GENERAL ARTICLE

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

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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]
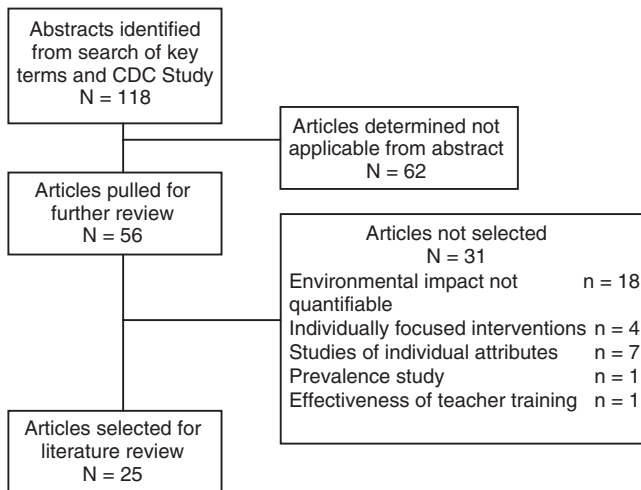
The physical environment consists of the space where violence occurs. Some research has shown that by redesigning school space, using principles of Crime Prevention Through Environmental Design (CPTED), incidences of school violence can be lowered.[28,29] CPTED categorizes the possible impact of the 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

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┌─────────────────────┐
│ Abstracts identified│
│ from search of key  │
│ terms and CDC Study │
│      N = 118        │
└─────────────────────┘
          │        ┌──────────────────────┐
          │        │ Articles determined  │
          ├────────│ not applicable from  │
          │        │ abstract             │
          │        │      N = 62          │
          │        └──────────────────────┘
┌─────────────────────┐
│ Articles pulled for │
│ further review      │
│      N = 56         │
└─────────────────────┘
          │        ┌──────────────────────────────────────┐
          │        │      Articles not selected           │
          │        │            N = 31                    │
          │        │ Environmental impact not     n = 18  │
          ├────────│ quantifiable                         │
          │        │ Individually focused         n = 4   │
          │        │ interventions                        │
          │        │ Studies of individual        n = 7   │
          │        │ attributes                           │
          │        │ Prevalence study             n = 1   │
          │        │ Effectiveness of teacher     n = 1   │
          │        │ training                             │
          │        └──────────────────────────────────────┘
┌─────────────────────┐
│ Articles selected   │
│ for literature      │
│ review              │
│      N = 25         │
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CDC, Centers for Disease Control and Prevention.

retrieved from these searches were read, with articles appearing to meet the above criteria pulled for further review. Figure 1 provides a detailed diagram of the article selection process. All articles were summarized using a table similar to Table 1.

ARTICLES SELECTED

The 25 studies selected represent a diversity of settings and methodologies. Most of the studies' populations were either middle or high school students, with only four studies including elementary school students. Eleven of the studies described an international student population. Most of the studies used a cross-sectional design with only five studies using a longitudinal design. Seven of the studies used an already existing national survey of school age children.

Twenty-three of the studies used a survey to obtain information about the school environment from students, teachers, or administrators. The two that did not, instead, used structured interviews. Thirteen of the studies used hierarchical linear modeling to evaluate the impact of the school environment on violence. Six of the studies used structural equation modeling and five of the studies used a regression analysis. Table 1 provides a more-in-depth look at the structure of the studies.

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 Peacebuilders 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 1. **Sample and Methods for Selected Articles** *(continued on next page)*

