

Students' Perceptions of Unsafe Schools: An Ecological Systems Analysis

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Abstract In the aftermath of several school shooting incidents in recent years, students' perceptions of unsafe schools has been a major concern for parents, teachers, school officials, school practitioners, and policy-makers. Using Bronfenbrenner's ecological systems framework, we examined the micro-, meso-, and exosystem level factors associated with perceptions of unsafe school environments in a nationally representative sample of 10- to 15-year-old youth in the United States. We found that for the socio-demographic characteristics, students who were older, male, and poor had increased risks of perceiving higher levels of unsafe school environments. Within the micro-system of the family, our results indicate that parent-youth discussions of school activities/events decreased the risk of students perceiving unsafe schools. All of the school environment variables—ease of making friends, teachers' involvement, observed weapon carrying, and school rule enforcement—were related in the expected direction to students' perceiving their schools as unsafe. At the meso-system level, findings from our study demonstrate that variables measuring parental school involvement were unrelated to perceptions of school safety. Finally, at the exosystem level, we found that students' perceptions of residing in a safer neighborhood and residence in a non-central city metropolitan area, compared with a central city, decreased the odds of perceiving school environments as unsafe. School policy and practice implications are discussed.

Keywords School safety · Ecological model · Family environment · Neighborhood environment · School environment

Introduction

In 2007, an estimated 1.5 million U.S. students between the ages of 12 and 18 were victims of nonfatal crimes at school involving both theft and violence. Although this victimization rate declined between 1992 and 2007, the rate remained stable between 2004 and 2007 (Dinkes et al. 2009). As might be expected, sizable proportions of students report concerns about their school safety, which researchers have frequently measured by students' perceptions of school safety or danger (e.g., Bowen and Van Dorn 2002; Shumow and Lomax 2001) or fear of school violence, crime, or victimization (e.g., Bachman et al. 2010; Brown and Benedict 2004; Schreck and Miller 2003). School safety concerns are important not only because society is responsible for ensuring students' safety, but because unsafe school environments are associated with multiple problems. These problems include decreased school attendance, grades, and participation in school activities, and increased negative attitudes toward school, school avoidance, fear, posttraumatic stress, and misbehavior (see Hilarski 2004, for a review of this research).

In response to school safety concerns, the Office of Safe and Drug-Free Schools (U.S. Department of Education, 2010) and recent U.S. government reports (e.g., Dinkes et al. 2009) advise and assist policymakers, school administrators, and practitioners to continue efforts to create safe and violence-free school environments. By identifying the factors associated with students' perceptions of unsafe schools, the current study contributes to these efforts. Using

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Bronfenbrenner's (1977) ecological systems model as a framework, this study examines multiple factors—socio-demographic characteristics and influences within the home, school, parent-school connection, and broader neighborhood environments—which affect students' perceptions of unsafe school environments. This study also contributes to understanding the factors that influence students' perceptions of school safety by using more recent national data and focusing specifically on middle school students, who appear to be particularly vulnerable to school environments that can contribute to a variety of problems (Anderman and Kimweli 1997).

Urie Bronfenbrenner's (1994, 1977) ecological systems model provides a framework to understand the factors that place students at risk of perceiving their schools as unsafe. In this context, the model postulates that students' perceptions of unsafe school environments result from a complex interplay between characteristics of the individual and family and interactions within and among five nested systems: micro-, meso-, exo-, macro- and chronosystems. Although Bronfenbrenner's ecological model suggests that influences at macrosystem (e.g., cultural beliefs) and chronosystem (e.g., life transitions) levels also can affect students' perceptions of school safety, research on the relationships between macrosystems and chronosystems and these perceptions are rare. Therefore, these two systems were not included in the literature review.

Youth and Family Socio-Demographic Characteristics

As Bronfenbrenner's (1977) ecological systems model suggests, socio-demographic characteristics of the youth (age, race/ethnicity, and gender) and family (marital status, parental education, and financial resources) can affect interactions in immediate settings such as the home and school, and influence the quality of more distant environments such as the neighborhood. These interactions and environments, in turn, can affect students' perceptions of safety within the school environment.

