Improving the School Environment to Reduce School Violence: A Review of the Literature*

SARAH LINDSTROM JOHNSON, PhD

ABSTRACT

BACKGROUND: School violence can impact the social, psychological, and physical well-being of both students and teachers and disrupt the learning process. This review focuses on a new area of research, the mechanisms by which the school environment determines the likelihood of school violence.

METHODS: A search for peer-reviewed articles was made in six databases and the Centers for Disease Control and Prevention’s report on school-violence interventions. Twenty-five articles that attempted to understand the influence of either the school social or physical environment in determining teacher and student perceptions of safety and experiences of violence were included.

RESULTS: Most of the included articles were cross-sectional surveys of junior high or high school students and staff. As articles used different measures of the school physical and social environment, a classification system was created. Using this system, studies show that schools with less violence tend to have students who are aware of school rules and believe they are fair, have positive relationships with their teachers, feel that they have ownership in their school, feel that they are in a classroom and school environment that is positive and focused on learning, and in an environment that is orderly.

CONCLUSION: The school social and physical environment appears to offer intervention opportunities to reduce school violence. However, the lack of consistency in school environment variables as well as the lack of longitudinal and experimental research designs limits the applicability of these findings.

Keywords: school violence; school environment; school improvement.


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INTRODUCTION

Recent statistics indicate that 63 out of every 1000 students in U.S. schools are the victims of violence at school.1 While this violence is related to morbidity and mortality, it also makes success in the school environment difficult to obtain. Students who experience school violence are more likely to report feelings of social isolation, depression, frustration, and poorer school attachment.2–5 Students who fear victimization at school are also more likely to skip school.4–8

School violence disrupts the working environment for teachers. By having to handle behavioral problems and quell potentially violent situations, teachers cannot devote as much time to instruction.9–11 The stress of handling these situations, as well as a personal concern for safety, is thought to explain the high teacher turnover rate in violent schools.9,12,13

BACKGROUND

This literature review will analyze research attempting to understand how the school environment influences the occurrence of violence at school. This paper will (1) categorize measures of the school environment, (2) quantify the known impact of the school environment on school violence, and (3) critique the quality of research available exploring this relationship.

School Environment Intervention: An Emerging Field

Most research and interventions attempting to reduce school violence have centered on the individual.14–18 In the late 1990s, school-violence researchers began to call for a shift in focus, with more research directed at understanding the school environment and its contribution to violence.3,14,16,17,19–22 Research focused on teachers’ experiences of school violence supports this shift. In qualitative interviews, teachers stress the lack of cooperation and support from administrators, the lack of basic security, and the physical deterioration of the school as contributing factors for school violence.20,23

Theoretical Basis

The school environment has two components: the school social environment and the school physical environment. The school social environment captures the nature of interactions that happen in the school. There are two primary mechanisms through which the school social environment impacts students’ behaviors. The first mechanism operates at the collective level using the constructs of social cohesion and social capital. Cohesive schools, where members know each other and have similar goals, have more social capital.24 This social capital, or organizational resources, allows for a stronger transmission of social norms and the ability to collectively act.25,26 The second mechanism through which the school social environment impacts behavior is at the individual level. Hirschi’s Social Control Theory posits four variables that determine an individual’s conformity with the set social norms: attachment, commitment, belief, and involvement.27

The physical environment consists of the space where violence occurs. Some research has shown that by redesigning school space, using principles of Crime Prevention Through Environmental Design (CPTED), incidences of school violence can be lowered.28,29 CPTED categorizes the possible impact of the environment into four mechanisms: space design, space use and circulation patterns, territorial features, and physical deterioration.28,30 Improvements in space design, and use and circulation patterns decrease the amount of violence in an area by decreasing interactions and the shield of anonymity. Territorial features or signs of ownership, and physical deterioration contribute to the perception of investment in an area and confer social norms of appropriate behavior.

LITERATURE REVIEW METHODS

This literature review was conducted to identify research that investigates the relationship between the school environment and school violence. The school environment was conceptualized broadly to include both the school social environment and the school physical environment. To be included, articles must have been able to quantify the impact of specific factors of the school social or physical environment on violence. Review articles, description of best practice articles, violence prevalence articles, and articles exploring individual characteristics and their relationship with violence were not included. Articles could explore the relationship between the school environment and violence at any educational level (ie, elementary, middle, and high school). Articles evaluating the effectiveness of alternative placement schools and military schools were not included. Only articles written in peer-reviewed, English language journals were considered.