Article	Aim	Sample	Method	Results
Longitudinal Design				
Crooks CV, Scotts KL, Wolfe DA, Chiodo D, Killip S. Understanding the link between child maltreatment and violent delinquency: What do schools have to add? *Child Maltreatment.* 2007;12:269-280.	To examine the ecological risk factors for child delinquency, including child maltreatment	Convenience sample. 1897 9th grade students from 23 high schools	Survey. Hierachical Linear Modeling	Violent Behavior Score
Brookmeyer KA, Fanti KA, Henrich CC. Schools, parents, and youth violence: A multilevel, ecological analysis. *J Clin Child Adolesc Psychol.* 2006;35:504-514.	To examine the joint contribution of parents, schools, and adolescent characteristics on changes in violent behavior over time	Randomized cluster sample. 6397 middle and high school students from 125 schools. National Longitudinal Study of Adolescent Health	Survey. In-home interviews. Hierarchical Linear Modeling	Violent Behavior Score
McNeely C, Falci C. School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *J Sch Health.* 2004;74:284-292.	To explore the association between teacher support and social belonging and the initiation, escalation, and reduction of participation in health-risk behaviors	Randomized cluster sample. 13,570 middle and high school students from 160 schools. National Longitudinal Study of Adolescent Health	Survey. In-home interviews. Conditional Multinomial Logistic and Conditional Logistic Regression	Dichotomous (yes/no) Violence Measure
Sprott JB. The development of early delinquency: Can classroom and school climates make a difference. *Canadian Journal of Criminology and Criminal Justice.* 2004;46:553-572.	To investigate the effects of the classroom climate and broader school climate on early adolescent violent and property offending	Nationally representative cohort of children ages birth to 25 (Canada). 1311 10-13-year-olds. Canadian National Longitudinal Study of Children and Youth	Survey of both children and teachers. Hierarchical Linear Modeling	Violent Offending Score. Property Offending Score
Espelage DL, Bosworth K, Simon TR. Short-term stability and prospective correlates of bullying in middel-school students: An examination of potential demographic, psychosocial, and environmental influences. *Violence Vict.* 2001;16:411-426.	To examine the factors associated with stability and change of bullying behaviors over time	Convenience sample. 516 middle school students in 1 school	Survey. Multilinear Regression	Bullying
Laflamme L, Menckel E. Pupil injury risks as a function of physical and psychosocial environmental problems experienced at school. *Inj Prev.* 2001;7:146-149.	To investigate the relationship between school physical and social environment problems and student injuries	Convenience sample (must have participated in prior study). Students from 77 Swedish high schools	Survey of principals. Chi-square	Proportionate Injury Ratio
Cross-Sectional International				
Reis J, Trockel M, Mulhall P. Individual and school predictors of middle school aggression. *Youth Soc.* 2007;38:322-347.	To assess individual, family, and school predictors of aggression	Nationwide convenience sample. 11,662 middle school students	Survey. Hierarchical Linear Modeling	Aggression
Khoury-Kassabri M, Astor RA. Benbenishti R. Weapon carrying in Israeli schools. The contribution of individual and school factors. *Health Educ Behav.* 2007;34:453-470.	To examine the individual and environmental variables that are related to carrying weapons to school	Randomized stratified cluster sample (Jewish/Arab, primary/junior high/high school). Nationally representative sample of Israeli schools. 10,400 junior high and high school students in 162 schools	Survey. Hierarchal Linear Modeling	Carrying a gun, knife, or other weapon to school
Astor RA, Benbenishty R, Vinokur AD, Zeira A. Arab and Jewish elementary school students' perceptions of fear and school violence: Understanding the influence of school context. *Br J Educ Psychol.* 2006;76:98-118.	To explore variables that predict elementary students' fear of attending school and perceived seriousness of school violence	Randomized stratified cluster sample (Jewish/Arab, primary/junior high/ high school). Nationally representative sample of Israel schools. 5472 elementary students in 71 schools	Survey. Structural Equation Modeling	Victimization by Students. Victimization by Teachers. Perceived Seriousness of the School Violence Problem Fear of Attending School

