

Bullying, school violence and more: A research model

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ABSTRACT: The objectives of this paper are twofold. First, a research model, namely, Model for the Study of Bullying and Other School Violence, is proposed, outlined, and delineated, arguing that this model is theoretically grounded and empirically validated by reviewing the related literature. In this model, five major components are proposed that are involved in the bullying-related studies. These components are: social, physical, affective, curricular and extracurricular, and school violence variables. The interrelationships among these components with the emphasis on bullying-related school violence are also presented based on the related literature. Second, an empirical study is conducted and the result is reported to partially assess the proposed model. Using a cross-sectional study of students in the seventh through twelfth grades in a Middle Western community, the interrelationships among the factors specified in the theoretical model were studied. Canonical correlation and regression procedures were used for the data analysis. Results of the analysis support the proposed model and are discussed in relation to the practical implications.

School violence has gained more and more attention in recent years and is a serious social problem both in Europe (Clarke & Kiselica, 1997; Hoover & Juul, 1993) and North America (Hoover & Olsen, 2001; Charach, Pepler, & Ziegler, 1995). Here, school violence is broadly defined as “any conditions or acts that create a climate in which individual students and teachers feel fear or intimidation in addition to being the victims of assault, theft, or vandalism” (Batsche & Knoff, 1994, p. 165). Much of school violence, particularly during adolescence, involves students bullying their peers (Boulton, 1999). According to Hoover and Olsen (2001), “up to 15% of students in American schools are frequently or severely harassed by their peers. ... Only a slim majority of 4th through 12th graders ... (55.2%) reported neither having been picked on nor picking on others” (p.11). More importantly, it is reported that in many school-shooting cases, bullying played major roles (Dedman, 2001). These significant numbers demonstrate that bullying and other school violence has become a vital social problem. It is imperative for us to face the challenge of solving this problem, but before we can tackle it, we need to have a thorough understanding of the issue. Among the questions are: What factors affect student bullying or victimization? What are the relationships between bullying and other school violence?

In response to these questions and others like them, the Model for the Study of Bullying and Other School Violence have been developed and refined. Because previous research (Hoover & Olsen, 2001; Stein, 1995; National Center for Educational Statistics, 1998; Hazler, 1994) suggests that bully-related behaviors may closely link to other school violence, the focus is on bully-related school violence and its relationship with other school violence. The task is set to identify the critical factors that influence bully/victim issues. The objectives of this paper are twofold. First, a research model is outlined and delineated, arguing that this model is theoretically grounded and empirically validated by reviewing the related literature. Second, an empirical study is conducted and the result is reported to partially assess the validity of the proposed model.

Bullying Model

A major goal of the research on bullying issues is to increase our understanding of the development and impact of bullying so that we can improve our school policies and practice that discourage bullying and help students deal with bullying in school. Despite much research attention, there is a lack of a theoretical model that specifies the possible links among various factors related to bullying. Therefore, in this paper, a general model based on previous research is proposed. A general summary of these factors and their relation to school violence, particularly bullying, is depicted in Figure 1. It is believed that this model has empirical validity for research into bullying issues. In addition, this model can be used as a heuristic device that may be useful in making sense of the literature and as an organizer for the topics and issues presented in related research studies.

This model depicts five major components that are involved in the bullying-related studies. Each component is represented in an oval. Arrows and double arrows are used to indicate causal relationships among the various components. The first component of the model concerns social variables which include the socioeconomic status of students' families and schools as well as other related factors regarding their families, schools, and communities. As discussed in the following literature review, researchers appear to support the notion of social factors as an important area of investigation in the study of bullying issues. In this model, it is assumed that social variables influence students' affective variables and their curricular and extracurricular involvement as

well as students' involvement in school violence. Conversely, school violence impacts student families, community, and schools. The double-headed arrow between the social variable and the school violence variable as shown in the model represents this reciprocal relationship.

The second component concerns physical variables. The physical variables include student gender, race, and other physical characteristics. The causal relationships related to this first component are rather complicated. In the model shown in Figure 1, regarding student gender and race, it is obvious that the causality is unidirectional. In other words, students' gender and race affect students' affective variables, their curricular and extracurricular involvement, and their involvement in school violence. However, with respect to some other physical characteristics, the causality is bi-directional: on the one hand, student physical characteristics influence their involvement in curricular, extracurricular activities, and school violence, as well as their affective variables. On the other hand, students' changing pattern of involvement in curricular and extracurricular activities may directly change some of their physical variables, such as their weight and appearance. Here, however, it is considered the causal relationships are unidirectional rather than reciprocal, because the focus is on bullying-related school violence, and because gender and race are the two major indicators of physical variable considered in the following empirical study. The arrows connecting physical variable and the other three variables represent these unidirectional relationships.

