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Although researchers have identified individual-level predictors
of nonphysical bullying among children and youth, school-level
predictors (i.e., characteristics of the school environment that
influence bullying exposure) remain largely unstudied. Using data
from a survey of 1,838 students in 21 Boston public high schools,

we used multilevel modeling techniques to estimate the level of variation across schools in student reports of nonphysical bully victimization and identify school-level predictors of bullying. We found significant between-school variation in youth reports of nonphysical bullying, with estimates ranging from 25%–58%. We tested school-level indicators of academic performance, emotional well-being, and school safety. After controlling for individual-level covariates and demographic controls, the percentage of students in the school who met with a mental health counselor was significantly associated with bullying (OR = 1.03, 95% CI = 1.01, 1.06). There was no significant association between school-level academic performance and perceptions of school safety on individual reports of bullying. Findings suggest that prevention and intervention programs may benefit from attending to the emotional well-being of students and support the importance of understanding the role of the school environment in shaping student experiences with bullying.

Bullying is widely recognized as a pervasive school experience in the United States and abroad, with studies indicating that 9%–32% of youth are victims (Berger, 2007). Contextually oriented theories, such as Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979), suggest that characteristics of both the individual student and the school environment jointly influence students' experiences of bullying and other types of victimization (Bellmore, Witkow, Graham, & Juvonen, 2004; Khoury-Kassbari, Benbenishty, Astor, & Zeira, 2004). Although studies have identified numerous student-level characteristics associated with bullying, including gender, age, and psychological disorders (Espelage & Swearer, 2003; Seals & Young, 2003), school-level predictors (i.e., the characteristics of the school environment that may give rise to bullying) have been largely ignored (Bradshaw, Sawyer, & O'Brennan, 2009). The lack of research on the characteristics of the school environment that influence exposure to bullying as well as the degree to which bullying varies across schools is particularly problematic, given that several school-wide bullying prevention and intervention programs rely on the assumption that bullying can be reduced by modifying the school environment (e.g., Frey, Hirschstein, Edstrom, & Snell, 2009; Olweus et al., 2007).

Existing research suggests that characteristics of the school environment may be associated with bullying. For instance, studies have shown that positive and supportive classroom and school cultures are related to prosocial peer relationships and lower rates of peer violence and victimization (Barth, Dunlap, Dane, Lochman, & Wells, 2004; Brookmeyer, Fanti, & Henrich,

2006; Khoury-Kassbari et al., 2004). However, few studies have examined school predictors of individual-level bullying using a multilevel design. Moreover, the few studies that have included school-level factors have primarily focused on demographic characteristics of schools, observing that indicators of social disorganization (e.g., increased student-teacher ratio, student poverty, student mobility, school size; Bowes et al., 2009; Bradshaw, Sawyer et al., 2009) are positively associated with individual bullying-related attitudes and experiences.

In the current study, we use data from a sample of high school students to examine school context and bullying. First, we explore the extent to which the proportion of students who report nonphysical bullying varies across schools. Then, we estimate the average association between school-level characteristics and bullying, after accounting for individual covariates. We specifically focus on nonphysical forms of bullying (i.e., teasing, electronic bullying, rumor-spreading, sexual comments, stealing) as they have been identified as harmful, but receive less attention in research on contextual factors than physical bullying.

While theories such as Bronfenbrenner's (1979) suggest that features of both the individual and their broader social context are associated with behavior, very little is known about the specific characteristics of the school environment that may be associated with bullying. In fact, there is little evidence or theoretical work to guide research in this area. Accordingly, we adopt an exploratory approach in conducting this research and, as described next, examine school factors in three conceptually derived categories. Guided by existing research on the role of school characteristics, we examined school-level indicators of: (a) academic performance, (b) mental health, and (c) school safety. Next, we briefly describe the relevance of these indicators.