Table 1. Continued

Article	Aim	Sample	Method	Results
Khoury-Kassabri M, Benbenishty R, Astor RA. The effects of school climate, socioeconomics, and cultural factors on student victimization in Israel. *National Association of Social Workers.* 2005;29:165-180.	To examine differences between Israel Jewish and Arab schools in the relationship between school-level variables and violence	Randomized stratified cluster sample (Jewish/Arab, primary/junior high/ high school). Nationally representative sample of Israel schools. 10,444 students in Junior and High School students in 110 Jewish school and 52 Arab schools	Survey, Hierarchal Linear Modeling	Serious Physical Victimization. Threats. Moderate Physical Victimization. Verbal-Social Victimization. Property Damage
Khoury-Kassabri M, Benbenishty R, Astor RA, Zeira A. The contributions of community, family, and school variables to student victimization. *Am J Community Psychol.* 2004;34:187-204.	To examine a multilevel model of school-violence contributors	Randomized stratified cluster sample (Jewish/Arab, primary/junior high/high school). Nationally representative sample of Israel schools. 10,444 Junior and High school students from 162 schools	Survey, Hierarchical Linear Modeling	Serious Physical Victimization. Threats. Moderate Physical Victimization. Verbal-Social Victimization
Astor RA, Benbenishty R, Zeira A, Vinokur A. School climate, observed risky behaviors, and victimization as predictors of high school students' fear and judgments of school violence as a problem. *Health Educ Behav.* 2002;29:716-735.	To test whether students' personal fear of attending school and subjective assessment of school violence are best understood as separate constructs	Randomized stratified cluster sample (Jewish/Arab, Primary/Junior High/High School). Nationally representative sample of Israel schools. 3518 High school students in 78 schools	Survey, Structural Equation Modeling	Victimization by Students. Victimization by Teachers. Perceived Seriousness of the School Violence Problem Fear of Attending School
Benbenishty R, Astor RA, Zeira A, Vinokur A. Perceptions of violence and fear of school attendance among junior high school students in Israel. *Social Work Research.* 2002;26:71-87.	To understand how the school context affects the level and nature of victimization of junior high students	Randomized stratified cluster sample (Jewish/Arab, primary/junior high/ high school). Nationally representative sample of Israel schools. 6892 junior high students from 102 schools	Survey, Structural Equation Modeling	Victimization by Students. Victimization by Teachers. Perceived Seriousness of the School Violence Problem Fear of Attending School
Mooij T. Pupil-class determinants of aggressive and victim behavior in pupils. *Br J Edu Psychol.* 1998;68:373-385.	To explore multilevel determinants (pupil, class, and school) of aggressive behavior in students	Randomized cluster sample. Dutch secondary schools. 1998 secondary students from 71 schools	Survey, Hierarchical Linear Modeling	Perpetrator of Disruptive Behavior, Intentional Damage to Property, or Premeditated Physical Violence in School. Victim of Physical Violence, Intentional Damage to Property, or Emotional Violence in School
Felson RB, Liska AE, South SJ, McNulty TL. The subculture of violence and delinquency: Individual vs. school context factors. *Social Forces.* 1994;73:155-173.	To examine the subculture of violence theory in schools	Randomized cluster sample. 2213 10th grade males from 87 schools. Youth in Transition Study	Interviews of students. Surveys of students and school principals. Hierarchical Linear Modeling	Interpersonal Violence Index. Theft/Vandalism Index. School Delinquency Index

Cross-Sectional National

Article	Aim	Sample	Method	Results
Wilcox P, Augustine MC, Clayton RR. Physical environment and crime and misconduct in Kentucky schools. *J Prim Prev.* 2006;27:293-313.	To test the link between the physical environment and crime within the school environment	Randomized stratified cluster sample of public (non-alternative) Kentucky schools. 3683 7th-grade students and 1351 teachers in 65 schools	Survey of students and teachers. Observation in schools. Hierarchical Linear Modeling	Student Victimization. Student Perceptions of School Crime. Teacher Witnessed Misconduct. Teacher Victimization. Teacher Perceptions of School Crime
Gottfredson GD, Gottfredson DC, Payne AA Gottfredson NC. School climate predictors of school disorders: Results from a national study of delinquency prevention in schools. *Journal of Research in Crime and Delinquency.* 2005;42:412-444.	To test hypotheses about the association of school organizational characteristics and school crime and disorder	Nationally representative sample. 254 secondary schools	Survey, Structural Equation Modeling	Teacher Victimization. Student Victimization. Student Delinquency