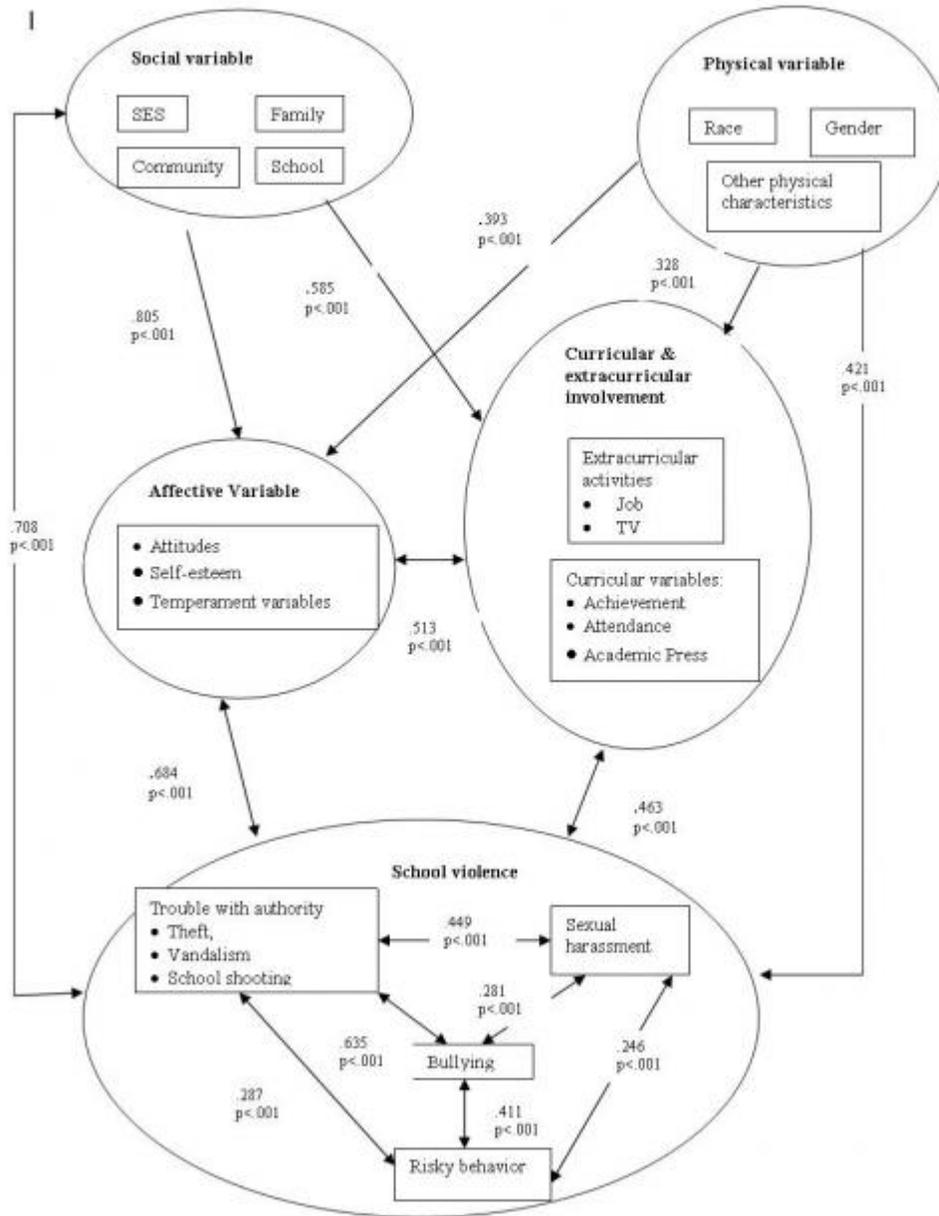
The third component of the model deals with student affective variables. The affective variables include student attitude, self-esteem, beliefs, and so on. As discussed in the following review, research shows that students hold certain beliefs (including attitudes, self-esteem, etc.) and their beliefs have observable relationships with their behaviors. In this model, it is assumed that the relationship between students' affective variables and their curricular and extracurricular involvement is reciprocal. Further, it is believed that there is a reciprocal relationship between students' affective variables and school violence variables. That is, students' attitudes can effect their involvement into school violence as well as curricular and extracurricular activities. On the other hand, students' involvement in school violence may impact their self-esteem, attitudes, and beliefs. The double-headed arrows between affective variable and curricular and extracurricular involvement, and between affective variable and school violence demonstrate these reciprocal relationships.

The fourth component of this model concerns student curricular and extracurricular involvement. The extracurricular variable as shown in this model includes student jobs, activities like watching TV, volunteerism, homework, etc. The curricular variable includes student academic achievement, academic pressure, and so forth. As will be demonstrated in the following literature review, students' curricular and extracurricular involvement impacts on their affective variables and their involvement in school violence. Alternatively, affective variables and student involvement in school violence also influence their curricular and extracurricular involvement. Therefore, double-headed arrows are again used between these circles.

The last component in this model considers school violence. The school violence variables include student involvement in bullying, sexual harassment, trouble with authority, and risky behavior. Trouble with authority includes behaviors like vandalism, theft, and school shooting. Risky behavior includes actions like drug/alcohol use or abuse and suicide. In this component, I use double-headed arrows to demonstrate the links among bullying, sexual harassment, risky behavior, and trouble with authority. These double-headed arrows indicate the reciprocal relationships among these four major variables. In addition, rather than representing the direction of causation as linear, it is more accurate to represent the direction as cyclical, or circular. The circular design in this model allows for the possibility that students' involvement in bullying may also connect to other school violence related activities. Alternatively, students' risky behaviors such as use of drugs and alcohol may encourage other school violence such as bullying, vandalism, sexual harassment, and school shooting.