Academic performance

At the individual level, poor academic performance and reduced student involvement in the educational process (e.g., lower rates of homework completion, lower grades, higher rates of dropout) are related to both bullying perpetration and victimization, (Holt, Finkelhor, & Kantor, 2007; Swearer, Espelage, Vaillancourt, & Hymel, 2010). At the school level, standardized test scores have been integrated in measures of overall school environment that are found to be significantly associated with aggression and violence (Barth et al., 2004; Birnbaum et al., 2003). School-level academic performance may be indicative of school resources, teacher quality, and student engagement in school.

Mental health

Mental health problems have been consistently linked to bullying as both a risk factor for and a consequence of victimization (Hawker & Boulton, 2000;

Klomek, Marrocco, Kleinman, Schonfled, & Gould, 2007; Seals & Young, 2003). Aggregated to the school-level, a higher prevalence of mental health problems may indicate a greater level of overall student psychological distress and school disorder. Further, research on students who witness bullying indicates that these bystanders are at greater risk for emotional problems (Rivers, Poteat, Noret, & Ashurst, 2009), suggesting that school-level mental health problems may be an outcome of exposure to bullying among other students in the school.

SCHOOL SAFETY

Research suggests that bullying and other high-frequency, low-severity forms of aggression have an impact on students' feelings of safety within their school (Skiba, Simmons, Peterson, & Forde, 2006). This association is important for intervention because schools frequently address bullying as part of broader efforts to decrease violence and victimization (e.g., positive behavioral interventions and supports; Bradshaw, Koth, Thornton, & Leaf, 2009; the Second Step Program; Van Schoiack-Edsrom, Frey, & Beland, 2002). Understanding the relation between safe school climate and bullying can have implications for the breadth and focus of prevention and intervention programs selected by schools.

METHOD

Sampling Design

Data for this study came from the 2008 administration of the Boston Youth Survey (BYS)*,* a biennial paper-and-pencil survey of high school students (9th–12th graders) in Boston Public Schools (BPS) administered by the Harvard Youth Violence Prevention Center (Azrael et al., 2009). The BYS 2008 instrument covered a range of topics (e.g., demographics, health behaviors, use of school resources, developmental assets, and risk factors) and had a particular emphasis on violence. A total of 32 eligible public high schools within the BPS system were invited to participate. Additional schools that were considered ineligible for participation were those that served adults (i.e., "night schools"), students transitioning back to school after incarceration, students on suspension, and students who were primarily living outside of Boston (i.e., schools for children with special needs). A total of 22 eligible schools participated in the survey, for a school participation rate of 68%. Among schools considered eligible, we did not observe any statistically significant differences in key school indicators (e.g., dropout rates, racial composition of students, scores on standardized tests) between participating and nonparticipating schools.

To acquire a random sample of students within participating schools, we generated a list of unique humanities classrooms within each school. Classrooms were then stratified by grade and selected randomly for survey administration. Every student within the selected classrooms was invited to participate. Selection of classrooms continued until the total number of students to be surveyed ranged from 100–125 per school. In the two schools with total enrollments close to 100, all classrooms in the school were invited to participate.

Survey Administration and Response

The paper-and-pencil survey was administered to students by trained research staff between January and April of 2008. Prior to survey administration, passive consent was sought from students' parents (i.e., parents were notified of the survey and not required to respond if they approved their child's participation). Survey administrators also obtained informed assent from respondents. Students were given approximately 50 minutes to complete the survey. Of the 2,725 students enrolled in the classrooms selected for participation, 1,878 completed a survey (69%). Students who did not complete a survey either (a) chose not to participate ($n = 99$), (b) did not have parental consent ($n = 24$), or (c) were absent on the day of administration ($n = 724$). We excluded one school from the analytical sample because 65.2% of the sampled students were absent on the day of the survey. Therefore, the total sample size is 1,838 students, within 21 schools. The Human Subjects Committee at the Harvard School of Public Health approved all procedures.