Youth Characteristics

Although results are not entirely consistent (e.g., Mijanovich and Weitzman 2003; Shumow and Lomax 2001), the majority of studies conducted primarily on post-elementary school students suggest that older students are less likely to fear for their school safety compared with younger students (e.g., Bachman et al. 2010; Dinkes et al. 2009; Schreck and Miller 2003). Scholars (e.g., Bachman et al. 2010; Brown and Benedict 2004; Price et al. 2002) have advanced several reasons to explain why racial/ethnic minority students (primarily Blacks and Hispanics) might perceive their schools

as less safe than White students. The reasons include increased risks of victimization, presence of gangs at school, and involvement in fights. The majority of multivariate studies, however, indicate no variations in perceptions of school safety among racial/ethnic groups (e.g., Bachman et al. 2010; Price et al. 2002; Wallace and May 2005). There are, however, exceptions. In a national study, students of color reported feelings less safe at school than their White counterparts (Bowen et al. 2000). Other research suggests that the effects of students' race/ethnicity on school safety perceptions vary by the type of fear. For example, Schreck and Miller (2003) found that compared with White students, Hispanic students were more likely to fear theft, robbery, and assault at school or going to and from school; Black students were more likely to fear robbery, but less likely to fear assault.

Various reasons also exist for expecting gender differences in students' perceptions of school safety. For example, male students face a higher risk of being threatened with a weapon or victimized on school property (Anderman and Kimweli 1997; Dinkes et al. 2009), and such victimization in turn can decrease students' perceptions of school safety (Bachman et al. 2010; Wallace and May 2005). On the other hand, compared with males, females might have less confidence in their ability to protect themselves and are more likely to experience gendered harassment and sexual crimes (Meyer 2008), placing them at higher risk of perceiving their schools as unsafe. Despite the rationales for expecting gender differences in students' perceptions of school safety, research findings have been mixed. Some studies indicate no relationship (e.g., Bachman et al. 2010; Mijanovich and Weitzman 2003). Other research suggests that males have more school safety concerns than females (Akiba 2008; Welsh 2000), while other studies indicate the opposite (e.g., Brown and Benedict 2004; Wallace and May 2005).

Maternal and Family Characteristics

Few studies have examined relationships between parents' marital status, education, and financial resources and students' perceptions of school safety. These are important omissions. Studies have demonstrated that single-mother status, lower levels of maternal education, and/or poverty can adversely affect parent-child interactions in the home (e.g., Duncan and Brooks-Gunn 1997), can decrease parental involvement in the school (e.g., Griffith 1998), and can constrain parents' ability to send their children to higher quality schools (e.g., Phillips and Chin 2004) and to reside in better quality neighborhoods (e.g., Eamon 2001). As the research in the subsequent subsections demonstrates, these factors can affect students' perceptions of school safety.

Little evidence exists that marital status plays a role in students' perceptions of school safety when other factors are controlled (e.g., Mijanovich and Weitzman 2003). However, this same study found that students with higher educated parents were actually less likely to feel unsafe in school. May and Dunaway (2000) found no relationship between poverty and students' fear of school crime, but other studies demonstrate a negative relationship between family income and students' fear of victimization while at school (Alvarez and Bachman 1997; Schreck and Miller 2003). Other research has examined the relationship between socio-economic status (SES) and perceptions of school safety. Although Akiba's (2008) international study found no relationship between SES and fear of school violence in the U.S., Shumow and Lomax's (2001) path analysis demonstrated that higher SES was indirectly related to a combined measure of student and parent ratings of safer schools through multiple pathways, such as attendance at higher quality schools and parental school involvement.

Microsystem

The most direct influences on the individual are situated at the microsystem level, which consists of physical features and interactions between the individual and others within immediate settings containing the individual (Bronfenbrenner 1977). At the microsystem level, parent-child interactions within the home and school, and social and physical environments within the school might influence students' perceptions of school safety.

Based on prior studies and theories, such as Bowlby's (1969) attachment theory, scholars have argued that when children have strong attachments with their parents, they expect to be comforted and protected. Thus, children learn to trust others and feel less threatened by aversive events (Twemlow et al. 2002). In a pioneering study in the area of school safety, Wallace and May (2005) found that male adolescents who had low levels of attachments with their parents (e.g., perceived parents cared about them) were more fearful of criminal victimization at school.

