were some similarities in the findings across both data sources, including a positive association between authoritative school climate and feelings of safety and significant indirect effects, there were also meaningful differences. In particular, the indirect effect explained a larger proportion of the total effect in the SCS data than in the ELS:2002 data, with the indirect effect in the fully adjusted model explaining the entire relation between authoritative school climate and feelings of safety. In the ELS:2002, on the other hand, the indirect effect explained only about one third of the total effect. Additionally, the relations driving the indirect effects differed across data sources. In the ELS:2002, the *a* coefficient was nearly four times larger than the *b* coefficient across all model specifications, indicating that the significant indirect effect across the four models was driven largely by the association between students' perceptions of authoritative school climate and their exposure to violence rather than the association between students' exposure to violence and victimization and their feelings of safety in school. Conversely, in the SCS, the *b* coefficient was nearly four times larger than the *a* coefficient across all model specifications, indicating that the association between students' exposure to violence and victimization and feelings of safety was driving the indirect effect.

## Discussion

The purpose of this study was to investigate the relationship between authoritative school climate and students' feeling of safety while exploring the extent to which this relationship can be explained by students' exposure to violence and victimization. Using two nationally representative datasets to cross-validate findings, this study provides evidence that students who perceive a more authoritative school climate also have greater feelings of safety, and that this relation can be explained in part by a reduction in students' exposure to violence and victimization. However, the two models differed in terms of the relative strength of the indirect effect, as well as whether it was driven more by the negative association between authoritative school climate and exposure to violence and victimization or between exposure to violence and victimization and feelings of safety. Additionally, the neighborhood safety control variables in the SCS had an influence on the model results that was not present in the ELS:2002. The decrease in magnitude of the total effect across model specifications suggests that in the SCS sample, students' perceptions of their neighborhoods explained a meaningful proportion of the variance in their feelings of safety at school.

Even though the two nationally representative data sources in this study used similar measures and identical modeling procedures, there were some key differences that emerged in the findings. This may be an artifact of the two different samples. For example, the ELS:2002 sample included only public school students enrolled in 10th grade in spring 2002 while the SCS sample includes secondary students ages 12 through 18 in 2011. The differences in both the year of data collection and the age of the students in the sample may partially explain the differences across the datasets. Students in general felt less safe at school in 2002 than they did in 2011 (Robers et al., 2015), suggesting that the relation with other factors such as authoritative school climate and exposure to violence and victimization may have shifted in the time between the two data collection years. We also know that students generally become

less fearful as they get older (Robers et al., 2015), suggesting that the distribution of feelings of safety may have been different across the two data sources, with the SCS including more variability due to the concomitant variability in students' ages.

## Limitations and Future Directions

It is important to note several limitations to this study. First, because this study relied on cross-sectional data, causal inferences are not appropriate. Although the ELS:2002 is part of a longitudinal data collection effort, variables related to authoritative school climate and feelings of safety were only measured in the first wave, precluding any longitudinal models here. Second, authoritative school climate is inherently a school-level construct, but this study was only able to measure perceptions of an authoritative school climate at the individual level. Future research should examine multilevel models to disentangle the differences between individual perceptions and whole-school measures of authoritative school climate. Third, although there were some clear similarities in the findings across datasets, the results were not entirely consistent. Although we have speculated about some potential methodological causes for these differences, they may have been caused by true variability that could be explored in future research. Next, the datasets utilized did not include students in the elementary school years. In particular, the ELS data focused on only a single grade-level in high school. Future work might extend these analyses to the elementary school grades to see if relationships were consistent for younger students. Finally, although most of the key constructs in both the ELS:2002 and the SCS were factors constructed from multiple items, thereby reducing any impact of measurement error, this was not true for the single item measure of feelings of safety in the ELS:2002. This may have introduced bias from measurement error into the models. There is general agreement that a single item measure of feelings of safety is inadequate (Farrall et al., 1997; Rountree & Land, 1996), and is an unfortunate limitation of the ELS:2002.

We suggest that future research could advance in two promising directions. First, establishing causal relations between an authoritative school climate, feelings of safety, and exposure to violence and victimization is necessary. Conducting evaluations of interventions aimed at increasing authoritative school climate may be one particularly useful strategy. Second, more research is needed on the variability in these relations across different characteristics of students and school. Rather than controlling for variables related to student and school characteristics as was done in the current study, future research could examine whether and how the outcomes associated with authoritative school climate vary across students and schools.

## Implications for School Safety Policy and Practice

The findings from this study suggest that school climate may be one malleable school-level factor that can help students feel safer at school. Enhancing students' supportive relationships with adults in schools and crafting discipline policies that are perceived by students as fair and consistently enforced is a promising direction for both reducing violence and victimization in schools, but also for increasing students' feelings of safety. Because students who feel less safe at school are likely to have lower academic achievement (Lacoe, 2013), these changes to the school climate may have broader

benefits as well. Although criminological theories such as social control theory (Hirschi, 1969) and procedural justice theory (Tyler, 1990) have emphasized the beneficial effects of these dimensions of school climate on students' behavior, this study's findings provide evidence that they may also affect students' affective perceptions of the safety of the school environment. This study extends the literature on authoritative school climate, feelings of safety, and exposure to violence and victimization in school. Recent research on authoritative school climate and victimization has shown promising results for improving student behaviors (Cornell & Huang, 2016; Cornell et al., 2016), and this study suggests that it may also lead to students feeling safer at school. While reducing violence and victimization are important results in their own right, it is also necessary to find ways to increase students' feelings of safety at school.

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