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Bullying and School Safety

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Abstract

Objective—To identify an association between involvement in bullying and problems in school.

Study design—This was a cross-sectional study of 5391 students in grades 7, 9, and 11 in an urban public school district. The main outcome measure was involvement in bullying. Secondary outcomes included attendance, grade point average, psychosocial distress, and perceived acceptability of carrying guns to school.

Results—Of the 5391 children surveyed, 26% were involved in bullying either as victim, bully, or both (bully-victim). All 3 groups were significantly more likely than bystanders to feel unsafe at school and sad most days. Victims and bully-victims were more likely to say they are “no good.” Victims were more likely to feel that they “do not belong” in their school. The odds of being a victim (vs a bystander) were 10% lower for every 1 point increase in grade point average. Bully-victims were more likely to say that it is “not wrong” to take a gun to school.

Conclusions—Associations between involvement in bullying and academic achievement, psychological distress, and the belief that it is not wrong to take a gun to school reinforce the notion that school environment is interrelated with mental health and school success.

Bullying is defined as any repeated negative activity or aggression intended to harm or bother someone who is perceived by peers as being less physically or psychologically powerful than the aggressor.¹ Of particular concern is that bullying may have an adverse impact on victims' scholastic achievement, desire to attend school, and psychological health.² In 2000, Nansel et al³ found a prevalence of bullying involvement (as bully, victim, or both [bully-victim]) among American teens and preteens of approximately 30%. But although this study found a significant association between bullying involvement and lower self-reported academic achievement, it did not use objective measures of academic achievement. Two other studies found a relationship between victim status and lower grade point averages.^{4,5} Results from studies of other age groups in other countries vary.⁶⁻⁸

Between 1994 and 1999, 220 school-associated violent deaths occurred in the United States, of which 172 were committed by students. Analysis revealed that the offending students were 2.6 times more likely to have been bullied than their victims.⁹ One US national study reported that during 1 month in 2001, 2.7 million students carried a weapon to school. In that study, carrying weapons was associated both with being a bully and with being a victim

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of bullying.¹⁰ Although numerous studies of bullying have been conducted worldwide, it cannot be assumed that the nature and effects of bullying will be the same in the United States as in other countries. In fact, data suggest that the phenomenon of bullying varies significantly from place to place.¹¹⁻¹⁸ For example, some data suggest that one of the most well-known anti-bullying interventions, the Norwegian Olweus Bullying Prevention Program, is significantly less effective in the United States than in Scandinavia.^{19,20} Variations in culture, school variables, or socioeconomic factors may account for these differences.¹⁹⁻²¹

The present study arose from an offer by a US urban school district to allow the authors to analyze the results of a survey designed to assess and improve the school climate. The goal was to characterize bullies, victims, and bully-victims as completely as possible given the available information. We identified the opportunity to answer the following specific questions:

1. What demographic factors are associated with bullying involvement among middle school and high school students in this particular geographic region?
2. Is bullying associated with poor academic achievement, low attendance, or serious disciplinary action?
3. What are the behavioral correlates of bullying?
4. Is bullying involvement associated with self-reported psychosocial distress?

We hypothesized that (1) bullying involvement would be associated with the following demographic features: low socioeconomic status, male sex, and lower age; (2) bullying involvement would be associated with low academic achievement and low attendance, especially in victims and bully-victims; (3) all children involved in bullying would be more likely to endorse carrying a gun to school; and (4) bullying involvement would be associated with self-reported psychological distress. This information was meant to serve as baseline data for future bullying prevention efforts.

METHODS

A large, urban public school district in a US west coast city agreed to participate in this study. The school district annually surveys students to determine how the school climate can be improved to better serve the students. Researchers involved with this study first approached the school district involved to discuss a potential collaborative study regarding bullying. The school district then offered to incorporate questions submitted by the researchers into their existing annual survey, with the understanding that the researchers would analyze the results for the district free of charge.

Survey answers were linked to computerized school records, including data on grade point averages, attendance, expulsions, suspensions, and demographic characteristics. All data were subsequently provided to the researchers with identifying information omitted. The study was approved by the University of Washington's Institutional Review Board and by the school district's Research Department.