In sum, the five general components in this theoretical model reflect, in large part, the state of research on bullying issues and the researchers' conceptualizations of the field. The structure of the proposed model is consistent with the social psychological theory that individual behavior reflects early experiences (home environment, etc.), personal attributes, and proximate environmental conditions operating in a complex network of effects (Bloom, 1976; Magnusson, 1981). The following review of related literature is represented and organized in a way that supports the proposed model. This review of literature is followed by the presentation of the specific hypotheses growing out of the components of the model. Next, the methodological procedures for the test of those hypotheses are outlined, and the findings of a cross-sectional study to partially test these hypotheses are summarized.

FIGURE 1



Previously, bullying had been narrowly defined as physical harassment (Besag, 1989). Now, researchers consider bullying to be “a form of aggression in which one student or one group of students repeatedly harasses a victim verbally or physically without provocation” (Ma, 2001, p.352). This broad definition indicates that bullying takes a wide range of forms. Generally, physical and verbal bullying are the two major categories characterized in research studies. For instance, punching, pushing, holding, and hostile gesturing are considered physical bullying, whereas verbal bullying includes name-calling, teasing, taunting, silent treatment, manipulating friendship, humiliating, and threatening. In fact, some researchers consider that the current statistical results regarding bullying may underestimate the problem (Remboldt, 1994) because traditionally it has been believed that verbal bullying is harmless as reflected in this American folk aphorism: “sticks and stones may break my bones, but words will never hurt me.” The following literature review is organized according to the proposed model.

Social Variables

The first major component of this model directs the attention to social variables including socioeconomic status, family, school, and community. The society is the ultimate and greatest victim of bullying because school bullies are inclined to bully their family members later, and this, in turn, can worsen domestic violence and affect new generations (Farrington, 1991). In their review, Batsche and Knoff (1994) argue that children from families where parents are authoritarian, hostile and rejecting are more likely to bully. Children from a large family are more likely to be bullies than bully-victims (Ma, 2001). In addition, students who are overly protected by parents at home are more likely to be bully-victims (Olweus, 1978).

Parent awareness and involvement is another important factor impacting student bullying. Ma (2001) suggests that if parents are aware of bullying issues and are actively involved in school life, they are more likely to prevent their children from being involved in bullying. In addition, his study shows that strong parental involvement is more effective in discouraging bullying than helping victims. The results of Espelage, Bosworth, and Simon’s (2000) study demonstrate that parental physical discipline, time spent without adult supervision, negative peer influences, and neighborhood safety concerns are all positively correlated with bullying.

School is another crucial variable that affects bullying. It is found that more bullying occurs in school than on the way to or from school (Olweus, 1994). A negative school environment encourages bullying and harassment (Hazler, 1994). Schools with tougher sanctions against bullying help reduce the number of incidents of bullying. However, different results surface with regard to the effect of school context. For example, Olweus (1994) and Whitney and Smith (1993) found that school size and class size do not affect bullying, whereas Ma (2001) argues that school size is a factor, correlating more to bullies than bully-victims. He found that small school students “could be bullied, but they could bully others a lot more” (p. 366). With respect to bullying in relation to school location and socioeconomic status (SES), no typical patterns can be drawn from the literature since the research findings are inconsistent. Ma (2001) argues that school mean SES does not contribute to bullying issues. Contrarily, other studies (Whitney & Smith, 1993; Olweus, 1994) show that schools in small towns tend to have more bullying incidents than schools in big cities. Schools with higher mean SES tend to have less incidents of bullying (Whitney & Smith, 1993). Whitney and Smith (1993) conclude that the racial-ethnic structure of school does not contribute to bullying. In contrast, Eslea and Mukhtar (2000) demonstrate that bullying is related to religion and/or culture. Thus, whether racial-ethnic variables contribute to bullying remains an open question.

Research in bullying also examines other school variables. Barone (1997) indicates that more rigid discipline, intensive supervision and counseling for students, as well as appropriate training for teachers are effective ways to reduce bullying. A number of research studies recommend systematic, school-wide intervention programs to combat bullying in school (Arora, 1994; Olweus, 1994; Clarke & Kiselica, 1997).

Physical Variables

Research studies have investigated the effect of physical variables in relation to bullying/victim issues. With respect to students’ physical conditions, the research results are somewhat mixed. Researchers (Mooney & Smith, 1995; Olweus, 1994; Slee, 1994) still debate over whether physical condition is a reason for being bullied. For instance, Perry, Kusel, and Perry (1988) found that students who are physically stronger are less likely to be either victims or bullies than those who are physically weaker. However, Olweus (1978) found that students are not bullied because of their physical conditions such as being overweight, having uncommon hair colors, wearing eyeglasses, speaking dialects, or dressing differently, although any physical disadvantage is used against the victim once the bully finds the victim (Besag, 1989). In his multivariate, multilevel analysis, Ma (2001) found that physical conditions which affect bullying vary with age. He also found that “physical condition is more a characteristic of victims than bullies” (p.365) and that physically weak students are more likely to be bully-victims than bullies.

When the investigation of the bullying issue considers gender, a typical pattern is established. That is, males are more likely than their female counterparts to be involved in bullying as either bullies or victims (Kumpulainen, Rasanen, Henttonen, & Almqvist, 1998; Kumpulainen, Rasanen, & Henttonen, 1999; Eslea & Mukhtar, 2000). In Crick, Casas, and Ku’s (1999) study, gender differences with respect to bullying were found in preschoolers as young as three to five years old. Their research indicates that males are significantly more physically victimized than females, while females were more relationally victimized. Both types of

victims experienced bigger adjustment problems than did their counterparts.