Unlike parent-youth interactions within the microsystem of the home, multiple studies have examined relationships among a variety of school characteristics and students' perceptions of school safety. Akiba's (2008) research suggests that students who attend schools with disorderly classrooms and school environments are more likely to fear becoming victims of school violence. Similarly, Mijanovich and Weitzman (2003) study indicates that when schools fail to enforce rules, students are at greater risk of feeling unsafe at school. On the other hand, when school rules are enforced, White students (but not Black students) feel less fearful while at school (Bachman et al. 2010). Research

using indexes of similar items representing school climate support these results (Kitsantas et al. 2004; Shumow and Lomax 2001; Welsh 2000).

Although the composite school rating scale used by Shumow and Lomax (2001) included items related to teachers (e.g., caring about students), we located only one study that examined the independent impact of teacher involvement on students' perceptions of school safety. The study (Akiba 2008) found that when teachers practice student-centered instruction, students have less fear of becoming victims of school violence. Akiba speculated that students perceive this type of instruction as demonstrating the teacher's interest and concern, which in turn create an environment where students feel protected from potential school violence. Research also suggests that peer associations influence perceptions of school safety. For example, students who feel isolated are more fearful of criminal victimization while at school (Wallace and May 2005). As might be expected, having delinquent friends can increase fear of crime (Schreck and Miller 2003), while having positive peer associations has the opposite effect (Welsh 2000). Broader school social environments, including larger school size (Bowen et al. 2000) and presence of gangs (Bachman et al. 2010) and drug dealers (Schreck and Miller 2003), also appear to increase school safety concerns. On the other hand, greater ethnic/racial diversity can enhance African American and Hispanic students' perceptions of safety (Juvonen et al. 2006).

Studies also document that the presence of physical objects such as students carrying weapons increases students' fear of victimization while at school (Brown and Benedict 2004; Schreck and Miller 2003). However, schools adopting various safety measures appear to have mixed effects on students' perceptions of school safety. One study found that a latent construct of school safety actions (e.g., use of guards, locker checks, hallway supervision) had a weak positive effect on students' perceptions of safe schools (Kitsantas et al. 2004). Other research indicates that similar safety measures either have no effect on students' fear while at school, or actually increase fear (Bachman et al. 2010; Schreck and Miller 2003).

Mesosystem

A mesosystem encompasses the interrelations among two or more microsystems, each of which contain the developing person (Bronfenbrenner 1977). An example of a mesosystem is the interrelations between the home and school, including parental involvement in the school system. Epstein and Lee (1995) theorize that parental involvement in youth's academic and school social life is important because it conveys to youth the value of education, provides them with additional support, and maintains

continuity between home and school influences. Other scholars argue that a home-school connection enhances positive youth outcomes and deters or reduces school problems such as bullying (Sheridan et al. 2004). Despite the importance of parental involvement in the school, we located only one study that examined these interactions in relation to school safety (Shumow and Lomax 2001). The researchers demonstrated that an index of parental school involvement (e.g., attending school events) was directly related to students' perceptions of school safety.

Exosystem

An exosystem includes formal and informal social structures that do not contain the developing person, but influence or comprise the immediate settings in which the developing person is found. The neighborhood is one of these structures (Bronfenbrenner 1977). Because schools are situated within neighborhoods, it is not surprising that neighborhood conditions such as crime and poverty predict school violence (Laub and Lauritsen 1998), and perceptions of unsafe and disordered communities increase students' feeling unsafe at school (May and Dunaway 2000; Schreck and Miller 2003). Studies examining the mediating effects of parents' and/or students' perceptions of neighborhood safety and quality, support similar relationships (Kitsantas et al. 2004; Shumow and Lomax 2001). Using a more objective measure of neighborhood quality, Bowen and Van Dorn (2002) found a positive association between community violent crime rates and male middle school students' perceptions of school danger.

Finally research suggests that the area in which youth live or attend school can impact perceptions of school safety. Some studies indicate that students who reside in rural and/or urban areas are more likely to perceive school safety as a problem compared with their suburban counterparts (Anderman and Kimweli 1997; Mijanovich and Weitzman 2003). Mijanovich and Weitzman speculated that such findings are the result of suburban youth living in safer and resource-rich areas. Although Bachman et al. (2010) research indicates that attending a school in the central city can increase school fear for White students, an older study (Alvarez and Bachman 1997) found no such relationship.