In 2007–2008 articles were identified through PubMed, PsycINFO, ERIC (the Educational Resources Information Center), Sociological Abstracts, the National Criminal Justice Reference Service, and the Social Citation Index. Key search terms for each of the databases included permutations of the following words: school, classroom, environment, climate, physical, social, violence, safety, security, prevention, program, technology, and intervention. Also included were the studies and references from the Centers for Disease Control and Prevention 2007 report on school-violence interventions.31 Abstracts of all articles
Measures of Violence

ARTICLE FINDINGS

Measures of Violence

Studies measured many dependent variables. These included both the victimization and perpetration of violence as well as perceptions of safety of both teachers and students. The victimization and perpetration measures captured different types of violence: thefts, threats, physical violence, delinquency, bullying, and weapon carrying. A detailed list of the dependent variables can be found in Table 1. Not all of the dependent variables measured only violence that occurred at school. Those that did not were from studies that used existing national surveys, which did not provide school-specific violence information, or were from studies whose aim was to broadly explore the determinants of youth violence.

Measures of the School Environment. All 25 studies found evidence that the school environment has some effect on the likelihood of violence. However, the use of multiple different measures of the school environment made a summation of this effect difficult. In order to facilitate this process, a classification system was created.

The 25 studies’ measures of the school environment can be grouped into 9 constructs. Six constructs relate to the school social environment and 2 to the school physical environment. The school social environment constructs such as Peer Relationships, Teacher/Student Relationships, School Norms About Violence, and Success in the School Environment represent the ideas of Social Control Theory. The other school social environment constructs, Classroom Culture and School Culture, attempt to measure the mechanisms of social cohesion and social control. Of the 2 school physical environment constructs, School Disorder captures the deterioration aspect of CPTED with School Safety Actions capturing all other school physical environment modifications. The items in the last construct, while directly involved in determining both the school social and physical environment, refer to the organization of the school.

Table 2 describes the classification system, indicating which articles used measures from each of the constructs. Examples of measures that were classified in each construct can be found in Table 3.

The School Social Environment and Violence

Many of studies included the school social environment with a single construct. In most cases this construct was derived from a scale that included multiple aspects of the school social environment. In all but 1 study that used a grouped construct, more positive perceptions of the school environment were related to decreases in school violence and its consequences. These results included less exposure to violence, less victimization, less fear of attending school, and more positive perceptions of school safety. The Peace-builders intervention, which attempted to improve the school social environment of elementary schools by rewarding pro-social behaviors, did find improvements in student aggression, though its effectiveness was limited. When compared to delayed intervention
<table>
<thead>
<tr>
<th>Article</th>
<th>Sample and Methods for Selected Articles (continued on next page)</th>
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<td>Article</td>
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<td>Author (Year)</td>
<td>Peer Relationships</td>
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<td>Crooks et al., 2007</td>
<td>X</td>
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<td>Brookmeyer et al., 2006</td>
<td>X</td>
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<tr>
<td>McNeely &amp; Falci, 2004</td>
<td>X</td>
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<td>Spratt, 2004</td>
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<td>Espelage et al., 2001</td>
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<td>Laflamme &amp; Menchkel, 2006</td>
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<td>Reis et al., 2007</td>
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<td>Khouy-Kassabri et al., 2007</td>
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<td>Astor et al., 2006</td>
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<td>Khouy-Kassabri et al., 2005</td>
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<td>Astor et al., 2002</td>
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<td>Benbenishty et al., 2002</td>
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<td>Mooij, 1998</td>
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<td>Felson et al., 1994</td>
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<td>Wilcox et al., 2006</td>
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<td>Gottfredson et al., 2005</td>
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<td>Kuntsas et al., 2004</td>
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<td>Van Dorn, 2004</td>
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<td>Stewart, 2003</td>
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<td>Welsh, 2003</td>
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<td>Mayer &amp; Leone, 1999</td>
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<td>Flannery et al., 2003</td>
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<td>Ialongo et al., 1999</td>
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<td>Kellam et al., 1994</td>
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* Indicates that these constructs are within the same measure.
### Table 3a. The School Social Environment’s Effect (continued on next page)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Article Results</th>
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</table>
| **Grouped Constructs** | Crooks et al., 2007: School connectedness did not significantly predict violence behaviors. 
Brookmeyer et al., 2006: School connectedness significantly predicted less future violent behavior (B = −.17, SE = 0.08) 
Laflamme & Menkel, 2001: The presence of social problems did not significantly predict the proportionate injury ratio of a school |
| **Peer Relationships** | Astor et al., 2002: A better school climate is significantly associated with a decrease in victimization for students (r = −0.18) and staff (r = −0.36). A better school climate is significantly related to a decrease in the perceived seriousness of violence (r = −0.05) and less fear of attending school 
Benbassity et al., 2002: A better school climate is significantly associated with a decrease in victimization for students (r = −0.19) and staff (r = −0.36). A better school climate has no significant effect on the perceived seriousness of school violence for students or their fear of attending school |
| **Teacher/Student Relationships** | McNeely & Falci, 2004: Teacher support significantly protected against the initiation of violence (RRR = 0.90, SE = 0.02) and encouraged the cessation of weapon-related violence (RRR = 1.07, SE = 0.03) 
Reis et al., 2007: Improved social support from teachers was significantly related to a decrease in aggression (B = −0.07, SE = 0.02) 
Khoury-Kassabri et al., 2005: Teacher support was significantly related to less serious physical victimization (B = −0.09), verbal-social victimization (B = −0.03), and property damage (B = −0.07) in Jewish schools. Teacher support was significantly related to less serious physical victimization (B = −0.09), threats (B = −0.042), moderate physical victimization (B = −0.042), moderate verbal-social victimization (B = −0.092), and property damage (B = −0.115) in Arab schools 
Khoury-Kassabri et al., 2004: Student support was significantly related to less serious physical victimization (B = −0.03), verbal-social victimization (B = −0.059) and verbal-social victimization (B = −0.01) 
Welsh, 2003: Respect for students not significantly related to either misconduct or offending |
| **Student’s Acceptance of School Norms About Violence** | Khoury-Kassabri et al., 2007: Students with negative perceptions of school policy were significantly more likely to carry weapons to school (Gun OR = 1.54, Knife OR = 1.44). Other Weapons OR = 1.41) 
Khoury-Kassabri et al., 2005: Students’ perceptions of school policy were significantly related to less serious physical victimization (B = −0.035), threats (B = −0.036), moderate physical victimization (B = −0.081), verbal-social victimization (B = −0.103), and property damage (B = −0.076) in Jewish schools. Students’ perceptions of school policy were significantly related to less serious physical victimization (B = −0.040), threats (B = −0.060), moderate physical victimization (B = −0.072), verbal-social victimization (B = −0.069), and property damage (B = −0.085) in Arab schools 
Khoury-Kassabri et al., 2004: Students’ perceptions of school policy were significantly related to less serious physical victimization (B = −0.031), threats (B = −0.038), moderate physical victimization (B = −0.071), and verbal-social victimization (B = −0.096) 
Gottfredson et al., 2005: Improved discipline management (combined of fairness of rules and clarity of rules) is significantly related to decreased student delinquency (r = −0.68) and victimization in school (r = −0.16) but not teacher victimization in school 
Felson et al., 2004: Prevalence of a school wide violence norm significantly predicted decreased interpersonal violence (r = 0.18), theft/vandalism (r = 0.09), and school delinquency (r = 0.11) even after controlling for individual attitudes |
### Table 3a. Continued