Measures

Bullying

The BYS 2008 contained five questions on nonphysical bully victimization, adapted from a 10-item survey developed by Rigby (1998). An introduction to the items defined bullying and instructed students to focus on peers, rather than siblings or dating partners (the latter two perpetrator groups were assessed in separate questions). The question stem read: "These questions are about whether you have been 'bullied,' which means that a kid or group of kids repeatedly hurt you or treated you badly . . . IN THE PAST 30 DAYS, has someone or a group of people repeatedly hurt you or made you feel bad by" [emphasis in original]. Items asked whether the student had experienced each of the following types of bully victimization in the past 30 days: teasing, electronic bullying, rumors, unwanted sexual comments or gestures, or stealing. Response options were "yes" or "no." We developed an indicator of

any bullying (i.e., students said "yes" to any of the five nonphysical bullying questions).

We used two different types of variables, administrative and derived, to capture information about the characteristics of the school climate. Administrative variables are school-level factors that have no individual-level analogue (e.g., 4-year graduation rate), whereas derived variables have been aggregated from individual-level responses (e.g., youth reports of truancy can be aggregated within a school to create a measure of the percentage of students who engage in that behavior; Diez Roux, 2002). Administrative variables were created using data from publicly-available BPS school reports for the school year in which the BYS data were collected, which was 2007–2008 (Office of Research, Assessment, and Evaluation, 2007). These school reports were designed to inform families about characteristics of BPS schools and to comply with the reporting requirements of the federal No Child Left Behind (NCLB) law. We created derived variables by aggregating data from respondents within each school. Derived variables were excluded from analyses if they were missing more than 15% of individual-level data. Administrative variables were excluded if any schools were missing data. See Table 1 for descriptive statistics on students and schools.

Several variables in the dataset measured school academics, mental health, and safety. Given that the number of schools in the BYS sample ($N = 21$) was small, we were unable to test a large number of school characteristics or use multiple variables that tapped the same construct. We therefore selected variables based on: (a) their representation of the constructs of interest, (b) the strength of Pearson's r correlation with other variables measuring a related construct (i.e., variables that were most strongly correlated with other constructs were retained), and (c) the extent of between-school variability in derived variables (i.e., variables that had the highest degree of between-school variation were retained).

We considered several academic performance variables for inclusion. Administrative variables considered were: percentage of students in the school promoted to the next grade, four-year graduation rate, Massachusetts Comprehensive Assessment System (MCAS) failure rate, whether schools are making NCLB Adequate Yearly Progress, and average SAT score. Derived variables considered were: percentage of students spending less than 1 hour per night on homework, percentage truant, percentage who have failing grades in school, percentage who think good grades are very important, and percentage who think education is very important to their family. As we considered all of these variables to be conceptually similar, we constructed a correlation matrix to determine which variable had the highest correlation coefficients with the other variables and was therefore potentially a good

TABLE 1 Individual- and School-Level Demographic Characteristics in the BYS Dataset

Individual level ($N = 1,838$)	% (n)	
Sex		
Female	52.6 (966)	
Male	47.2 (868)	
Race/Ethnicity		
White, non-Hispanic	8.5 (156)	
Black, non-Hispanic	41.6 (764)	
Hispanic/Latino	32.3 (593)	
Asian	8.0 (147)	
Other	6.8 (125)	
Age		
13–14	8.3 (151)	
15	19.0 (349)	
16	27.0 (496)	
17	26.1 (479)	
18–19	18.8 (345)	
Nativity		
U.S.-born	68.0 (1250)	
Foreign-born	30.9 (568)	
School level ($N = 21$)	M (SD)	Range
% Female	51.3 (12.2)	23.0–66.3
% White, non-Hispanic	11.1 (11.5)	0.4–53.4
% U.S.-born	67.2 (14.0)	41.9–89.6
% Receiving special education services	19.3 (8.2)	0.7–33.7
% Receiving ELL services	7.0 (10.3)	0.0–35.5
% Receiving free or reduced price lunch	72.82 (13.49)	28.30–88.0
Student mobility rate	21.7 (13.1)	1.4–47.2
Student enrollment	691.1 (584.0)	226–2401
Number of teachers	47.3 (35.0)	17–141