Our study goes beyond previous research that has investigated the relationship between various factors and students' perceptions of school safety. Few past studies have focused specifically on middle school students who, according to Anderman and Kimweli's (1997) review of the literature, appear to be particularly vulnerable to negative school environments. In addition, the majority of the studies examining school safety issues focused primarily

on school and neighborhood effects, and failed to evaluate a range of socio-demographic characteristics and influences in two other levels of the environment: the micro-system of the home (parenting practices) and the mesosystem (parent-school connection). The study conducted by Shumow and Lomax (2001) is an exception. However, it also has limitations. The data (1994) are over a decade old, and did not focus specifically on middle school students. The study also omitted important characteristics such as presence of weapons at school, area of residence, and parent-youth interactions. In addition, the latent variables frequently included perceptions of both students and parents, limiting an identification of the specific factors that contribute to students' perceptions of school safety. Our study contributes to understanding the relationship between multiple factors, including youth and family socio-demographics, the microsystems of the home and school, a mesosystem (parental school involvement), and an exosystem (neighborhood safety and area of residence), that might place students at risk of perceiving unsafe school environments in a recent national sample of 10- to 15-year-old youth.

Methodology

Data and Sample

Data were extracted from the National Longitudinal Survey of Youth (NLSY) and the NLSY mother-child datasets. The original NLSY surveyed a nationally representative sample of 12,686 individuals between the ages of 14 and 22 in 1979. Beginning in 1986 and every 2 years afterwards, additional assessments of the NLSY female respondents and their children were conducted, and youth between the ages of 10 and 15 completed a self-administered survey (U. S. Department of Labor 2000). The sample for our study included youth who in the first of 2 years (2004 or 2006) were between the ages of 10 through 14, resided with their mothers, attended school, and responded to at least one of the 13 items from the self-administered survey used in this study. Because mothers' socio-demographic information and family income were collected only on biological mothers and their households, youth residing with others were eliminated from the sample. NLSY data do not allow identification of siblings attending the same school; thus, we were unable to use statistical methods to address such clustering. Instead, we randomly selected one youth from families with multiple youth meeting the sample selection criteria. The resulting sample included 1,249 youths. Strategies for handling missing data are described in the analytic methods section.

Measures

Dependent Variable

Students' perceptions of unsafe school environments was measured by the item "I don't feel safe at this school" (1 = very true, 4 = not at all true). Because categorizing the dependent variable into four categories violated the proportional odds assumption of the ordinal regression models, the "not at all true category" (6.13%) and the "somewhat true" categories were collapsed, and school safety was measured with three categories. The variable was then recoded so that higher numbers reflect the youth's perceiving a greater degree of unsafety in the school (1 = not at all true, 2 = not too true, 3 = somewhat true/very true).

Independent Variables

Using an ecological model as a framework for this analysis, we incrementally entered four groups of variables into the models: socio-demographic characteristics and variables representing micro-, meso-, and exosystems. Youth's socio-demographic characteristics included age, race/ethnicity, and gender. Socio-demographic characteristics of the mother and household included the mother's marital status and educational level and the family's poverty status, which was defined by a NLSY constructed variable based on the U.S. Federal poverty definition.

We selected two sets of variables measuring interactions and environments within the microsystems of the youth's home and school. Within the home, three variables measured parent-youth discussions: how often youth discussed with their parents things studied in class, things that were troubling them, and school activities/events (coded as 1 = never, 4 = often). The school environment was measured by four items: "it's easy to make friends at this school"; "most of the teachers are willing to help with personal problems" (teacher involvement); "have you ever seen a student carry a weapon such as a gun or knife on school property"; and "you can get away with almost anything at school" (school rule enforcement). All of the variables, with the exception of observing a weapon (1 = yes, 0 = no), were measured on a Likert-type scale (1 = very true, 4 = not at all true), and responses for ease of making friends and teachers' involvement were recoded so that higher numbers reflect more positive school environments. The first two responses for "ease of making friends" were then collapsed because of a low frequency in the "not at all true" category.

To examine the mesosystem encompassing parental school involvement, four variables were used: youth reported how many times their parents attended a school meeting, spoke to a teacher or counselor, attended a school event, and

volunteered at school (coded as 1 = never/almost never, 5 = once a week or more). Finally, for the exosystems level, we measured neighborhood safety by youth's responses to "how safe do you feel walking and playing in your neighborhood" (1 = very unsafe, 4 = very safe), and area of residence was measured by variables indicating whether youth lived in a standard metropolitan statistical area (SMSA) and within or outside of a central city.