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Article Results</th>
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</table>
| Students’ Acceptance of School Norms About Violence (continued) | Kitsantas et al., 2004: Positive perceptions of the fairness of the school disciplinary code were significantly related to improved perceptions of school safety \( r = 0.11 \)   
Stewart et al., 2003: Student belief in school rules was significantly associated with a decrease in school misbehavior \( B = -0.397, SE = 0.039 \)   
Welsh, 2003: Students’ perception of the fairness of rules was not significantly related to either misconduct or offending. Students’ perception of the clarity of rules was not significantly related to either misconduct or offending. Students’ belief in rules was significantly related to a decrease in both misconduct \( B = 0.14, SE = 0.01 \) and offending \( B = -0.19, SE = 0.01 \)   
Mayer & Leone, 1999: A system of law (knowledge of rules and implementation of consequences) was significantly related to less school disorder \( -0.38 \)   
Stewart et al., 2003: Students’ overall academic ability not significantly predictive of either violent offending or property offending   |
| Students Success in the School Environment        | Reis et al., 2007: Students’ inclusion in policy and rule making at school was significantly associated with a decrease in aggression \( B = -0.38, SE = 0.19 \)   
Khoury-Kassabri et al., 2005: Students’ participation in decision making was significantly related to less physical victimization \( B = -0.023 \), threats \( B = -0.030 \), moderate physical victimization \( B = 0.067 \), verbal-social victimization \( B = -0.074 \), and property damage \( B = -0.039 \) for Jewish schools but not Arab schools   
Khoury-Kassabri et al., 2004: Students’ participation in decision making was significantly related to less serious physical victimization \( B = -0.012 \), threats \( B = -0.019 \), moderate physical victimization \( B = -0.052 \), and verbal-social victimization \( B = -0.081 \)   
Felson et al., 2004: Academic values were not significantly predictive of either interpersonal violence, theft/vandalism, or school delinquency   
Welsh, 2003: Students’ school effort was significantly related to a decrease in both misconduct \( B = 0.10, SE = 0.01 \) and offending \( B = -2.22, SE = 0.83 \) and offending \( B = -0.05, SE = 0.30 \)   
Stewart et al., 2003: Students’ commitment to school was significantly related with a significant decrease in school misbehavior \( B = -0.145, SE = 0.042 \). Involvement in school was not significantly associated with a decrease in school misbehavior. Students GPA level was significantly associated with a decrease in school misbehavior \( B = -0.108, SE = 0.047 \)   |
| Classroom Culture                                | Sprott, 2004: Positive social interactions significantly predicted less violent offending \( B = -0.097 \), but not less property offending. Higher academic focus in the classroom significantly predicted less property offending \( B = -0.103 \), but not less violent offending   
Moogi, 1998: A greater perceived number of teachers with positive teaching behavior was significantly related to less perpetration of disruptive behavior \( B = -0.21 \) and intentional damage of property \( B = -0.06 \). A greater perceived number of strict teachers was significantly related to an increase in perpetration of disruptive behavior \( B = -0.21 \) and premeditated physical violence \( B = 0.01 \), as well as an increase in victimization of physical violence \( B = 0.05 \) and intentional damage of property or emotional damage \( B = 0.05 \). A greater perceived number of teachers with discipline problems was significantly related to an increase in perpetration of disruptive behavior \( B = 0.13 \) and premeditated physical violence \( B = 0.04 \) as well as victimization of intentional damage to property or emotional violence \( B = 0.06 \)   
Iolango et al., 1999: The Classroom Centered intervention significantly reduced teacher ratings of problem behaviors for both boys and girls. The Classroom Centered intervention significantly reduced peer ratings of aggression for boys but not girls. The Classroom Centered intervention did not result in significant effects for parent ratings of problem behaviors   |
| School Culture                                   | Kellam et al., 1994: The Good Behavior Game significantly reduced aggression over time for all student levels of baseline aggression   
Crooks et al., 2007: Schoolwide academic success was not significantly associated with students’ violence behavior   
Sprott, 2004: Teachers’ feelings of school management were not significantly predictive of either property offending or violent offending   
Reis et al., 2007: Students’ perception of the school’s emphasis on understanding over memorization was significantly related to less aggression \( B = -0.64, SE = 0.17 \). The inclusion of cultural sensitivity education in school was significantly related to a decrease in aggression \( -0.11, SE = 0.04 \)   
Stewart et al., 2003: Social cohesion was significantly associated with decreased school misbehavior \( B = -0.035, SE = 0.029 \)   
Welsh, 2003: Students’ perceptions of their school’s effort to plan and effect change were not significantly related to either misconduct or offending   |
Table 3b. The School Physical Environment’s Effect