Affective Variables

The third component of this model concerns student affective variables. Among various studies, Kumpulainen et al's study (1999) shows that children involved in bullying, especially bully-victims are psychologically disturbed. Bullies often felt that the bully-victim deserved bullying (Smith & Shu, 2000). Both bullies and victims feel more loneliness than those not involved in bullying (Tritt & Duncan, 1997). "Attitudes toward gender and gender roles also affect bullying – both in terms of the risk for being victimized and in terms of the form the bullying takes" (Hoover & Olsen, 2001, p. 14). Females seen either as more or less physically attractive were more likely to be victim of bullying than other females (Shakeshaft, Barber, Hergenrother, Johnson, Mandel, et al, 1995). Males with atypical gender-related behaviors are more likely to be bullied than other males (Shakeshaft et al, 1995). Males who are accused of homosexuality are more likely to have physical and psychological injury in public schools than other young men (Hetrick & Martin, 1987).

With respect to bully issues in relation to self-esteem, no firm conclusions can be drawn due to the mixed findings. On the one hand, Tritt and Duncan (1997) claim that previous involvement in bullying does not contribute to the level of self-esteem. On the other hand, a number of studies (Lane, 1989; Slee, 1994) indicate that bully-victims tend to have low self-esteem and high social anxiety. In addition, bullying-victims suffer from a loss of self-esteem lasting long into their adult life (Boulton & Underwood, 1992; Slee, 1994). Emotion is another variable related to bullying. Females who are emotional are more likely to be taunted than other students (Hoover, Oliver & Thomson, 1993). "Males who are short tempered appear to reward victimizers by reacting visibly to harassment" (Hoover & Olsen, 2001, p. 13).

Curricular and Extracurricular Involvement

The fourth component of our model deals with curricular and extracurricular involvement. In general, there is a lack of research on bullying issues in relation to student curricular and extracurricular involvement. One exception is Ma (2001) who demonstrates that a heavy academic workload can discourage bullies in school. He also concludes that students with low academic status are more likely to be victims than bullies.

School Violence

The fifth component of this model shows relationships among school violence variables such as bullying, sexual harassment, risky behavior, and trouble with authority. According to Hoover and Olsen (2001), there is a strong positive correlation between mild disciplinary contact, which includes bullying, and the number of crimes reported in schools. Statistical analysis shows that schools with a great number of bullying cases have greater risk for violence (National Center for Educational Statistics, 1998). Dedman (2001) indicated that, although bullying was not a factor in every school shooting case, the fact "that bullying played a major role in a number of these school shootings supports ongoing efforts to combat bullying in American schools" (p. 21). Numerous studies report that rates of disciplinary contacts in the elementary years can predict later arrest rates for more serious juvenile offenses (Sprague, Sugai, Horner, & Walker, 1999; Walker, Stieber, Ramsey, & O'Neill, 1993).

In their study of student self-reports, Rigby and Slee (1999) found that students involved in bully-victim problems at school, especially those students with relatively little social support are more likely to have a higher degree of suicidal ideation. In addition, bullying during the elementary years is positively associated with sexual harassment later on (Stein, 1995). In summary, while there is limited research on bullying in relation to other school violence, evidence from different lines of research provides support for the hypotheses proposed in the model. There have been suggestions that the school violence variables are closely related to each other. While these suggestions have not been tested in light of this model, they do provide support for this theoretical analysis and could add to the understanding of bullying issues.

Although abundant research studies exist that deal with bullying-related issues, there is a major limitation in this body of literature. That is, there is a lack of broadly defined theoretical models with demonstrated validity, which will help us conceptualize the issue. Rather, studies on bullying-related behaviors have been designed and conducted without the guidance of a broadly based, integrative, theoretical orientation. Researchers have been exploring the causes by bits and pieces, and each study has tended to investigate only a subset of the possible reasons. In this paper, therefore, a set of constructs as critical factors influencing bullying-related variables is identified and a model of the interrelations among these constructs is proposed. This model is designed to provide a device with both theoretical and empirical validity. The model is a first step toward enhancing our understanding of the interaction among the variables relating to bullying. The above literature review on bullying-related issues demonstrates that, at the very least, this model is useful in organizing this research. In the following empirical study, the validity of the proposed model is partially tested. Specifically, this investigation seeks to examine the relationships among the key constructs to bullies and victims as proposed in this model.

Empirical Study

In this study, the focus is on the variables related to bullying issues and other school violence. Particularly, the following hypotheses as indicated in Figure 1 are tested. Specific variables and their descriptions are presented in tables 1 to 4.

1. Social variables including student family, SES, school, community are associated with school violence variables including bullying/bully-victims;
2. Student physical variables including gender, race, and grade impact school violence;
3. Student affective variables including attitudes, self-esteem, temperament variables are associated with school violence variables;
4. Student curricular and extracurricular involvement is associated with school violence variables;
5. Student other school violence variables including trouble with authority, sexual harassment, and risky behavior are associated with student bully variables.