Table 1. Continued

Article	Aim	Sample	Method	Results
Kitsantas A, Ware HW, Martinez-Arias R. Students' perceptions of school safety: Effects by community, school environment, and substance use variables. *Journal of Early Adolescence.* 2004;24:412-430.	To examine the relationship between students' perceptions of the safety of their community and their school environment and their evaluation of their school's safety and level of substance use	Randomized sample of households. 3092 middle school students. School Safety and Discipline component of the 1993 National Household Education Survey	Survey. Structural Equation Modeling	School Safety
Van Dorn RA. Correlates of violent and nonviolent victimization in a sample of public high school students. *Violence and Victims.* 2004;19 :303-320.	To investigate the impact of the presence of hate-related words, the availability of drugs, and the presence of gangs on student victimization	Randomized sample of households. 9442 public middle and high school students. School Crime Supplement of the 1999 National Crime Victimization Survey	Survey, Multinomial Logistic Regression	Categorical Victimization in school (violent, nonviolent, no victimization)
Stewart EA. School social bonds, school climate, and school misbehavior: A multilevel analysis. *Justice Quarterly.* 2003;20:575-604.	To examine how student and school characteristics influence student misbehavior	Nationally representative sample. 10,578 high school students from528 schools. National Education Longitudinal Study	Survey. Hierarchical Linear Modeling	School Misbehavior Scale
Welsh WN. Individual and institutional predictors of school disorder. *Youth Violence and Juvenile Justice.* 2003;1:346-368.	To explore the effect of school climate on adolescent offending and misconduct	Convenience sample. 5203 middle school students in 11 Philadelphia middle schools	Survey. Hierarchical Linear Modeling	Misconduct in School. Offending in School
Mayer, MJ, Leone PE. A structural analysis of school violence and disruption: Implications for creating safer schools. *Education and Treatment of Children.* 1999;22:333-356.	To examine the relationship between school rules and school security and school disorder	Randomized sample of households. 6947 public middle and high school students. School Crime Supplement of the 1995 National Crime Victimization Survey	Survey. Structural Equation Modeling	Individual Self-Protection. School disorder
Intervention				
Flannery DJ, Vazsonyi AT, Liau AK, et al. Initial behavioral outcomes for the PeaceBuilders universal school-based violence prevention program. *Dev Psychol.* 2003;39:292-308.	To evaluate the effectiveness of a program that attempts to change characteristics of a setting that trigger aggressive hostile behavior	8 elementary schools from 1 school district in Tucson	Quasi-experimental design. School Delayed Match. Survey. Hierarchical Linear Modeling	Teacher and child reports of both aggressive behavior and pro-social behavior
Ialongo NS, Wethamer L, Kellam SG, Brown CH, Wang S, Lin Y. Proximal impact of two first-grade preventive interventions on the early risk behaviors for later substance abuse, affective disorder, and antisocial behavior. *Am J Community Psychol.* 1999;27:599-641.	To examine the impact of two preventative interventions on the early risk factors for substance abuse, affective disorder, and conduct disorder	678 first graders from 9 elementary schools (3 classrooms in each school) in Baltimore City	Randomized block design. Semistructured interviews teachers. Structured interviews students. Mixed-Model Analysis	Teacher, parent, and peer observation of classroom behaviors
Kellam SG, Rebok GW, Ialongo N, Mayer LS. The course and malleability of aggressive behavior from early first grade into middle school: Results of a developmental epidemiologically-based preventive trial. *J Child Psychol Psychiat.* 1994;35:259-281.	To examine the effect of a classroom intervention attempting reduce aggression by changing the demand/response relationship between teacher and student	693 students from41 elementary classrooms from 19 schools in Baltimore City	Quasi-experimental design. Classroom Control Match (internal and external). Semistructured interviews teachers. Structured interviews students. ANOVA. Multilinear Regression	Teacher observation of classroom aggression

Table 2. School Environment Constructs

Author (Year)	Social Environment						Physical Environment		Other
	Peer Relationships	Teacher and Student Relationships	School Norms About Violence	Success in School	Classroom Culture	School Culture	Safety Actions	School Disorder	Organizational Characteristics
Crooks et al., 2007	X*	X*				X			X
Brookmeyer et al., 2006	X*	X*							X
McNeely & Falci, 2004	X	X							
Sprott, 2004				X	X	X			
Espelage et al., 2001	X								
Laflamme & Menchkel, 2006	X*	X*		X				X	
Reis et al., 2007	X	X		X		X			X
Khoury-Kassabri et al., 2007		X	X						
Astor et al., 2006		X*	X*					X*	
Khoury-Kassabri et al., 2005		X	X	X					X
Khoury-Kassabri et al., 2004		X	X	X					X
Astor et al., 2002		X*	X*					X*	
Benbenishty et al., 2002		X*	X*					X*	
Mooji, 1998					X				
Felson et al., 1994			X	X					X
Wilcox et al., 2006								X	X
Gottfredson et al., 2005	X*		X			X*			X
Kitsantas et al., 2004	X*	X*	X	X*			X		
Van Dorn, 2004							X	X	
Stewart, 2003	X		X	X		X			X
Welsh, 2003	X	X	X	X		X			X
Mayer & Leone, 1999			X*				X	X	
Flannery et al., 2003			X*			X*			
Ialongo et al., 1999					X				
Kellam et al., 1994					X				

*Indicates that these constructs are within the same measure.