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<thead>
<tr>
<th>Constructs</th>
<th>Article Results</th>
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<tr>
<td>School Safety Actions</td>
<td>Wilcox et al., 2006: Improved territoriality was related to a decrease in teachers’ perceptions of school crime (B = −0.298, SE = 1.34) and an increase in teacher perceptions of safety (B = 0.59, SE = 0.18). Improved surveillance was related to a decrease in teachers’ perceptions of school crime (B = −0.96, SE = 0.29) and improved teacher perceptions of safety (B = −0.07, SE = 0.04). These were not significantly associated with teachers’ or students’ victimization experience at school or with students’ perceptions of school crime. Exterior entrapment areas were not significantly associated with teacher or student victimization at school, teacher or student perception of school crime, or teacher witnessed misconduct. Kitsantas et al., 2004: Positive perceptions of school safety actions (modifications to the physical environment) were significantly related to improved perceptions of school safety (r = 0.13). Van Dorn, 2004: A greater number of school safety actions were not significantly related to a change in violent or nonviolent victimization. Meyer &amp; Leone, 1999: The level of school security interventions (personnel, metal detectors) was significantly related to more school disorder (r = 0.57).</td>
</tr>
<tr>
<td>School Disorder</td>
<td>Laflamme &amp; Menchkel, 2001: The presence of physical problems did not significantly predict a school’s proportionate injury ratio. kitsantas et al., 2004: Positive perceptions of school safety actions (modifications to the physical environment) were significantly related to improved perceptions of school safety (r = 0.13). Van Dorn, 2004: A greater number of school safety actions were not significantly related to a change in violent or nonviolent victimization. Meyer &amp; Leone, 1999: The level of school disorder was significantly related to increased individual self-protection (r = 0.54).</td>
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Table 3c. Organizational Characteristics of the School