Note. ELL = English-language learners.

proxy for the underlying construct of school academic performance. The variable, percentage of students spending less than 1 hour per night on homework, had the highest absolute correlation coefficients with the most other academic performance variables ($r = .37–.75$; e.g., for the correlation with SAT scores, $r = -.74$, with making Adequate Yearly Progress, $r = -.66$; with graduation rate, $r = -.61$). We also found, through a null multilevel model, that this variable had the highest degree of between-school variation when compared to the other derived academic performance variables ($\sigma^2_{between} = 0.03$, $p < .01$). Therefore, this variable was selected for inclusion in multilevel models as an indicator of school-level academic performance.

The BYS data included several questions assessing student mental health and emotional well-being including questions about depressive symptoms, suicidal ideation, and visits with a counselor. We selected the variable measuring mental health service use ("In the past 12 months, did you visit a school counselor, therapist, or psychologist because you were feeling bad

or were having some emotional problems?") as the best representative of a range of emotional and behavioral disorders (whereas variables assessing depression and suicidality were more specific in their focus and excluded symptoms of anxiety and externalizing disorders that are commonly associated with bullying). At the school-level, this mental health service use variable had moderate correlations with the percentage of students in the school who felt sad ($r = .28$, $p < .001$) and hopeless ($r = .37$, $p < .001$), considered suicide ($r = .41$, $p < .001$), and cut or injured themselves on purpose ($r = .58$, $p < .001$). Further, school-level reports of visits with a counselor was significantly correlated with the percentage of students in schools who reported involvement in peer aggression (e.g., involvement in arguing, physical fights, punching someone, attacking or threatening someone; $r = .50$, $p < .001$), suggesting that the variable is also associated with externalizing behaviors. Although the percent of students in schools who reported visiting a counselor varied considerably (range $= 14.61–35.09$), there was no statistically significant between-school variation in this variable ($\sigma^2_{between} < 0.01$, $p = .23$). However, the finding that the percent of students who visited a counselor was more than twice as high in some schools than in others suggests that this variation may be meaningful.

The BYS included only one question that explicitly assessed school safety: "Do you feel safe in your school building?" Respondents could select response options indicating that they *never/rarely, sometimes,* or *mostly/always* felt safe at school. We collapsed response options to indicate the percentage of students in the school who did not feel safe (i.e., indicated *never/rarely* or *sometimes* vs. *mostly/always*). This variable had significant between school variability ($\sigma^2_{between} = 0.04$, $p < .01$) and was included as an indicator of safe school climate. The three school-level variables that we included in the final model had weak to moderate correlations with one another ($r = .136–.652$).

SCHOOL-LEVEL DEMOGRAPHIC CONTROLS

We tested several school-level administrative (e.g., student mobility rate, percentage of students who were involved in special education) and derived variables (e.g., percentage of students who were U.S. born) for possible inclusion in our analyses. In bivariate analyses, no school-level variables were significantly associated with individual-level reports of exposure to bullying. Therefore, we decided not to include school-level demographic controls in our models.

INDIVIDUAL-LEVEL DEMOGRAPHIC CONTROLS

We also tested a set of individual-level controls. Individual-level variables that were significantly associated with bullying were: female sex (OR = 2.19, 95% CI = 1.99, 2.39), Hispanic ethnicity (OR = 1.22, 95% CI = 1.04, 1.40),

older age (OR = 0.88, 95% CI = 0.80, 0.96), and foreign nativity (OR = 1.45, 95% CI = 1.24, 1.67). We controlled for these variables to reduce the likelihood that school-level effects were confounded by compositional effects (i.e., we control for differences in the compositions of schools to rule out the likelihood that youth with certain characteristics were disproportionately represented within certain schools).