Table 3a. **The School Social Environment's Effect** *(continued on next page)*

Constructs	Article Results
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
	Astor et al., 2006: A better school climate is significantly related to a decrease in the amount of victimization for students (r = −0.13) and staff (r = −0.34). A better school climate was significantly related to a decrease in the perceived seriousness of violence (r = −0.17). A better school climate is not significantly associated with fear of attending school
	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 for (r = −0.06)
	Benbenishty 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
	Gottfredson et al., 2005: Better ratings of psychosocial climate (combined measure including organizational focus, moral, planning, and administrative leadership) was significantly related to less teacher victimization at school(r = −0.46) but not student victimization at school or student delinquency
	Kitsantas et al., 2004: A better school climate was associated with improved student perceptions of school safety (r = 0.07)
	Flannery et al., 2003: In schools implementing PeaceBuilders ratings of student aggression by teachers for grades 3-5 were significantly lower than in comparison schools (B = −0.017, SE = 0.005). There were no significant effects for grades K-2 or for student self-report of aggression in either grade grouping
Peer Relationships	McNeely & Falci, 2004: Social belonging did not significantly predict the initiation or cessation of weapon-related violence
	Espelage et al., 2001: Sense of belonging did not significantly predict bullying behavior. Negative peer influences significantly predicted increased bullying behavior (B = .17)
	Reis et al., 2007: Students' perception of the quality of school life was significantly related to a decrease in aggression (B = −0.40, SE = .02)
	Stewart et al., 2003: Student attachment was significantly related with a decrease in school misbehavior (B = −0.212, SE = 0.031). Positive peers were significantly associated with a decrease in school misbehavior (B = −0.431, SE = 0.039)
	Welsh, 2003: Positive peer associations were significantly associated with a decrease in misconduct (B = 0.09, SE = 0.01) and offending (B = 0.23, SE = 0.01)
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 = .02)
	Khoury-Kassabri et al., 2007: Teacher support was not significantly related to gun, knife, or other weapon carrying to school
	Khoury-Kassabri et al., 2005: Teacher support was significantly related to less serious physical victimization (B = −0.029, threats (B = −0.042, moderate physical victimization (B = −0.059), verbal-social victimization (B = −0.070) in Jewish schools. Teacher support was significantly related to less serious physical victimization (B = −0.059), verbal-social victimization (B = −0.092), and property damage (B = −0.042), moderate physical victimization (B = −0.096), and property damage (B = −0.115) in Arab schools
	Khoury-Kassabri et al., 2004: Teacher support was significantly elated to less serious physical victimization (B = −0.023), threats (B = −0.029), moderate physical victimization (B = −0.059) and verbal-social victimization (B = −0.110)
	Welsh, 2003: Respect for students not significantly related to either misconduct or offending
Students' 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 = 1.40, Other Weapons OR = 1.41)
	Khoury-Kassabri et al., 2005: Students' clear 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' clear perceptions of school policy were 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' clear 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 student 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 = .09), and school delinquency (r = 0.11) even after controlling for individual attitudes

Table 3a. Continued

Constructs	Article Results
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 = .19, SE = 0.01)
Students Success in the School Environment	Mayer & Leone, 1999: A system of law (knowledge of rules and implementation of consequences) was significantly related to less school disorder (−0.38)
	Sprott, 2004: Students' overall academic ability not significantly predictive of either violent offending or property offending
	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 = 0.15)
	Khoury-Kassabri et al, 2007: There was no significant relationship between students' participation in decision making and weapon carrying to school
	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 = 0.13, SE = 0.01) and offending (B = 0.10, SE = 0.01). Rewards for this effort were not significantly related to either misconduct or offending. School involvement was significantly related to an increase in both misconduct (B = −2.22, SE = 0.83) and offending (B = −0.65, 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
	Mooji, 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 = 0.04), 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
	Kellam et al., 1994: The Good Behavior Game significantly reduced aggression over time for all student levels of baseline aggression
School Culture	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