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Article Results</th>
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<tbody>
<tr>
<td>School Size</td>
<td>Crooks et al., 2007: School size had no significant relationship with students’ violence behavior. Brookmeyer et al., 2006: A larger school significantly predicted future violent behavior (B = −0.08, SE = 0.03). Khoury-Kassabri et al., 2006: School size had no significant association with weapon carrying to school. Khoury-Kassabri et al., 2007: School size had no significant association with physical victimization, threats, verbal-social victimization, or property damage. Khoury-Kassabri et al., 2004: School size had no significant association with physical victimization, threats, verbal-social victimization, or property damage. Felton et al., 1994: School size was not significantly predictive of interpersonal violence, theft/vandalism, or school delinquency. Wilcox et al., 2006: A larger school was associated with more teacher victimization (B = 0.00, SE = 0.00). School size was not associated with teacher witnessed misconduct or teacher perceptions of school crime. School size was also not significantly associated with student victimization or student perceptions of school crime. Stewart et al., 2003: A larger school was significantly associated with more school misbehavior (B = 0.197, SE = 0.042). Welsh, 2003: A larger school was significantly associated with a higher level of offending (B = 0.0001, SE = 0.0002). School size was not significantly related to misconduct.</td>
</tr>
<tr>
<td>Class Size</td>
<td>Brookmeyer et al., 2006: Class size had no significant impact on future violent behavior. Khoury-Kassabri et al., 2007: Class size was not significantly associated with weapon carrying to school. Khoury-Kassabri et al., 2005: A larger class size was significantly associated with more threats (B = 0.019), moderate physical victimization (B = 0.043), verbal-social victimization (B = 0.064), and property damage (B = 0.048) for but not serious physical victimization for Levish schools. A larger class size was significantly associated with more threats (B = 0.079), moderate physical victimization (B = 0.066), verbal-social victimization (B = 0.109), and property damage (B = 0.057) but not serious physical victimization or threats for Arab schools. Khoury-Kassabri et al., 2004: A larger class size was significantly associated with more serious physical violence (B = −0.016), threats (B = −0.021), moderate physical violence (B = −0.038), and verbal-social victimization (B = −0.057).</td>
</tr>
<tr>
<td>School Level</td>
<td>Brookmeyer et al., 2006: The school level had no significant impact on future violent behavior. Khoury-Kassabri et al., 2007: School level had not significant effect on weapon carrying to school.</td>
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Table 3c. Continued

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<tr>
<th>Constructs</th>
<th>Article Results</th>
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| **School Level (continued)**      | Khoury-Kassabri et al., 2005: High schools were significantly associated with less serious physical victimization \( (B = -0.032)\), threats \( (B = -0.032)\), moderate physical victimization \( (B = -0.028)\), verbal-social victimization \( (B = -0.198)\), and property damage \( (B = -0.125)\) than junior high schools for Jewish schools. High schools were significantly associated with less moderate physical victimization \( (B = -0.170)\), verbal-social victimization \( (B = -0.226)\), and property damage \( (B = -0.168)\) than junior high schools in Arab schools. High school status was not associated with less serious physical victimization or threats for Arab schools.  
Khoury-Kassabri et al., 2004: High schools were significantly associated with less serious physical violence \( (B = -0.042)\), threats \( (b = -0.045)\), moderate physical violence \( (B = -0.134)\), and verbal-social victimization \( (B = -0.204)\) than junior high schools. High school status was not associated with less serious physical violence or threats for Arab schools.  
Mooji, 1998: Attending a lower type of secondary school was significantly associated with a greater likelihood of disruptive behavior in school \( (B = -0.02)\), intentional damage to property \( (-0.01)\), premeditated physical violence \( (B = -0.02)\), and being a victim of physical violence \( (B = -0.01)\). A lower type of secondary school was not significantly associated with a greater likelihood of intentional damage to property or emotional violence.  
Gottfredson et al., 2005: High school was significantly associated with less student victimization \( (r = -0.56)\), student delinquency \( (r = -0.35)\), and teacher victimization \( (r = -0.19)\) than junior high school.  
Brookmeyer et al., 2006: The type of school (private vs. public) had no significant impact on future violent behavior.  
Gottfredson et al., 2005: A higher African American student and teacher population was significantly associated with higher levels of teacher victimization at school \( (r = 0.29)\) and student delinquency \( (r = 0.12)\) but not student victimization at school.  
Felson et al., 2004: Having a greater black student population was significantly associated with more interpersonal violence \( (r = 0.16)\) but not more theft/vandalism or school delinquency.  
Brookmeyer et al., 2006: Having a greater nonwhite student population was significantly associated with increased teacher witnessed misconduct \( (B = 0.07, SE = 0.08)\). Percent nonwhite population was not significantly associated with teacher or student victimization or teacher or student perceptions of school crime.  
Wilcox et al., 2006: The percentage of nonwhite students was significantly associated with school misbehavior.  
Stewart et al., 2003: A higher percentage of nonwhite students was not significantly associated with school misbehavior.  
Felson et al., 2004: A greater percentage of male students was significantly associated with more weapon violence \( (Guns-OR=3.17, Knife-OR=4.56, Other weapons-OR=3.81)\).  
Gottfredson et al., 2005: A higher percentage of males was significantly associated with higher levels of student delinquency \( (r = 0.12)\) and student victimization \( (r = 0.11)\) but not teacher victimization.  
Wilcox et al., 2006: The percentage of male students was not significantly associated with teacher or student victimization, teacher or student perceptions of school crime, or teacher witnessed misconduct.  
Brookmeyer et al., 2006: A higher percentage of students on free and reduced lunch was associated with more student \( (B = 0.03, SE = 0.02)\) and teacher victimization \( (B = 0.02, SE = 0.01)\) and teacher perceptions of school crimes \( (B = 0.01, SE = 0.00)\). The percentage on free lunch was not significantly associated with students' perceptions of school crime or teacher witnessed misconduct.  
Stewart et al., 2003: School poverty is not significantly associated with an increase in school misbehavior.  
Brookmeyer et al., 2006: School attendance had no significant impact on future violent behavior.  
Brookmeyer et al., 2006: The percentage of dropouts had no significant impact on future violent behavior.  
Brookmeyer et al., 2006: PTA participation by parents had no significant impact on future violent behavior.  