Measures

Outcome status: Bully/victim/bully-victim/bystander—Three questions about bullying were accepted by the school district for use in the 34-item annual internal school climate survey. These 3 questions (Table I) were taken from a larger, reliable, well-validated bullying survey.²²

Students were classified as only victims, only bullies, bully-victims (those who were both victimized by bullies *and* bullied other children), or bystanders (children who did not bully others and were not bullied by others) based on their answers to the first 2 survey questions. Bystanders served as the reference group in all analyses.

Cutoffs for bullying status were chosen to be consistent with previous work by Nansel and Olweus.^{1,3} Children who said they were bullied *always*, *often*, or *sometimes* as opposed to *seldom* or *never* were considered victims. Children who said they bullied others at least 2 times per month were classified as bullies. Children who fit criteria for both bullies and victims were treated as a separate “bully-victim” group.

Academic Achievement, Attendance, and Disciplinary Actions

Cumulative grade point averages from the year of the survey were used as indicators of academic achievement. School attendance was expressed as a percentage of days attended out of days enrolled during the 2001-2002 school year. Suspensions and expulsions during the 2001-2002 school year were considered an indication of serious discipline.

Psychosocial Measures

The students were also asked whether they felt *safe* at school, whether they felt they *belonged* at their school, whether at times they felt *no good* at all, and whether they felt *sad* most days. In addition, the students were queried about how wrong they felt it was to engage in specific high-risk behaviors including *carrying a gun* to school, *beating* people who start a fight, *smoking* cigarettes, drinking *alcohol regularly*, *stealing*, *cheating*, *picking fights*, and *attacking another student* with the idea of seriously hurting that person. Response options were *not at all wrong*, *sometimes wrong*, or *very wrong*. A student who did not answer *very wrong* was considered to endorse the specific behavior (Table I).

Socioeconomic Status

Receiving free lunch at school was used as a proxy for low-income status. Based on the National School Lunch Program for the 2001-2002 school year, a child was eligible for free lunch if his or her family income was less than 130% of the poverty level.²³

Statistical Methods

The 2 key bullying questions asked whether the student was bullied and whether they bullied others (Table I). If these questions were not answered, the respondent was unable to be directly classified as a victim or bully. The 13% of students surveyed who did not answer 1 or both of these key questions were called *nonresponders*. Compared with students who responded to the key bullying status questions, nonresponders were significantly more likely to attend special education classes, to have lower attendance and slightly lower grade point averages, to be in the lowest socioeconomic group, to be disciplined more, to be in the youngest grade (7th), to be younger (age 11 to 12 years), and to be of a different ethnicity compared with responders.

In light of these differences, restricting the analysis to subjects with no missing values might have yielded biased estimates. Consequently, multiple imputation was performed to use available data on these subjects and decrease item nonresponse bias.^{24,25} The literature suggests that disregarding missing information completely could lead to bias, and multiple imputation is designed to correct for this.^{24,25} Five demographic covariates (age, school attended, socioeconomic status, sex, and ethnicity) were used to determine the bullying status group (bully, victim, or bully-victim) for the nonresponders. These variables were chosen based on information available for all students and data from previous literature that age, sex, and ethnicity might contribute toward predicting bullying status.^{1,3}

SOLAS software (Statistical Solutions, Cork, Ireland) was used to impute the missing data. We chose the hot-deck method, which randomly selected a “donor” (a similarly responding subject whose information could be substituted or “donated” to a nonresponding subject) based on specified demographic characteristics that they had in common. The missing value was replaced with the observed value from the donor. If a child responded to 1 of the 2 bullying status questions, then the data that the child provided were used and the data that were missing were imputed. Five data sets were imputed. We compared the results of analyses using imputed and nonimputed data and found similar results. Specifically, most of the variables that remained in the final models for imputed and nonimputed analyses were the same, and their odds ratios (ORs) were similar. This suggests that limited bias may have been associated with missing data.

We performed multiple logistic regression with bullying (status) as the response variable. Bullies, victims, and bully-victims were compared separately with the bystander group. All analyses were adjusted for potential confounders: race/ethnicity, sex, age, and socioeconomic status. We tested each variable individually for significant association with bully, victim, or bully-victim status after adjusting for age, sex, ethnicity, and socioeconomic status. We entered significant independent variables into a preliminary model together to determine which factors remained significantly associated with bullying status after adjustment for age, sex, ethnicity, and socioeconomic status. We eliminated variables that were not significant in this preliminary model and included those variables remaining after that elimination step in the final model. In the final model we also included the four variables that we used to adjust for confounding: age, sex, ethnicity, and socioeconomic status. All variables included in the final models are presented in Table II, regardless of their significance, with their associated ORs and 95% confidence intervals (CIs).