Analyses

After selecting variables and conducting descriptive statistics, we used multilevel modeling techniques to answer the two research questions (Raudenbush & Bryk, 2002). We began by fitting a null or intercept-only multilevel logistic model, which allowed us to quantify the total unexplained variance in bullying and partition this variance into within-school and between-school components. The school-level variance component ($\sigma^2_{between}$) quantified variation in bullying across schools. Next, we tested the association between each school-level predictor and individual-level reports of bullying. We tested these associations by introducing, one by one, each of the three variables into the null model creating a series of three bivariate models (Models 1–3). We then combined the three variables in a multilevel model to determine the relative association of each of our three predictors with bullying (Model 4).

Individual-level demographic covariates were added to the multilevel model (Model 5) to determine whether the effect of the school level characteristics persisted after accounting for demographic factors (Diez Roux, 2008). Next, individual-level analogues for each derived variable were added to the multilevel model (e.g., in addition to testing the percentage of students in the school who saw a counselor, we also entered individual reports of having seen a counselor, Model 6). Including the individual-level analogues was designed to allow us to determine whether the contextual effects of school characteristics were statistically significant over and above the characteristics of the youth who are part of a specific school (i.e., composition). Our final model included individual-level demographic covariates and individual-level analogues for each variable (Model 7).

Analyses were conducted using PROC GLIMMIX, a regression procedure for multilevel modeling (SAS, version 9.2). We report odds ratios and 95% confidence intervals.

RESULTS

Student Reports of Nonphysical Bullying Across Schools

In the total sample, 41.0% of students reported nonphysical bully victimization in the past month, 21.3% reported two or more forms of bullying, and 9.8% reported three or more forms of bullying. The percentage of

students within each school reporting any form of bullying ranged from 24.6% to 57.6% of students. Results of the null multilevel model suggest that the degree of between-school variation in reports of victimization was statistically significant ($\sigma^2_{between} = 0.05$, $p < .001$).

School-Level Predictors of Bullying

Models 1 to 3 present the bivariate associations between each school-level factor and individual-level bullying. These results indicate that mental health service receipt is the only significant predictor (Table 2). In Model 4, school-level mental health service receipt continues to be significant when controlling for academic performance and school safety. When individual-level demographic controls are added in Model 5, mental health service receipt is significant, as are several demographic controls (sex, age, nativity). Model 6 includes the three school-level predictors and each of their individual-level analogues. Even when controlling for individual-level receipt of mental health services and school safety, school-level mental health service receipt is significant; that is, each one percent increase in the percent of students who saw a counselor was associated with a 1.34 fold increase in odds of reporting bullying (95% CI = 1.31, 1.36). In our final model (Model 7), we include all school-level predictors, individual-level demographic controls, and individual-level analogues to the school-level predictors. In this model, the percent of students in the school who visited a counselor remained significantly associated with bullying: each one percent increase in the percent of students who saw a counselor was associated with an odds ratio of 1.03 (95% CI = 1.01, 1.06) for being bullied.

DISCUSSION

Bullying interventions frequently rely on ecologically-based models (Swearer et al., 2010) and seek to influence school climate and culture to decrease bullying (Merrell, Gueldner, Ross, & Isava, 2008; Smith & Ananiadou, 2003). As such, identifying school-level influences on bully victimization can have important implications for selecting interventions, determining which schools are most in need of these resources, and studying the effectiveness of programs. Among the 21 schools included in this analysis, we found significant variation in the prevalence of nonphysical bullying across schools, with less than a quarter of students in some schools reporting victimization and almost 60% of students in other schools reporting bullying.