| Location of School                | Crooks et al., 2007: School location (rural vs. urban) had no significant impact on students' violence behavior.  
Brookmeyer et al., 2006: School location (rural vs. urban) had no significant impact on future violent behavior.  
Felson et al., 1994: City size was not significantly predictive of interpersonal violent, theft/vandalism, or school delinquency.  
Van Dorn, 2004: School location (rural vs. urban) was not significantly associated with either violent or nonviolent victimization.  
Stewart et al., 2003: Urban schools were significantly associated with more school misbehavior \( (B = 0.173, SE = 0.044)\) than non-urban schools.  

| Type of School                    | Brookmeyer et al., 2006: The type of school (private vs. public) had no significant impact on future violent behavior.  
Gottfredson et al., 2005: A higher African American student and teacher population was significantly associated with higher levels of teacher victimization at school \( (r = 0.29)\) and student delinquency \( (r = 0.12)\) but not student victimization at school.  
Felson et al., 2004: Having a greater black student population was significantly associated with more interpersonal violence \( (r = 0.16)\) but not more theft/vandalism or school delinquency.  
Brookmeyer et al., 2006: Having a greater nonwhite student population was significantly associated with increased teacher witnessed misconduct \( (B = 0.07, SE = 0.08)\). Percent nonwhite population was not significantly associated with teacher or student victimization or teacher or student perceptions of school crime.  
Stewart et al., 2003: A higher percentage of nonwhite students was not significantly associated with school misbehavior.  

| Percent Nonwhite                  | Gottfredson et al., 2005: A higher African American student and teacher population was significantly associated with higher levels of teacher victimization at school \( (r = 0.29)\) and student delinquency \( (r = 0.12)\) but not student victimization at school.  
Felson et al., 2004: Having a greater black student population was significantly associated with more interpersonal violence \( (r = 0.16)\) but not more theft/vandalism or school delinquency.  
Gottfredson et al., 2005: A higher percentage of males was significantly associated with higher levels of student delinquency \( (r = 0.12)\) and student victimization \( (r = 0.11)\) but not teacher victimization.  
Wilcox et al., 2006: The percentage of male students was not significantly associated with teacher or student victimization, teacher or student perceptions of school crime, or teacher witnessed misconduct.  

| Percent Male                      | Khoury-Kassabri et al, 2006: A higher percent of male students was significantly associated with more weapon violence \( (Guns-OR=3.17, Knife-OR=4.56, Other weapons-OR=3.81)\).  
Gottfredson et al., 2005: A higher percentage of males was significantly associated with higher levels of student delinquency \( (r = 0.12)\) and student victimization \( (r = 0.11)\) but not teacher victimization.  
Wilcox et al., 2006: The percentage of male students was not significantly associated with teacher or student victimization, teacher or student perceptions of school crime, or teacher witnessed misconduct.  

| School Poverty                    | Wilcox et al., 2006: A greater percentage of students on free and reduced lunch was associated with more student \( (B = 0.03, SE = 0.02)\) and teacher victimization \( (B = 0.02, SE = 0.01)\) and teacher perceptions of school crimes \( (B = 0.01, SE = 0.00)\). The percentage on free lunch was not significantly associated with students' perceptions of school crime or teacher witnessed misconduct.  
Stewart et al., 2003: School poverty is not significantly associated with an increase in school misbehavior.  