Method

Data and Measures

Data used in this study was from the secondary Midwestern School District Protective and Risk Survey. This survey was developed by a midwestern school district located in a rural state in the U.S. Data were collected by the school district from 1,420 (male =677, female = 743) students from Grade 7 to Grade 12.

To achieve a higher validity of the statistical analysis, whenever possible, variables were constructed by collapsing groups of survey questions. That is, when the internal consistency reliability was high enough (i.e., with a coefficient alpha greater than or equal to 0.25), a single variable was created by adding multiple survey questions. These variables and their coefficient alphas were detailed in Tables 1 to 4. The values of those coefficient alphas ranged from 0.25 to 0.80. Five independent variables were included in social variables. These variables were SES, school, peer, family, and community. The SES was measured through parents' (father and mother's) education. The school variable included number of schools students had attended, availability of substances, and school environments. Sometimes, students would transfer from one school to another for various reasons, for example, family moved, or school closed. The variable 'number of schools students has alternated' reflected students' experience in this aspect. The family variable consisted of family demographic information; family violence; parent expectation and rules; and parent involvement and knowledge about the children. The community variable included accessibility of alcohol, drug, and guns in the community and people's attitudes towards youngsters. Physical variable included student gender, grade, and race. Extracurricular variables were assessed through hours of work, homework, watching TV, extracurricular and volunteer activities. The curricular performance was measured by student achievement and attendance of school. The affective variable was evaluated through student attitude, feelings, and self-esteem. The bullying-related variable was measured from four perspectives: bullying; willingness to communicate; stop bully; and bully-victim. Risky behavior included substance use as well as suicide.

Table 1. Social variables

Variable in the model	Variables used in statistical analysis	Survey Question	Alpha
SES	SES	· What is the highest level of schooling your father has completed? · What is the highest level of schooling your	0.61

		mother has completed?	
School	Availability of substance in school	Is alcohol available on your school grounds? Are other drugs (cocaine, meth, ecstasy) available on your school grounds?	0.75
	School environment	Is the policy at your school for students who use alcohol or other drugs enforced? Do you think there are school/community services available to students with alcohol or other drug problems? Do you feel safe at school?	0.36
Peer	Attitudes of peers	Do your friends think it's cool to get drunk? Do your friends think it's cool to get high?	0.79
Family	Parent expectation and rules	Do your parents expect you to graduate from high school? What do you parents expect you to do after leaving high school? How do you think your parents/guardians would feel about you drinking alcohol? How wrong do your parents feel it would be for you to smoke cigarettes? How wrong do your parents feel it would be for you to smoke marijuana? Which consequence from your parents would most keep you from drinking? How would you describe the rules your parents set for you?	0.48
	Family demographic information	Which one of the following best describes your family: 1) living with both natural parents; 2) living with one natural parents; 3) living with adoptive, foster parents, guardians, or other relatives. How often does your family eat meals together each week?	.36
	Parents' knowledge about children	Do your parents think you smoke marijuana? How much of the time do your parents know where you are going or with whom you will be?	0.29
	Parent involvement	Are your parents involved in community activities? Since the beginning of the school year, how often have you discussed the following with either or both of your parent(s) and/or guardians...? 1) selecting course or programs at school? 2) your participation in school activities? 3) current class work or projects? Do your parents talk to you about alcohol and other drugs?	.73
	Family violence	Has alcohol or any other drug use (other than tobacco) by any family member repeatedly caused family, health, job, or legal problems? Have you been harmed at home or by someone in your family or living with your family? Have you ever witnessed violence in your home?	0.59
Community	community	How easy is it for you to get alcohol in your community? How easy is it for you to get cigarettes or tobacco in your community? How easy is it for you to get other drugs in your community? Does your neighborhood care about you? Do you have access to guns outside your home? Adults in this city make you feel important. Adults in this city care about the people your age.	0.70

Table 2. Extracurricular and Curricular Involvement

Variables in the model	Variables in statistical analysis	Survey Questions	Alpha
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Extracurricular	Extracurricular activity	<ul style="list-style-type: none"> On average, how many hours per week do you spend at a job out side of school? On average, how many hours per week are you involved in extracurricular activities? On average, how many hours per week do you spend on homework outside of school? 	0.31
	Volunteer	<ul style="list-style-type: none"> During an average week, how many hours do you spend helping other people without getting paid to make your city a better place for people to live? During an average week, how many hours do you spend helping friends or neighbors? A mentor is an adult outside your family who cares about and spends time with you. Would you participate in a mentor program in this community if it were available? 	0.52
Curricular	Curricular performance	<ul style="list-style-type: none"> What grades did you earn most often this year? In the past 30 days, have you cut any classes at school? 	0.37