We derived the descriptive statistics (eg, frequency, CI) and performed regression analyses across all five imputed data sets and then combined, according to Rubin’s rule.²⁶ All statistical analyses were performed using SAS version 9.1 (SAS Institute, Cary, NC).

RESULTS

Youth in grades 7, 9, and 11 in 20 schools in an urban US school district were surveyed. Of the total of 6836 students enrolled in the schools, 5391 (79%) participated in the survey. Overall, 15% (796) of students surveyed reported being bullied but did not bully others, 7% (387) bullied others but were not bullied themselves, and 4% (195) were bully-victims. The remaining 74% (4013) reported no direct involvement in bullying and were categorized as bystanders. Only 27% of the students defined as victims and 30% of those defined as bully-victims said that they had reported their victimization to someone.

Multiple logistic regression results are presented in Table II. Victims, bullies, and bully-victims were not significantly more likely than bystanders to be absent from school, to smoke cigarettes, to use alcohol, or to be suspended or expelled. Additional results for each group are presented next.

Victims

After adjusting for age, sex, ethnicity, and income status, victims were about twice as likely as bystanders to say that they felt *unsafe at school*, *sad most days*, and at times that they were *no good at all*. Victims were also more likely to report feeling that they *didn’t belong at school*. For each 1-point rise in grade point average, the odds of being a victim versus being a bystander dropped by 10%.

Victims were no more likely than bystanders to endorse high-risk behaviors, with the exception of *stealing if they could get away with it*. Victims were more likely to be in the middle (13 to 14) age group as opposed to the youngest (11 to 12) or oldest (15 to 16) group compared with bystanders. Victims were also less likely to be African American, Asian, or Native American compared with bystanders.

Bullies

Bullies were almost twice as likely to say they felt *unsafe at school* and were more likely to say that they felt *sad most days* relative to bystanders. They were also more likely to be younger (age 11 to 12) and male compared with bystanders. Bullies were 3 times as likely as bystanders to say that it was *not wrong to beat up someone who starts a fight*. They were also more likely to say that it was *not wrong to pick fights* and to *cheat at school*.

Bully-Victims

Bully-victims were more than 2.5 times more likely than bystanders to *feel unsafe at school* and to say that at times they *felt no good at all*. They were approximately twice as likely to be male and to say they *felt sad most days* compared with bystanders. Bully-victims were more likely than bystanders to be male, to be older (age 13 to 16 years as opposed to 11 to 12), to say that it was *not wrong to take a gun to school*, and to cheat at school if they could get away with it.

Additional data from this study are provided in an Appendix available at www.jpeds.com.

DISCUSSION

The National Household Education Survey of 1993 revealed that approximately 50% of students in grades 6 to 12 use strategies to avoid harm at school. Not only being victimized, but even simply witnessing bullying increased the likelihood that a student used a strategy to avoid harm.²⁷ Many lawsuits have been filed over school districts' failure to protect students being bullied at school.^{28,29} DuRant et al³⁰ reported a subgroup of students who have been victimized at school, are afraid to go to school, and carry weapons at school.

This study showed that bully-victims are more likely to endorse carrying a gun to school. There are many reasons why adolescents might want to carry guns to school and bullying has been confirmed as a common reason.^{31,32} In 2000, the US Secret Service reported that in 2/3 of the 37 school shootings that have occurred in 26 states since 1974, the attacker felt "bullied, attacked, threatened, or persecuted prior to the incident."³³ In many of those cases, previous bullying of the shooter has been confirmed.^{28,34} Cunningham et al³⁵ revealed that of the rural American middle-school students surveyed who owned a gun and were considered high-risk (ie, carrying a gun to intimidate or command respect), the vast majority (83%) engaged in bullying. The study presented here suggests that we should be particularly concerned about children who are both bullies and victims, because they are much more likely to endorse carrying a gun to school. This is consistent with the literature that suggests that the bully-victim group is the most troubled.³⁶⁻⁴⁰

