Bullying Behaviors Among US Youth
Prevalence and Association With Psychosocial Adjustment

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Bullying among school-aged youth is increasingly being recognized as an important problem affecting well-being and social functioning. While a certain amount of conflict and harassment is typical of youth peer relations, bullying presents a potentially more serious threat to healthy youth development. The definition of bullying is widely agreed on in literature on bullying.1-4 Bullying is a specific type of aggression in which (1) the behavior is intended to harm or disturb, (2) the behavior occurs repeatedly over time, and (3) there is an imbalance of power, with a more powerful person or group attacking a less powerful one. This asymmetry of power may be physical or psychological, and the aggressive behavior may be verbal (eg, name-calling, threats), physical (eg, hitting), or psychological (eg, rumors, shunning/exclusion).

The majority of research on bullying has been conducted in Europe and Australia. Considerable variability among countries in the prevalence of bullying has been reported. In an international survey of adolescent health-related behaviors, the percentage of students who reported being bullied at least once during the current term ranged from a low of 15% to 20% in some countries to a high of 70% in others.3,6 Of particular concern is frequent bullying, typically defined as bullying that occurs once a week or more. The prevalence of frequent bullying reported internationally ranges from a low of 1.9% among 1 Irish sample to a high of 19% in a Malta study.1,7-12

Bullying takes many forms, and findings about the types of bullying that occur are fairly similar across countries. A British study involving 23 schools found that direct verbal aggression was the most common form of bullying, occurring with similar frequency in both sexes.13 Direct physical aggression was more common among boys, while indirect forms were more common among girls. Similarly, in a study of several middle schools in Rome, the most common types of bullying reported by boys were threats, physical harm, rejection, and name-calling.14 The most common forms for girls were name-calling, teasing, rumors, rejection, and taking of personal belongings.

See also p 2131 and Patient Page.
Research examining characteristics of youth involved in bullying has consistently found that both bullies and those bullied demonstrate poorer psychosocial functioning than their noninvolved peers. Youth who bully others tend to demonstrate higher levels of conduct problems and dislike of school, whereas youth who are bullied generally show higher levels of insecurity, anxiety, depression, loneliness, unhappiness, physical and mental symptoms, and low self-esteem.1-8,17-27 Males who are bullied also tend to be physically weaker than males in general.2 The few studies that have examined the characteristics of youth who both bully and are bullied found that these individuals exhibit the poorest psychosocial functioning overall.15,17,19,26

The current research provides a foundation for an understanding of the bullying problem. However, it is insufficient to guide intervention and policy development. Moreover, little is known specifically about bullying among US youth.6 In one county-wide middle school survey, 24.1% of youth reported bullying others at least once in the past semester26; it is not known whether this is characteristic of the rest of the nation.

The purpose of this study was to report the prevalence of bullying in a nationally representative sample of US youth in grades 6 through 10, along with information on differences in the prevalence of bullying by sex, grade, and race. In addition, the relationships among bullying, being bullied, and psychosocial adjustment are explored for 3 distinct groups: bullies only, those bullied only, and those who both bully and are bullied.

METHODS

Study Population

The National Institute of Child Health and Human Development supported a nationally representative survey of US youth in grades 6 through 10 during spring of 1998. The survey, entitled the Health Behaviour of School-aged Children (HBSC), was part of a collaborative, cross-national research project involving 30 countries and coordinated by the World Health Organization.27 The US survey was approved by the National Institute of Child Health and Human Development Institutional Review Board and was carried out by Macro International Inc (Calverton, Md). Both parental and student consent were solicited.

The US sampling universe consisted of all public, Catholic, and other private school students in grades 6 through 10, or their equivalent, excluding schools with enrollment of fewer than 14 students. The sample design used a stratified 2-stage cluster of classes. The sample selection was stratified by racial/ethnic status to provide an oversample of black and Hispanic students. The sample was also stratified by geographic region and counties’ metropolitan statistical area status (largest urban areas/not largest urban areas) with probability proportional to total enrollment in eligible grades of the primary sampling units. Sample size was determined on the criteria of making estimates for all US students in grades 6 through 10 with a precision of 3% at a 95% confidence level, and for minority students with a precision of 5% at a 95% confidence level.