Weighted means and standard deviations or percentages for the previously defined variables are presented in Table 1. It is worth noting that although the majority of the students (69.08%) indicated no concerns with school safety, close to one-third (31%) perceived their school environments as unsafe to some degree.

Analytic Methods

SAS 9.1 was used to conduct the data analyses. Multivariate ordinal logistic regression models, the appropriate analysis for a dependent variable with ordered categories (Allison 2001), were estimated. The odds ratio (i.e., the exponentiated *B* coefficient) can be interpreted as the effect of each variable on the odds of being in a higher rather than a lower category of perceiving an unsafe school environment, adjusted for the effects of the other independent variables. As recommended by the Center for Human Resource Research (2004), we weighted only the descriptive statistics provided in Table 1. The poverty and race/ethnicity variables controlled for oversampling of respondents with those characteristics. Consistent with an ecological model, we estimated four hierarchical ordinal logistic models. The first model included only the socio-demographic variables; the parenting practices and school environment variables were added to the second model; measures of parental involvement in the school were added to the third model; and in the final model, the neighborhood variables were added.

Approximately 33% of the sample had missing data for at least one of the variables used in this analysis, but the majority of those cases were missing data for only one variable (62.44%). We imputed missing data using SAS PROC MI and PROC MINANALYZE, and followed these procedures for imputing data for categorical variables as suggested by other researchers (Miller and Chen 2006; Rose and Fraser 2008). Five imputates were created, which resulted in relative efficiency estimates above .96 for each covariate.

Results

Multivariate Results

Results of the ordinal logistic analysis of students' perceptions of unsafe schools are shown in Table 2. The results for

Table 1 Weighted means and standard deviations (SD) or percentages for the study variables ($N = 1,249$)

Variable	%	Mean	SD
<i>Dependent variable</i>			
Feeling unsafe in school			
Not at all true	69.08		
Not too true	17.80		
Somewhat true/very true	13.12		
<i>Independent variables</i>			
Socio-demographic characteristics			
Youth's age (range 10–14)		11.65	1.33
Youth's race/ethnicity			
Black	12.09		
Hispanic	6.53		
Non-Hispanic, White (reference)	81.38		
Youth's gender			
Male	50.43		
Mothers' marital status			
Never married	5.90		
Married, spouse present (reference)	72.27		
Other	21.83		
Mothers' education			
Less than high school (reference)	9.21		
High school	31.21		
More than high school	59.58		
Lived in poverty	9.80		
Microsystems			
Parent-youth discussions			
School studies (range 1–4)		3.20	.80
Things troubling youth (range 1–4)		3.04	.90
School activities/events (range 1–4)		3.05	.82
School environment			
Ease of making friends (range 1–3)		2.44	.69
Teacher involvement (range 1–4)		3.25	.85
Observed a weapon	20.71		
School rule enforcement (range 1–4)		3.19	.89
Mesosystem			
Parental school involvement			
Attended school meetings (range 1–5)		2.43	1.32
Spoke to teacher/counselor (range 1–5)		2.08	1.40
Attended school events (range 1–5)		2.81	1.50
Volunteered at school (range 1–5)		2.17	1.40
Exosystem			
Neighborhood safety (range 1–4)		3.40	.86
Area of residence			
Not in SMSA	15.41		
In SMSA, not central city	61.93		
In SMSA, in central city (reference)	22.66		

SMSA standard metropolitan statistical area

Model 1, which included only the socio-demographic characteristics, demonstrate that students' age, male gender, and poverty status were statistically significantly related to perceptions of unsafe schools. The adjusted odds ratios indicate that as students became older, they had an increased risk of perceiving a higher level of unsafe school environments (OR = 1.17, $P < .001$). Males, compared with females, were 30% more likely to perceive their schools as more unsafe (OR = 1.30, $P < .05$), and youth who lived in poverty were 58% more likely to perceive higher levels of unsafe school environments (OR = 1.58, $P < .05$), compared with non-poor youth.

Adding the microsystems level factors—parent-youth discussions and school environment variables—into Model 2, resulted in a significant improvement of fit over Model 1 (change in -2 log likelihood = 131.84, $df = 7$, $P < .001$). As the frequency with which parents discussed school activities/events with youth increased, their risk of perceiving unsafe school environments declined (OR = .83, $P < .05$). Although only one parent-youth discussion variable was associated with school safety perceptions, all of the school environment variables were statistically significant. Students who reported that it was easier to make friends in their schools (OR = .64, $P < .001$), teachers were more involved (OR = .75, $P < .001$), and rules were more likely to be enforced (OR = .68, $P < .001$) had lower risks of perceiving their schools as unsafe. On the other hand, students who observed another student carrying a weapon at school were 70% more likely (OR = 1.70; $P < .001$) to have increased perceptions of unsafe schools.