The symptom of frequent sadness is known to have high sensitivity and specificity for the diagnosis of major depression.⁴¹ Scales for depression in childhood universally include a question about frequent sadness and DSM IV criteria require a cardinal symptom of being sad nearly every day or experiencing loss of pleasure in usual activities for 2 weeks or more.⁴² In other words, being involved in bullying in any way (as bully, victim, or bully-victim) is associated with a key depressive symptom. This adds depth to the previous literature that supports a connection between bullying, suicide, and depression.^{1,43-54}

Victims have significantly lower academic achievement in school than bystanders using an objective measure of achievement.⁴ Whether the lower academic achievement among victims preceded or was a consequence of being a victim cannot be determined from this cross-sectional study. Some literature has supported the idea that being bullied impairs concentration and subsequent academic achievement.^{3,55-57} A large US national survey found that those who perceive themselves as having below-average academic achievement are more likely to be bullies or bully-victims.³ In contrast, the results of the present study showed that victims' grades were more likely to be lower than bystanders'. This may have to do with the different methodologies used—specifically, the fact that the present study used objective achievement data although the previous study did not.

A small number of studies has used actual attendance data to determine whether greater school absence is associated with being bullied in the middle and high school years (grades 7, 9, and 11). Smith et al from the United Kingdom reported that continued victimization is associated with lower school attendance. That study verified that some absences occurred out of fear of being bullied.⁵⁸ Two studies by Nishina et al⁴ and Juvonen et al⁵ and from the United States found that absenteeism was predicted by self-reported victimization. The US National Center for Education Statistics reported in 1993 that of the 6504 middle school students surveyed, 455 (7%) skipped school to avoid being harmed by peers.²⁷ The study described here found no association between involvement in bullying and greater school absenteeism.

A literature search revealed no previous works examining an association between bullying and disciplinary action at school including expulsions and suspensions, with the exception of one article reporting dramatic decreases in suspension rates after implementation of an anti-bullying intervention.⁵⁹ In the present study, we found no association between being expelled or suspended and being involved in bullying.

Our study has several limitations. It was conducted in a single school district in the United States, limiting generalizability. In addition, students included their names on the surveys, and the determination of whether a child was a victim, a bully, or a bully-victim was determined solely by self-report. Both of these factors could potentially introduce bias. However, partly with the intention of minimizing any potential misclassification based on self-report, only more severely affected children were defined as bullies and victims for this analysis. It would seem unlikely (because of the negative social stigma attached to being a victim) that a child would report being *sometimes*, *always*, or *often* bullied if he or she truly was not.³⁸ For bullies, however, some literature suggests that their social status may be above average or improved due to bullying.^{38,60} Because of this, some students might be inclined to call themselves bullies even if they truly are not. In addition, although there is literature to support that self-report is quite accurate after grade 2 and becomes more reliable as the children age, a combination of peer reports, teacher reports, and self-reports produces better estimates of children's relational adjustment.⁶¹⁻⁶³

Another limitation is that 21% of students did not participate in the survey. There are many possible reasons for not participating in a survey. When middle-school and high-school students are involved, as with this study, absenteeism, fear of retaliation, and lack of desire are some possible reasons for lack of participation. Unfortunately, we had no information on those students who did not respond to the survey.

Currently, various interventions are used to decrease aggressive behavior and increase social skills.^{1,19,20,64} In 2001, the US Surgeon General stated that hundreds of violence-prevention programs are being used in American schools without a full understanding of their effectiveness. Primary prevention programs focus on the whole school, whereas secondary

prevention programs are aimed mainly at aggressive children. A 2006 Cochrane Collaboration review of school-based secondary violence prevention programs concluded that successful programs designed to reduce aggressive behavior have been implemented for students of all ages.²¹ The Centers for Disease Control is currently undertaking a randomized controlled trial of an intervention that has both primary and secondary components, but results are not yet available.

Second Step and the Olweus Bullying Intervention Program are examples of interventions that have some evidence supporting their effectiveness.^{1,19,20,64} The school district involved with the present study offered several schools the opportunity to try the Olweus Bullying Intervention Program developed in Norway. An extensive study of this effort by researchers at the University of Washington yielded mixed results that are awaiting publication.²¹ The next step for bullying researchers will be to focus on helping school leadership understand the importance of anti-bullying efforts, determining which interventions work best with which populations, and determining which aspects of successful interventions make them work.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Glossary