| Attendance                        | Stewart et al., 2003: School poverty is not significantly associated with an increase in school misbehavior.  
Brookmeyer et al., 2006: School attendance had no significant impact on future violent behavior.  

| Percent of Dropouts               | Brookmeyer et al., 2006: The percentage of dropouts had no significant impact on future violent behavior.  

| PTA Participation                | Brookmeyer et al., 2006: PTA participation by parents had no significant impact on future violent behavior.  

matched schools, the intervention was effective in reducing lower-grade-level students’ aggression and all grade levels’ social competence. However, when Laflamme et al. measured violence by injuries occurring at school, no significant difference in injury rates was found between high schools with low versus high numbers of perceived school social problems.

Peer Relationships. Peer relationships were measured in five studies with varied results. Two cross-sectional studies by Reis et al. and Stewart found that student belonging was related to a decrease in violent behavior. However, in two longitudinal studies by McNeely and Falci and Espelage et al., social belonging was not predictive of the rate of initiation or cessation of weapon-related violence or bullying. However, social belonging does not evaluate with whom students have relationships. Espelage et al. found that negative peer associations were predictive of future bullying among middle school students. This finding was supported by studies by Stewart and Welsh that found that positive peer associations were related to a decrease in misconduct and offending as well as school misbehavior.

Teacher/Student Relationships. In four of the 6 studies that measured teacher support, teacher support was significantly related to less perpetration and victimization of multiple types of violence. McNeely and Falci found teacher support both to be protective against the initiation of violence and to encourage the cessation of violence for middle and high school students. In their study, violence was the only health-related outcome for which teacher support was protective of both the initiation and cessation of the behavior (other behaviors included smoking, drinking, marijuana use, and suicidal initiation). Interestingly, though, in the Khoury-Kassabri et al. study of weapon-related violence, teacher support was not related to weapon carrying for middle and high school students. The Teacher/Student Relationships construct had the most consistent measurement of all the school social environment measures.

School Norms About Violence. School norms about violence were researched to a greater extent than the other school social environment measures. All studies found that school norms against violence were associated with a decrease in student-reported perpetration and victimization. Felson et al. found that this was true for 10th grade males even after controlling for students’ attitudes toward violence. Studies measured three different components of this construct: awareness of school norms, perception of the fairness of school norms, and belief in the school norms. Welsh included all 3 components in his study of middle school students and found that the measures were not statistically significantly correlated and that only belief was associated with a decrease in misconduct and offending.

Success in Schools. Success in the school environment was also measured in multiple ways. Studies measured both traditional notions of involvement, which include participation in activities and feelings of decision making, as well as students’ academic ability and values. Most studies found traditional notions of involvement to be related to less perpetration and victimization of various violent acts. This was not true in all studies as Khoury-Kassabri and Stewart found no significant association. Academic ability and academic values have not shown as much evidence as to their relationship to violence. Again this was not true for all studies, as Stewart found a significant association for academic ability.

Classroom Culture. While the above constructs certainly contribute to the classroom culture, some studies specifically attempted to measure the culture of the classroom or the school. Mooji and Sprott found that a positive classroom environment with an academic focus was correlated with fewer instances of violence. When this atmosphere was created in an elementary school classroom, the Classroom Centered intervention and its predecessor the Good Behavior Game found a reduction in all levels of student-reported baseline aggressive behavior. This was also seen for teacher-reported problem behavior, but not for parent-reported problem behavior.

School Culture. At the school level, Crooks et al., Sprott, and Welsh found that schools’ level of competency in management and its level of achievement were not related to violence. However, Reis et al. and Stewart found that schools’ level of emphasis on understanding, inclusion of cultural sensitivity, and cooperative efforts among school faculty were significantly related to a decrease in violence.

The School Physical Environment and Violence

Although the school social environment was measured in 24 of the 25 studies, only 5 studies considered the effect of the school physical environment. Of all 25 studies, only Wilcox et al. focused entirely on the school physical environment and its relationship to school violence.

Safety Actions. The construct school safety efforts focused on the perception of teachers and students of passive and active efforts of the school to improve safety. Studies showed that although school safety actions were related to perceptions of personal safety for both teachers and students, this relationship did not hold for actual incidents of violence. Mayer and Leone found that for middle and high school students the presence of school security personnel was in fact significantly related to more violence. Wilcox et al. did not focus on school personnel, but on the design of the school, noting that improved territoriality, indicated school ownership, and improved surveillance were
related to better perceptions of safety for students and teachers.