In Model 3, the four variables measuring a mesosystem—parental school involvement—were added to Model 2. None of the variables were statistically significant. In the final model (Model 3), the neighborhood variables at the exosystem level were added. Students who perceived their neighborhoods as safe (OR = .63, $P < .001$) and lived in a SMSA, not in the central city, compared with a central city (OR = .72, $P < .05$), had decreased odds of perceiving unsafe school environments (change in -2 log likelihood = 46.22, $df = 3$, $P < .001$). In this final model, older students and males continued to be at risk for perceiving unsafe school environments. In addition, the coefficients for parent-youth discussions of school activities/events and for all of the school environment variables remained statistically significant.

Discussion

This study identified socio-demographic characteristics and other factors at several ecological levels that influence

Table 2 Hierarchical ordinal logistic analysis of students' perceptions of unsafe schools ($N = 1,249$)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>B</i> (SE)	Exp(<i>B</i>) OR	<i>B</i> (SE)	Exp(<i>B</i>) OR	<i>B</i> (SE)	Exp(<i>B</i>) OR	<i>B</i> (SE)	Exp(<i>B</i>) OR
Socio-demographic characteristics								
Youth's age	.16*** (.05)	1.17	.08 (.05)	1.08	.08 (.05)	1.08	.11* (.05)	1.12
Youth's race/ethnicity (White)								
Black	.20 (.16)	1.22	.17 (.17)	1.19	.17 (.17)	1.19	-.01 (.18)	.99
Hispanic	.15 (.17)	1.16	.12 (.17)	1.13	.12 (.18)	1.13	-.03 (.18)	.97
Youth's gender (female)								
Male	.26* (.12)	1.30	.22 (.13)	1.25	.21 (.13)	1.23	.35** (.13)	1.42
Mothers' marital status (married, spouse present)								
Never married	.38 (.22)	1.46	.37 (.23)	1.45	.36 (.23)	1.43	.21 (.23)	1.23
Other	.11 (.16)	1.12	.03 (.16)	1.03	.02 (.16)	1.02	-.08 (.16)	.92
Mother's education (<high school)								
High school	-.12 (.20)	.89	-.04 (.21)	.96	-.04 (.21)	.96	-.01 (.21)	.99
More than high school	-.23 (.19)	.79	-.15 (.20)	.86	-.14 (.21)	.87	-.09 (.21)	.91
Lived in poverty (yes)	.46* (.19)	1.58	.37 (.21)	1.45	.36 (.21)	1.43	.38 (.21)	1.46
Microsystems								
Parent-youth discussions								
School studies			-.02 (.09)	.98	-.02 (.09)	.98	-.01 (.09)	.99
Things troubling youth			.09 (.08)	1.09	.10 (.08)	1.11	.11 (.08)	1.12
School activities/events			-.19* (.08)	.83	-.18* (.08)	.84	-.19* (.08)	.83
School environment								
Ease of making friends			-.44*** (.09)	.64	-.44*** (.09)	.64	-.35*** (.09)	.70
Teacher involvement			-.29*** (.08)	.75	-.29*** (.08)	.75	-.29*** (.08)	.75
Observed a weapon (yes)			.53*** (.15)	1.70	.53*** (.15)	1.70	.44** (.15)	1.55
School rule enforcement			-.39*** (.07)	.68	-.39*** (.07)	.68	-.39*** (.07)	.68
Mesosystem								
Parental school involvement								
Attended school meetings					.00 (.05)	1.00	.01 (.05)	1.01
Spoke to teacher/counselor					.01 (.05)	1.01	.01 (.05)	1.01
Attended school events					-.02 (.05)	.98	-.02 (.05)	.98
Volunteered at school					-.03 (.06)	.97	-.02 (.06)	.98
Exosystem								
Neighborhood safety							-.47*** (.08)	.63
Area of residence (SMSA, central city)								
Not in SMSA							-.16 (.21)	.85
In SMSA, not central city							-.33* (.15)	.72
-2 LL	2,102.06		1,970.22		1,969.38		1,923.16	
<i>df</i>	9		16		20		23	