Constructs	Article Results
School Safety Actions	Wilcox et al., 2006: Improved territoriality was related to a decrease in teachers' perceptions of school crime (B = −0.293, 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' 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
	Mayer & Leone, 1999: The level of school security interventions (personnel, metal detectors) was significantly related to more school disorder (r = 0.57)
School Disorder	Laflamme & Menchkel, 2001: The presence of physical problems did not significantly predict a school's proportionate injury ratio
	Wilcox et al., 2006: Increased school disorder was significantly related to an increase in teachers' perceptions of school violence (B = 0.01, SE = 0.00), teacher witnessed misconduct (B = 0.11, SE = 0.04), as well as teachers' victimization at school (B = 0.04, SE = 0.02). Increased school disorder was not significantly related to student victimization or student perception of school violence
	Van Dorn, 2004: The presence of hate-related words was significantly related to an increase in violent victimization (B = 1.09, SE = 0.27) but not nonviolent victimization. The presence of hate-related symbols was not significantly associated with an increase in either type of victimization. The presence of hard drugs was significantly associated with an increase in violent victimization (B = 0.56, SE = 0.26) while the presence of soft drugs was significantly associated with an increase in nonviolent victimization (B = 0.59, SE = 0.23). The presence of gangs was significantly associated with an increase in violent victimization (B = 1.02, SE = 0.26) but not nonviolent victimization
	Mayer & Leone, 1999: The level of school disorder was significantly related to increased individual self-protection (r = 0.54)

Table 3c. Organizational Characteristics of the School

Constructs	Article Results
School Size	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., 2007: School size had no significant association with weapon carrying to school
	Khoury-Kassabri et al., 2005: 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
	Felson 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
Class Size	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 school1
	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 Jewish schools. A larger class size was significantly associated with more threats (B = 0.019), 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)
School Level	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

Table 3c. Continued

Constructs	Article Results
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
	Mooij, 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
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
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
	Wilcox et al., 2006: Having a greater nonwhite student population was significantly associated with increased teacher witnessed misconduct (B = 0.07, SE = 0.03). 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 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	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.[32] 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.

Study Design

Unfortunately, most of the knowledge that exists about the impact of the school environment on school violence is based on cross-sectional studies. As individual's behaviors are a factor in determining an environment, it is important to isolate the effect of the environment on behavior. Without a longitudinal design to assess the temporal relationship between variables, a causal relationship between the school environment and school violence cannot be established. One could hypothesize a mechanism by which violence in the school could impact aspects of the school social and physical environment. For example, in a cross-sectional survey, Mayer and Leone found that increased school security was related to students' report of more school disorder.[33]

A strength of the cross-sectional studies included in this literature review is that they were specifically designed to explore the associations between the school environment and the likelihood of violence. Most of the included longitudinal studies used existing national surveys. They were forced to choose measures of the school environment and violence that were included in the survey. Because of this, many of these surveys measured outcome variables that were not specific to school violence.

All but one outcome measure was self-report of violence perpetration or victimization. Although there are concerns regarding the validity of self-report measures, it is difficult to obtain information about school violence from schools. Additionally, the data available from schools may have validity issues (ie, underreporting or only capturing severe incidents). Finally, school observation is costly and time consuming.

IMPLICATIONS FOR RESEARCH

This review provides evidence of a relationship between the school environment and school violence. It suggests that school environment interventions to reduce school violence should focus on strengthening students' connection to school. Evidence was found to support the importance of teacher–student relationships as well as the benefits of positive classrooms and schools. Also important was students' belief in the rules. Although the existence and knowledge of rules were important, belief in those rules appeared to be most strongly related to a reduction in school violence. Similarly, this review found more evidence to support the benefit of creating orderly, safe physical environments for learning over other school security interventions.

Change in school environment can reduce school violence. However, of the 21 school violence intervention studies found that included the school environment, only 3 provided enough information to assess its impact. Although there is no doubt that programs

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.[34]

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.

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