CI	Confidence interval
SD	Standard deviation
OR	Odds ratio

Table I**Bullying survey questions**

1	Students at this school bully me. (Bullying includes any bad thing one person could do or say to or about another person that happens more than once.) Response options: Always; often; sometimes; seldom; never.
2	How often have you yourself bullied another student at school in the past couple of months? Response options: None; only once or twice; 2 or 3 times a month; about once a week; several times a week.
3	Where have you been bullied? Response options: Playground; playing fields; hallways or stairs; classrooms; bathrooms; gym; locker room; lunch room; going to and from school; and school bus.
4	I feel safe at my school. Response options: Always; often; sometimes; seldom; never.
5	At times, I think that I am no good at all. Response options: Not at all true; fairly true; sometimes true; mostly true; very true.
6	In the past year, I have felt sad most of the days, even though I feel okay sometimes. Response options: Not at all true; fairly true; sometimes true; mostly true; very true.
7	I feel like I belong at my school. Response options: Yes or no.
8	How wrong do you think it is for someone your age to: take a handgun to school, steal, pick a fight with someone, attack or beat someone with the idea of seriously hurting them, drink alcohol regularly, smoke cigarettes? Response options for high-risk behavior or item: Very wrong; sometimes wrong; not at all wrong.

Table II

Characteristics of 7th, 9th, and 11th grade students associated with victim, bully, and bully-victim status *

	OR	95% CI	P
VICTIMS			
Victims Feel unsafe at school	2.0	1.6 to 2.6	<.0001
Feel sad most days	1.8	1.4 to 2.4	<.0001
Feel they don't belong	1.7	1.4 to 2.1	<.0001
Sometimes feel no good at all	2.2	1.7 to 2.8	<.0001
Endorse stealing if they can get away with it	1.5	1.1 to 2.2	.0168
Cumulative grade point average	0.9	0.8 to 1.0	.0083
Low-income status	1.3	1.0 to 1.6	.0243
Male	1.2	1.0 to 1.5	.0255
Age 11 to 12 years [†]	2.0	1.4 to 2.6	.0653
Age 13 to 14 years[†]	1.4	1.1 to 1.8	.0183
African American	0.6	0.4 to 0.8	.0012
Hispanic	0.9	0.7 to 1.3	.5769
Asian	0.8	0.6 to 1.0	.0458
Native America	0.4	0.2 to 1.0	.0375
BULLIES			
Feel unsafe at school	1.9	1.3 to 2.6	.0003
Feel sad most days	1.5	1.1 to 2.2	.0147
Endorse picking fights	2.3	1.4 to 3.8	.0007
Endorse beating up others	3.0	2.2 to 4.0	<.0001
Endorse stealing	1.5	1.0 to 2.3	.0683
Endorse cheating	2.3	1.6 to 3.3	<.0001
Low-income status	1.4	1.0 to 1.8	.0240
Male	1.6	1.2 to 2.1	.0004
Age 11 to 12 years[†]	1.7	1.2 to 2.6	.0082
Age 13 to 14 years [†]	1.4	1.0 to 2.1	.0658
Age 15 to 16 years [†]	0.8	0.6 to 1.3	.4108
African American	1.2	0.8 to 1.7	.3167
Hispanic	0.9	0.6 to 1.5	.7983
Asian	0.9	0.6 to 1.2	.4014
Native America	1.4	0.7 to 2.9	.3005
BULLY-VICTIMS			
Feel unsafe at school	2.6	1.7 to 3.8	<.0001
Feel sad most days	1.9	1.2 to 2.9	.0039
Sometimes feel no good at all	2.7	1.8 to 4.2	<.0001
Endorse cheating	3.1	2.0 to 4.8	<.0001
Endorse taking a gun to school	3.3	1.4 to 7.8	.0071
Low-income status	1.1	0.7 to 1.6	.7168

	OR	95% CI	P
Male	2.0	1.4 to 2.8	<.0001
Age 11 to 12 years [†]	3.0	1.5 to 5.8	.3179
Age 13 to 14 years[†]	2.7	1.5 to 4.8	.0005
Age 15 to 16 years[†]	1.4	0.7 to 2.5	.0013
African American	0.8	0.5 to 1.3	.3177
Hispanic	0.7	0.4 to 1.3	.2240
Native American	0.8	0.3 to 2.3	.6733
Asian	0.7	0.5 to 1.1	.1756

Bold variables are significant by $P < .05$.

* From multiple logistic regression after adjusting for age, sex, ethnicity, and socioeconomic status.

[†] Reference group: 17- to 18-year-olds.