Table 3. Affective Variable

Variables used in the model	Variables used in statistical analysis	Survey Questions	Alpha
Attitude	Attitude	· I have a number of good qualities· I have a positive attitude towards myself	0.26
	Beliefs related to violence	· Do you believe students have a right to use violence to protect themselves or their reputation· Do you believe you can count on adults in this school to protect you from being hurt by others?· If you were being bullied or harassed by another student, whom would you tell?	0.64
	General beliefs	· Is it important for you to tell the truth, even when it's not easy?· Do you accept responsibility for your actions when you make a mistake or get in trouble?	0.35
	Expectation	· Do you expect to graduate from high school?· What do you expect to do after leaving high school?	0.67
	Feelings about family	· Do you feel safe from abuse in your home?· How would you describe your family?· Do your parents often tell you they love you?· Does your family make you feel useful and important?	0.56
	Feelings about substance	· How much do you think people risk harming themselves if they take one or two drinks of an alcoholic beverage regularly?· How much do you think people risk harming themselves if they smoke marijuana regularly?· How much do you think people risk harming themselves if they smoke one or more packs of cigarettes per week?	0.69
Self-esteem	Self-esteem	· Think about the people who know you well. How do you think they would rate you on the following?o Knowing how to say "no" when someone wants me to do things I know are wrong or dangerous.o Caring about other peoples' feelings.o Respecting the values and beliefs of people who are different than I am.o Being good at planning ahead.o Thinking through the possible good and bad consequences or results of different choices before I make decisions.	0.74

Table 4. School violence

Variables used in the model	Variables used in statistical analysis	Questions	Alpha
Bullying related variable	Bullying	· How many times have you started a fight or beaten up somebody at school?· Have you been in trouble for picking on or bullying another student at school?· Have you started rumors or repeated lies about someone at school?· Have you been part of a group who bullied or hurt another student?	0.67
	Willingness to communicate	· If you heard a rumor that someone was going to shoot or hurt someone, how seriously would you take it? (a) I would discuss with friends. (b) I'd think that student was just looking for attention. (c) I would take it very seriously and tell an adult. (d) I would ignore it.· If you knew a student had threatened to hurt or shoot someone, who would you most likely tell?	0.25
	Stop bully	· Have you ever broken up a fight at your school?· Have you ever tried to stop a student from picking on another student at school?	0.51
	Bully-victim	· How many times have you stayed home from school because of fears of being hurt or bullied by other students?· Have you been bullied by other students at school?	0.52
Trouble with authority	Trouble with authority	· During the past year, how many times have you been in trouble with the law?· During this school year, how many times have you damaged property?· During this school year, how many times have you been suspended from school?· Have you stolen or destroyed another student's property?· Have you stolen or destroyed property belonging to a staff member or the school?	0.71
Sexual harassment	Sexual harassment	· Have you forced anyone to have sexual contact?· Has anyone ever touched you sexually or had you touch him or her sexually without your consent?	0.31
Risky behavior	Substance use	· Do you drink alcohol?· Do you smoke marijuana?· Do you use other drugs?	0.80
	Suicide	· During this school year, how many times have you considered attempting suicide?· During this school year, how many times have you attempted suicide?	0.55

Statistic Analysis

Canonical correlation and regression procedures were used to test the model. Because this proposed theoretical model specifies the direct and indirect relations between a set of independent variables to a set of dependent variables, canonical correlation was used (Newton & Rudestam, 1999). The use of canonical correlations provides a test for the relations hypothesized to exist in this model. If significant relations emerge where predicted, support is provided for this theoretical model. If the predicted relations are non-significant, the support for this theoretical model is weakened. When there was only one independent variable, multiple regressions were used. Because of the relative large sample size ($n=1,420$), an alpha of 0.01 instead of 0.05 was used for the statistic analyses.

Results

To test the proposed theoretical model, a total of 15 tests including canonical correlation and regression procedures were conducted. Data shown in Figure 1 represented the correlation coefficients and significance. Because all the paths predicted in the model had correlations that were significant, no change was made to the theoretical model. A cutoff correlation of .3 was used for all canonical correlations. The 15 tests were grouped into two sets of tests to assess the relationships among the components

identified in the model.

Relationships among the Five Components

The first part of the tests dealt with the relationships between each pair of the variable sets represented in the ovals. Nine canonical correlation tests were performed to examine this part of the model. The first pair of canonical variates were used to test the relationships. First, a canonical correlation was administered between the social variables set and the school violence set (.71, $p < .001$). The first pair of canonical variates indicate that students with peers who do not like drink/drug (.33), whose parents have high expectations and restricted rules (.42) and know about their children (.42), and who live in communities where people have positive attitudes and have difficult access to substances and guns (-.85), are associated with less substance use behaviors (-.65).

Second, between the social variables set and the affective variable set, the canonical correlation coefficient was 0.81 ($p < .001$). Particularly, the analysis shows that students who have high expectation about oneself (-.41), who feel happy about their family (-.35), and who feel substances are harmful (-.31), are associated with parents' high expectations and restricted rules (-.53). Third, a canonical correlation was performed between the social variables and the curricular and extracurricular set (.58, $p < .001$). The result demonstrates that students who have high achievement and good attendance (-.57), and who spend a lot of hours working, doing homework, or participating extracurricular activities (-.61), are associated with more parent involvement (-.40) and who live in communities where people have positive attitudes and have difficult access to substances and guns (.30).

The fourth canonical correlation was performed between the affective variables set and the physical variables (.39, $p < .001$). Students who have negative beliefs related to school violence (.49), low self-esteem (-.53), and who do not feel substances harmful (-.50), are associated with middle school (.36) male (-.87) students.

Fifth, a canonical correlation was administered between the physical variables set and curricular and extracurricular involvement set (.33, $p < .001$). The analysis indicates that white (.31), female (.78) students were more likely to have good curricular performance (.55), spend less time watching TV (-.58) and more time on volunteer work (.36). The next canonical correlation was conducted between the school violence set and the physical set (.68, $p < .001$). Among the variables, middle school (-.94) males (-.32) tend to bully (.31), to have trouble with authority (-.50), and to use substance (-.97).