**School Disorder.** In the studies that researched the relationship between school disorder and violence, the results were mixed. Wilcox et al., Van Dorn, and Mayer and Leone found that evidence of school disorder, defined as litter, graffiti, and disrepair, were related to higher levels of teacher and student victimization as well as the perception of school violence. However, in their study of high school students, LaFlamme and Menkel did not find evidence that increased school disorder resulted in an increase in violence-related injuries.

### Impact of the Organizational Characteristics of the School

In many of these studies, aspects of the school environment that assist in determining the school social environment or the school physical environment were included in explanatory models. These included school size, class size, school level, location of school, type of school, school poverty, attendance, PTA participation, and the percentage of nonwhites, of male population, and of dropouts. Table 3c includes a detailed listing of the studies’ findings.

### DISCUSSION

Although all 25 studies found some relationship between the school environment and school violence, the nature and strength of this relationship was difficult to assess due to the multiple measures of the school environment and violence used by the included studies. This can partially be attributed to the multidisciplinary nature of the study of school violence. It also should be noted that 11 of the 25 studies were of international schools, with potentially different school environments as well as societal and organization values and practices around education.

In order to clarify the current state of knowledge demonstrated by these articles, a classification system was created. Using the classification system, studies show that lower rates of school violence were associated with the following:

- Positive relationships with teachers. Interestingly feeling a sense of belonging had no association with violence, though belonging to a negative peer group was associated with an increase in violence.
- A student population that is aware of school rules and believes they are fair.
- Students who have ownership in their school. Academic values and ability were not as good of predictors of decreased school violence.
- Classroom and school environments that are positive and focused on student comprehension.
- School safety interventions that are focused on improving the physical environment of the school, especially reducing the amount of perceived school physical disorder.

### Measures of the School Environment

Research into the school environment’s contribution to the occurrence of school violence is in its infancy. Of the 25 studies, 20 were published after 2000. This may also contribute to the different measures of the school social environment found in this review. An additional problem is the lack of consistency in the conceptualization of similar variables.

The mechanisms by which the school social environment influences violence operate at both the student and school levels. Most of the studies in this literature review measured those that operate at the student level, or the tenets of Social Control Theory. Assessing the principles of social cohesion and capital operating at the school level have been less proficiently and accurately assessed. No studies identified have attempted to assess the stability of the environment or relationships in the school, which improve trust and cohesiveness and may increase social control. Questions assessing these variables could be modeled after a similar research exploring the neighborhood climate.

Another understudied area is the school physical environment and its role in school violence. This may be due to the fact that the school physical environment is seen as the domain of school security. Another reason may be the difficulty in operationalizing the school physical environment. Although the tenets of CPTED suggest mechanisms of impact, assuring validity when assessing these mechanisms is more difficult. More formative research into aspects of the school environment that indicate control and ownership is needed. Another area of future research is how this physical environment interacts with the social environment. For example, it may be that improving the physical environment of the school improves the level of school cohesion by instilling pride in their school.

These needs will be best accomplished through qualitative research into the lived experiences of teachers and students in school. All of these studies used a survey to assess the school environment and its relationship to violence using questions derived from theories. Whether the variables suggested by theories actually represent how teachers and students experience the school environment in relation to violence needs to be ascertained. Additionally, although the use of a survey allows for multiple independent variables and multiple dependent variables as well as for a larger and potentially more generalizable sample, it does not allow for an in-depth exploration of the relationship between any variables.
that aim to address both individual and school level risk factors need to be attempted, more efforts at distinguishing the mechanisms of effectiveness need to be made. Programs could accomplish this by either phasing in various parts of the interventions and measuring the dose of exposure of different components, or measuring students’ and teachers’ opinions as to the effectiveness of components.

**IMPLICATIONS FOR SCHOOLS**

The goal of this literature review was to present schools with new intervention opportunities to reduce school violence. Although the individual is the perpetrator of violence, violence occurs in a context. This review suggests that by modifying this context, schools can reduce the likelihood of an individual being violent. An additional benefit for schools is that improvements in the school environment have been linked to improvements in educational outcomes.

Although more research needs to be completed to support these findings, there is enough evidence to begin to act. School health educators can include violence as another example by which the environment influences health, potentially engaging the class in a school beautification project. School principals can place more emphasis on student bonding, encouraging positive school classrooms and the creation of new student organizations. And, school superintendents and school board members can reexamine their use of resources to prevent violence, perhaps beginning to rethink what “security” means in schools. All school personnel need to see the improvement of the school environment as a way to reduce school violence while at the same time hopefully improving academic outcomes.

**REFERENCES**

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