As expected, we found that individual-level variables were more strongly associated with whether any particular student was bullied than school-level factors. When we accounted for these individual-level factors in our models, however, we found a significant association between

TABLE 2 Odds Ratios for Multilevel Models Depicting the Association Between School-Level Variables and Individual Reports of Exposure to Any Bullying

	Models 1–3[a] bivariate OR (95% CI)	Model 4[b] combined OR (95% CI)	Model 5[c] combined with demographic controls OR (95% CI)	Model 6[d] combined with individual-level analogues OR (95% CI)	Model 7[e] combined with demographic controls and individual-level analogues OR (95% CI)
School-level variables					
Academic performance	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.00 (0.98, 1.01)	1.00 (0.99, 1.01)
Mental health services	1.03 (1.01, 1.05)*	1.03 (1.01, 1.05)*	1.04 (1.01, 1.06)**	1.34 (1.31, 1.36)*	1.03 (1.01, 1.06)*
School safety	1.00 (0.99, 1.00)	1.00 (0.99, 1.01)	1.00 (0.98, 1.01)	1.00 (0.98, 1.01)	0.99 (0.98, 1.01)
Individual-level covariates					
Gender (female)	—	—	2.26 (2.05, 2.46)**	—	2.19 (1.97, 2.41)**
Age	—	—	0.99 (0.91, 1.07)**	—	0.85 (0.77, 0.94)**
Hispanic ethnicity	—	—	1.04 (0.92, 1.15)	—	1.03 (0.88, 1.17)
Born in United States	—	—	1.59 (1.37, 1.81)**	—	1.69 (1.45, .92)**
Individual-level analogues					
Academic performance	—	—	—	1.02 (0.80, 1.23)	1.16 (0.93, 1.38)
Mental health services	—	—	—	2.16 (1.92, 2.39)**	1.98 (1.73, 2.22)**
School safety	—	—	—	1.52 (1.13, 1.91)*	1.58 (1.17, 1.98)*

[a]Models 1 to 3 present three separate bivariate multilevel models that each include one school-level variable. [b]Model 4 is a multilevel model that combines all three school-level variables. [c]Model 5 is a multilevel model that combines all three school-level variables and individual-level demographic covariates. [d]Model 6 is a multilevel model that combines all three school-level variables and each of their individual-level analogues. [e]Model 7 is a multilevel model that combines all three school-level variables, each of their individual-level analogues, and individual-level demographic controls.

*p < .05. **p < .01.

one feature of the school environment—use of mental health services—and bullying. Specifically, results suggest that the percentage of students in the school who met with a counselor was associated with individual-level bullying, even after accounting for covariates including individual-level counseling use. Although previous studies have found an association between academic performance and other indicators of school safety with bullying, when aggregated to the school level, these variables were not significantly associated with bullying.

The academic performance variable included in our analyses (percentage of students spending less than 1 hour on homework per day) could be considered both an indicator of overall school academic performance, as demonstrated by its high correlation with other academic variables, and an indicator of academic engagement. Although other research has shown that being bullied at the individual-level leads to a reduction in academic engagement, distractability during classes, and poor academic performance (Holt et al., 2007; Swearer et al., 2010), neither the general academic climate of the school nor the youth's own level of academic engagement was associated with bullying in this sample.

Similarly, we did not find that perceptions of safety aggregated to the school-level were associated with individual-level nonphysical bullying victimization. This was contrary to our expectation that the percentage of students in the school who felt unsafe would be related to bullying, as bullying is frequently considered an indicator of school safety. It is possible that the results would differ for physical forms of bullying, as we suspect that students responding to the question about school safety may have been referencing experiences with physical safety in schools.

Finally, results showed that the percentage of students in schools who reported having visited a counselor for an emotional problem was significantly associated with individual-level bullying, even when we controlled for individual-level reports of visits to a counselor and demographic covariates. The size of the odds ratios reported here may appear small, but they are similar in magnitude to those reported in other studies of the association between school-level characteristics and bullying (Bowes et al., 2009; Bradshaw, Sawyer et al., 2009).