Between the curricular and extracurricular variable set and the affective variable set, the seventh canonical correlation was performed (.51, $p < .001$). It was found that students who spend more time on extracurricular activities (-.42) and have good curricular performance (-0.71), are associated with students who have high expectation (-.40), high self-esteem (-.30), and who feel substances (-.45) are harmful. Regarding the correlation between the school violence set and the affective variable set (.68, $p < .001$), the result demonstrates that students who feel that substances are not harmful (-.35) tend to use them (.40) and to have trouble with authority (.36).

Finally, a canonical correlation was conducted between the school violence variable set and the curricular and extracurricular involvement set (.46, $p < .001$). Students who spend a less time extracurricular activities (-.34) and have bad curricular performance (-.79), are positively associated with students who use substances (.50), and have trouble with authority (.44).

In summary, the canonical correlation tests conducted support the first part of the associations hypothesized in this theoretical model. All associations analyzed between each pair of sets of variables showed significant relations. Among them, the following pairs of variables showed strong associations: "school violence" and "affective variables," "school violence" and "curricular and extracurricular involvement," and "affective variable" and "curricular and extracurricular involvement." The remaining relations between the sets of variables hypothesized in the model demonstrated moderate associations.

Relationships within School Violence

The second part of the relations hypothesized in the proposed model dealt with variables specifically related to school violence. To test these relations, six correlation tests were conducted. Depending on the data, either canonical correlation or regression tests were used to detect associations.

First of all, canonical correlation was used to test the relationship between "bully related" variables and "risky behavior" (0.41, $p < .001$). The first pair of canonical variates showed that students who use substances (-.56), and whom are more likely to commit suicide (-.76), were associated with students who tend to both bully others (-.67) and be bullied (-.48).

Next, five regression tests were administered to test the relations with alpha of .01. First, a multiple regression was performed between trouble with authority (dependent variable) and risky behavior. "Substance use" and "suicide" were the independent variables. R for regression was significantly different from zero, $f(2, 1417) = 178.69$, $p < .001$. Both independent variables were contributed significantly to correlation of trouble with authority. Altogether, 20% (20% adjusted) of the variability in "trouble with authority" was predicted by knowing scores on these two independent variables. There was a positive significant

relationship between trouble with authority and “substance use,” and “suicide.” In other words, students who have trouble with authority were likely to use substances and to attempt suicide.

Then, a regression test was performed between “trouble with authority” (dependent variable) and “sexual harassment” (independent variable). R was significantly different from zero, $f(1, 1418) = 127.34$, $p < .001$. Sexual harassment accounted for 8% (8% adjusted) of the variance in scores on trouble with authority. A significant and positive relationship was found which indicated that students who have trouble with authority were more likely to either sexually harass others or be harassed themselves.

Next, a multiple regression was performed with “trouble with authority” as dependent variable and “bullying,” “willingness to communicate,” “bully victim,” and “stop bully” as independent variables, $f(4, 1415) = 239.26$, $p < .001$. Altogether, 40% (40% adjusted) of the variability in “trouble with authority” was predicted by knowing scores on these four independent variables. The significant and positive relationship indicated that both bullies and bully-victims tended to have trouble with authority.

Following, multiple regression between “sexual harassment” (dependent) and “bullying” variables (“bullying,” “willingness to communicate,” “bully victim,” and “stop bully” as independent variables) was significantly different from zero, $f(4, 1415) = 239.26$, $p < .001$. Eight percent (8% adjusted) of the variability in “sexual harassment” was predicted by knowing scores on these four independent variables. A significantly positive association indicated that both bully and bully-victims were more likely to be involved in sexual harassment related behaviors.

Last, between “sexual harassment” (dependent variable) and “risky behavior” (“substance use” and “suicide” as independent variables), regression was significantly different from zero, $f(2, 1417) = 44.10$, $p < .001$. Altogether, 6% (6% adjusted) of the “sexual harassment” variable was predicted by knowing scores on these two independent variables. A significant positive illustrated that students who use substances, who attempt/consider suicide, were more likely to be involved in sexual harassment.

In summary, the six tests including canonical correlation and regression procedures provided support for the relationships among the variables categorized in school violence hypothesized in the model. Although all the tests were significant at the .01 level, “trouble with authority” was strongly associated with “bullying” related variables. The relations between “trouble with authority” and “sexual harassment,” and between “risky behavior” and “bullying” were moderate. Between “sexual harassment” and “bullying,” between “sexual harassment” and “risky behavior,” and between “risky behavior” and “trouble with authority,” there were weak relations.

Summary and Discussion

This study adds to the literature on bullying and other related school violence both theoretically and empirically. First, a “model of bullying and other school violence” was developed based on previous research studies. An empirical study was then conducted to test the relationships hypothesized in the proposed model.

This study sheds lights on previous work on bullying-related school violence. At the theoretical level, key factors associated with bullying-related variables were identified and their relationships were hypothesized in the model. This model, depicted in Figure 1, has five major components. Conceptually, this work established a framework representing the relationships among the different causes for bullying and other school violence. In the theoretical sections, a full picture of the various factors included in the model was provided. A wide range of influences, and specified various relations among those influences, was discussed. In general, the reviewed studies supported the importance of the variables specified in the model. Bullying-related variables were related to other school violence variables, as well as to social variables, physical variables, affective variables, and curricular and extracurricular involvement. Given the scope of the paper, however, the discussion of each of these influences was brief, and only the most salient and global integrations were considered in detail.