Reference categories are in parentheses

SE standard error, *OR* odds ratio, *SMSA* standard metropolitan statistical area. *LL* log likelihood. -2 LL was averaged for the five implicates for each model

For Model 2, change in -2 LL = 131.84, $df = 7$, $P < .001$; for Model 3, change in -2 LL = .84, $df = 4$ (ns); and for Model 4, change in -2 LL = 46.22, $df = 3$, $P < .001$

* $P < .05$; ** $P < .01$; *** $P < .001$

students' perceptions of unsafe schools. In the final model, two socio-demographic characteristics (youth's age and gender); five factors at the microsystem level, including

one within the home setting (parent-youth discussions of school activities/events) and four within the school environment (ease of making friends, teacher involvement,

observed weapon carrying, and school rule enforcement); and two exosystem level characteristics (neighborhood safety and residence in a SMSA, not in a central city, compared with a central city) were related to students' perceptions of unsafe school environments.

The findings of this study suggest that older and male youth are at increased risks of perceiving higher levels of unsafe school environments, which are inconsistent with the bulk of the previously reviewed research. Possible reasons for these inconsistencies are the various ways in which school safety was defined and the younger age range of youth in the current study compared with the majority of the other studies. As bullying appears to increase and peak during early adolescence (Espelage and Swearer 2003), this might account for the positive relationship between age and perceptions of unsafe schools found in the current sample. The absence of a significant relationship between Black and Hispanic students and school safety is consistent with the majority of the previously reviewed research. As several studies suggest, however, relationships between gender and race/ethnicity and school safety are more complex. For example, some research demonstrates that the relationship between race/ethnicity and measures of school safety vary by type of fear and/or by gender (May and Dunaway 2000; Schreck and Miller 2003; Wilcox et al. 2005).

In Model 1, youth living in poverty experienced an increased risk of perceiving unsafe school environments, which is consistent with some research (Alvarez and Bachman 1997; Schreck and Miller 2003). However, when the parenting and school variables were placed into Model 2, the coefficient for poverty was no longer significant. This suggests that the effect of poverty on perceptions of school safety might be mediated or explained by poor parents being less likely to discuss school activities/events with their youth and poor students being more likely to attend lower quality schools, compared with non-poor parents and youth. As previously discussed, research supports these latter relationships (e.g., Duncan and Brooks-Gunn 1997; Phillips and Chin 2004).

At the microsystem level within the home, only the variable measuring parent-youth discussions of school activities/events was significantly related to youth's perceptions of school safety. Perhaps when parents discuss these activities/events, youth are more likely to disclose safety issues occurring within the school. Parents then can assist youth in coping with these issues or can intervene in the school system on their behalf, both of which might decrease perceptions of unsafe school environments. Unlike the variables measuring interactions within the microsystem of the home, all of the school environment variables were associated with students' perceptions of unsafe schools. These results are consistent with multiple

studies (e.g., Akiba 2008; Mijanovich and Weitzman 2003) and suggest that friendly school environments, involved teachers, and school rule enforcement enhance students' perceptions of safer school environments. On the other hand, observing other students carrying a weapon decreases perceptions of school safety, which is consistent with other research (e.g., Brown and Benedict 2004).

At the mesosystem level, none of the variables measuring parental school involvement were related to youth's perceptions of unsafe schools. This is surprising, given the importance placed on the home-school connection for enhancing the well-being of children and youth (e.g., Sheridan et al. 2004). Contrary to the current findings, Shumow and Lomax's (2001) path analysis indicated a direct positive relationship between parents' reports of their school involvement and students' perceptions of school safety. Perhaps the inconsistency between the two findings is the result of the current study using youth's reports of parental school involvement, which might be less accurate than parents' reporting on their own involvement.

At the exosystem level, students who perceive their neighborhoods as less safe and those who live in a central city, compared with other urban areas, are at risk of perceiving their schools as more unsafe. These results, which are consistent with some studies (e.g., Shumow and Lomax 2001), highlight the importance of neighborhood environments on these perceptions. Youth living in unsafe and central city neighborhoods might be fearful of their school safety because they carry fears from hearing about, experiencing, and observing violence in their neighborhoods into the school.