In addition to being an indicator of psychological distress in schools, the percentage of students who saw a counselor or therapist may also represent service availability in schools or accessibility of services to the families of students. We were able to partially explore this possibility by testing the association of the percent of students visiting a mental health counselor with two variables in the BYS dataset that assessed access to health care. One BYS question about health exams ("In the past 12 months, did you have a physical exam or check-up from a doctor or nurse") had a negative correlation ($r = -.49$, $p < .001$) with mental health service use. Another variable indicated whether BYS schools provided mental health services through

a clinic operated by the Boston Public Health Commission or a partnership with Children's Hospital Boston. The presence of these health clinics in the school had no association with the percent of students seeing a counselor ($r = -.04$, $p =$ n.s.). These correlations suggest that the percentage of students using school mental health services is not solely related to service accessibility; however, the extent to which school resources moderate the relationship between mental health service use and bullying should be explored further. This association is broadly consistent with literature indicating that students who are involved in bullying have higher rates of emotional problems (Hawker & Boulton, 2000; Haynie et al., 2001). Further, witnessing bullying in schools has been associated with risk for mental health problems (Rivers et al., 2009), suggesting that the influence of bullying may also go in the other direction and the extent to which individuals in schools are being bullied may influence school-level mental health.

Study Limitations

Just over 40% of students in this sample of Boston public high school students reported at least one form of nonphysical bullying victimization in the past month. This prevalence is towards the upper end of what is typically reported (Berger, 2007). In general, the range in prevalence estimates reported in studies has been largely attributed to variation in assessment methods (Solberg & Olweus, 2003). Here, we used a measure that focuses on nonphysical forms of bullying (teasing, bullying, rumors, unwanted sexual comments or gestures, stealing) and does not assess physical victimization. It also does not explicitly assess power differential, frequency, or intentionality of bullying. It is possible that prevalence estimates in this study are underestimates because physical bullying was not assessed, or overestimates because we were unable to use definitional characteristics to distinguish bullying from more general forms of peer aggression, as has been done by others (Solberg & Olweus, 2003). Further, some previous studies have found higher rates of absenteeism among bullied students (Kochenderfer & Ladd, 1996). Given the absenteeism rate on the day of data collection, it is possible that bullied students were disproportionately absent from our survey. However, we did not find an association between individual-level reports of being bullied and truancy.

Given the cross-sectional nature of this study, we were unable to assess temporality or draw causal inferences in the association between school-level characteristics and bullying. In addition, data are from 21 schools in a single school district. If the data had come from multiple school districts, there might have been more heterogeneity. The small number of schools limited the analyses that we were able to complete. We carefully selected a limited number of school-level variable to include in our analyses because of concerns about collinearity and thus we were unable to conduct a factor

analysis or use another empirical approach to test the association among all of the school-level variables. Further, because of this small sample size we were unable to adequately test school-level demographic covariates in our final model. None were significantly associated with bullying when tested individually. However, we were unable to include all of them in the final model, as we would have liked, to determine whether they influenced jointly the magnitude of the association of our other variables with bullying.

We selected the variables that best represented three important factors in the literature. However, this approach means that our results are limited to the variables tested. For example, had we selected a different indicator of academic performance or school safety, it is possible that our results may have differed. Further, we did not test the interaction between individual and school-level variables in this dataset. This should be explored in future studies, as person-context fit may be more important than main effects of context (Bellmore et al., 2004). Systematically testing these interactions for different types of individual-and school-level variables will be critical to both fully understanding how the school environment sets the context for bullying and developing interventions that are most effective for individual students within their school contexts.

CONCLUSIONS

The results of this study indicate that the extent to which students in school experience psychological distress may be associated with individual experiences of being bullied. This finding is consistent with the extant literature that finds a strong association between mental health and bullying. This result suggests that schools may be wise to attend to the general emotional well-being of students in their efforts to decrease bullying and not restrict prevention and intervention efforts to programs focused solely on violence and aggression. Identifying students with emotional and behavioral problems early and providing early intervention may be one of the more effective ways that schools can decrease violence and victimization.

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