In the empirical section, statistical analysis of a large-scale study was conducted to test major aspects of this model. In particular, this study was based on canonical correlation and regression procedures to provide support for the hypothesis. One of the most important findings in the empirical study is that the data analysis validates the model. All the hypothesized interrelationships among the variables are confirmed by the correlation and regression procedures. This emphasizes that a joint effort to improve all aspects of student living and learning environment is crucial in combating school violence. Particularly, because social and affective variables are demonstrated to be especially strong links with school violence including bullying, factors like family, school, community, and student beliefs are the most important aspects that influence school violence. The educational implication of this result is important in that it suggests that we need to focus on social and affective issues rather than largely unchangeable physical factors.

Most importantly, several intriguing results were found. First, when scrutinizing social variables, it is shown that family, community, and peers are particularly important influences on school violence variables. Parents’ expectations and restrict rules are strongly associated not only with their children’s own expectations, but also with their children’s feeling about family and

beliefs about substances. Consistent with previous results (Espelage, et al., 2000), one reasonable argument is that parents' low expectations for their children influence the children to have low expectations for themselves, feel unhappy about their family, and be inclined toward substance (e.g. drug and alcohol) use/abuse.

Because non-white students, students with disability, and students who live in poverty are far more likely than their counterparts to be the victims of low expectations (NCTM, 2000), these students are far more likely to be morally challenged and involved in violence, which, in turn, worsens domestic violence in society. Therefore, it is essential to improve all aspects of social environments, with particular emphasis on underrepresented groups. We should communicate with and educate parents ("if we say, they will listen") about raising their expectations and setting restrict rules for their children, and this in turn, may have positive effects on their children, improving academic performance (NCTM, 2000) and combating school violence. In addition, students who live in communities where substances are relatively difficult to access, and where people hold positive attitudes toward youngsters, are less likely to be involved in school violence. This further stresses the importance of society's continuous efforts to provide safe and drug-free communities.

Secondly, younger male students are most likely to have trouble with authority, to use substances, and to bully. This is consistent with previous results that the bullying problem is more prominent during middle school years (Hoover & Olsen, 2001), which reinforces the idea that we should start addressing school violence as early as elementary school.

Thirdly, students who use drug and alcohol, who think it is not harmful, and who have trouble with authority, are more likely to have low achievement scores, have bad attendance records, and spend fewer hours on homework, out-of-school jobs, and extracurricular activities. One explanation is that students who are busy with school work and extracurricular activities are most likely to focus their attention on academic and extracurricular work. As a result, they have less time to wonder around and to make troubles. An important practical implication is that by keeping students occupied with schoolwork, extracurricular activities, and out-of-school jobs, we may able to reduce school violence.

Turning to the hypotheses proposed within the school violence variable set depicted in this model, it is worth noting that all the relations hypothesized are statistically significant. Bullying-related behaviors, trouble with authority behaviors, risky behaviors, and sexual harassment related behaviors are very interrelated. This further confirms that all the school violence variables are closely related to each other. One educational application of this result is that when we establish intervention programs for schools to combat bullying, it is vital to consider all school violence variables as an integrated whole rather than treat each variable such as bullying as an isolated issue.

With respect to bully-related variables, it is worth emphasizing that both bully and bullies-victims are more likely to have trouble with authority, to use drugs and alcohol, to attempt or consider suicide, and to sexually harass others or be harassed themselves. This suggests that both bullies and bully-victims are probably psychologically abnormal; therefore, they tend to engage in improper behaviors. In particular, it may come as a surprise for many researchers and educators that bullies are also more likely to attempt and/or consider suicide. One explanation for this may be that bullies feel more "internalized group pressure to enforce standards of behavior...[which] causes endless problems" (Hoover & Olsen, 2001, p.23). Another interesting result is that bully-victims also tend to have trouble with authority and be involved in sexual harassment. This may be because bully-victims seek indirect compensation by vandalism or sexually harassing weaker (most possibly female) students. A significant practical implication of this discussion is that it provides a possible explanation of the failures of some traditional counseling programs in which bullies and victims are treated as separated groups (Ma, 2001; Clarke & Kiselica, 1997). This segregation of bullies and bully-victims fails to recognize the significant relationships among the various components affecting bully-related behaviors as suggested in this study. To be effective, all counseling services need to consider joint effects of bullying and victimization. Moreover, all the violence-related factors should be taken into account in any counseling program. In addition, the strong association between the bully-related variable and trouble with authority further confirms that "bullying played a major role" in a lot of school shooting cases (Dedman, 2001). This in turn, highlights the importance of our continuing endeavor to fight bullying in schools.

Needless to say, this study also has limitations. For instance, the data used to test the model are collected in a rural community with minimal visible minorities. Therefore, it is difficult to generalize the results to large urban communities with a larger population of minorities. In addition, constrained by the data, I was not able to use longitudinal data to test the model. Hence, it is not feasible to have more refined assessment of causal relations among the variables hypothesized in the model.

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