This study has several limitations, many of which are based on the data available in the NLSY. Although school safety encompasses many aspects of the school environment, only one item was available to measure students' perceptions of school safety. This limitation precludes a more in depth understanding of the factors that might differentially impact different types of fears or safety concerns. In addition, other characteristics of the school, such as its size and use of security measures, were not available in the NLSY. Although past studies indicate that students' perceptions of school safety is an important predictor of student well-being, perceptions do not necessarily reflect objective measures of school safety. In addition, relying only on youth's reports to measure all of the characteristics of the microsystems, mesosystem, and exosystem, with the exception of area of residence, may have introduced unmeasured biases. Finally, the study was correlational and cross-sectional; thus, it cannot establish causation between the covariates and students' perceptions of unsafe school environments. Despite these limitations, the findings suggest a number of implications for school policy and practice.

Implications for School Policy and Practice

The findings of our study highlight the importance of social workers engaging in an ecological assessment to determine the need for interventions or school safety programs that can enhance school safety. Benbenishty et al. (2008) advocate such an assessment, which not only evaluates multiple systems levels, but involves the school, parents, and community members in assessing and developing a school safety program, or adopting or customizing an existing program. In addition, Astor et al. (2005) provide descriptions of multiple school safety programs with aims consistent with the current findings. These include creating supportive and cooperative school environments, enhancing friendships, assisting teachers in using positive methods for disruptive behaviors, reinforcing appropriate behavior, and implementing consequences for rule infractions. These programs have varying degrees of research support for increasing school safety, but school personnel, including social workers, might find them appropriate for enhancing school safety. Our findings also suggest that when developing and implementing school safety programs, students who are male, older, and live in poverty should receive special attention.

Our results suggest that social workers should encourage parental involvement with their youth within the home, specifically asking about and discussing issues related to school activities and events. Although the current study is limited in identifying the ways in which such discussions enhance school safety, social workers might suggest positive strategies that parents could use or communicate to their children to cope with disclosed school events or activities that heighten perceptions of schools as unsafe.

Although our research suggests the need for schools to establish and enforce rules to enhance school safety (e.g., prohibiting weapon carrying), other scholars provide guidelines that school administrators and social workers might find helpful. First, ensuring the fairness and appropriateness of the rules is important, because when students perceive school rules as unfair, fear of school crime appears to increase (Schreck and Miller 2003). Second, it is important to ensure that rules and enforcement are perceived as appropriate and fair by *all* students. For example, Kupchik and Ellis (2008) found that Black students, compared with White students, are less likely to perceive school rules as fair and school rules and enforcement as appropriate. Third, scholars caution against creating a jail-like, heavily structured environment. Relying solely on punitive measures may actually exacerbate the danger by inflaming at-risk youth (Garbarino et al. 2002). An anti-school violence policy combined with a “whole school” intervention, an approach predicated on the assumption that

programs must target the entire school rather than individuals or groups of students, should be considered (James et al. 2006).

Because weapon carrying is perceived as a threat to safety, practitioners can work closely with school administrators, community leaders, and gun-control organizations to create partner-based strategies for reducing weapon carrying and weapons-related school violence. For example, partnership-based programs, such as the Baton Rouge Partnership, appear to be effective in reducing weapons-related youth violence (Lizotte and Sheppard 2001). The positive relationship between observing another student carrying a weapon and an increased risk of perceiving schools as unsafe also might indicate the need for school security measures, such as metal detectors and locker checks. However, even though the presence of security measures may help deter certain types of school crimes that undermine students’ perceptions of school safety, the use of such measures also can increase fear (Bachman et al. 2010; Schreck and Miller 2003). School administrators and social workers should determine the need for security measures before such measures are implemented, and then determine that such strategies increase students’ actual and perceived safety.

Finally, because neighborhood safety and residence in inner cities affect students’ perceptions of school safety, social workers might consider advocating the development of or participating in community programs that reduce violence and protect children as they walk to and from school. Examples include community self-governance programs (Nelson 2000) and neighborhood watch programs (Salcido et al. 2002).

In conclusion, our study suggests that intervening at the family, school, and neighborhood levels can increase students’ perceptions of safer school environments. Enhancing these perceptions in turn will likely promote students’ psychological, social, and academic well-being. Based on the current and previous studies, future research might focus more on appropriate methods of assessing these multiple ecological systems and evaluating relevant interventions to enhance students’ perceptions of school safety.

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