An 83% participation rate was achieved. The school-based sample design, using 1 class period for completion of the questionnaire, precluded ability to compare respondent characteristics with those of nonparticipants. Responding students in sampled classes were excluded if they were out of the target range for grade or if age was outside of the 99th percentile for grade (n=440 students), or if either grade or age were unknown (n=39 students), yielding an analytic sample of 15686 students.

Measures

Measures were obtained from a self-report questionnaire containing 102 questions about health behavior and relevant demographic variables. Items were based on both theoretical hypotheses related to the social context of adolescents and measurements that had been validated in other studies or previous WHO-HBSC surveys.27 Measures were pretested.

Bullying. Questions about bullying were preceded with the following explanation.10,28 Here are some questions about bullying. We say a student is BEING BULLIED when another student, or a group of students, say or do nasty and unpleasant things to him or her. It is also bullying when a student is teased repeatedly in a way he or she doesn’t like. But it is NOT BULLYING when two students of about the same strength quarrel or fight.

Participation in bullying was assessed by 2 parallel questions that asked respondents to report the frequency with which they bullied others in school and away from school during the current semester. Similarly, being bullied was assessed by 2 parallel questions asking respondents to report the frequency with which they were bullied in school and away from school during the current semester. Because the analytic focus of the current study was the relationship of bullying behaviors to overall psychosocial adjustment, frequencies of bullying behaviors in and out of school were combined for all analyses. Response categories were “I haven’t...,” “once or twice,” “sometimes,” “about once a week,” and “several times a week.” An analysis of the response distribution revealed fewer subjects in the fourth category than the fifth, a deviation from the expected skewed pattern. Hence, the latter 2 response options were collapsed. Additional questions asked respondents to report the frequency with which they were bullied in each of 5 ways—belittled about religion/race, belittled about looks/speech, hit/slapped/pushed, subject of rumors or lies, and subject of sexual comments/gestures.

Psychosocial Adjustment. Measures of psychosocial adjustment included questions about problem behaviors, social/emotional well-being, and parental influences. Alcohol use was measured by 3 items assessing frequency of alcohol consumption. The frequency of smoking, fighting, and truancy were assessed by 1 item each. Academic achievement was assessed by an item querying perceived school perfor-
BULLYING BEHAVIORS AMONG US YOUTH

Table 1. Weighted Percentage of Students Reporting Bullying Others During the Current Term*

<table>
<thead>
<tr>
<th>Sample</th>
<th>None</th>
<th>Once or Twice</th>
<th>Sometimes</th>
<th>Weekly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>55.7 (53.6-57.8)</td>
<td>25.0 (23.9-26.1)</td>
<td>10.6 (9.5-11.6)</td>
<td>8.8 (7.9-9.6)</td>
</tr>
<tr>
<td>By sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>47.1 (44.8-49.4)</td>
<td>27.0 (25.5-28.5)</td>
<td>13.0 (11.9-14.1)</td>
<td>12.9 (11.5-14.3)</td>
</tr>
<tr>
<td>Females</td>
<td>63.2 (60.5-65.8)</td>
<td>23.2 (21.8-24.6)</td>
<td>8.5 (7.0-9.9)</td>
<td>5.2 (4.4-6.0)</td>
</tr>
<tr>
<td>By grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>54.3 (50.0-58.7)</td>
<td>26.9 (23.8-29.9)</td>
<td>8.4 (6.7-10.2)</td>
<td>10.4 (8.2-12.6)</td>
</tr>
<tr>
<td>7th</td>
<td>53.5 (49.8-57.2)</td>
<td>26.9 (24.1-29.8)</td>
<td>9.8 (8.0-11.5)</td>
<td>9.8 (8.0-11.5)</td>
</tr>
<tr>
<td>8th</td>
<td>50.5 (47.3-53.7)</td>
<td>25.4 (22.9-28.0)</td>
<td>14.3 (11.8-16.8)</td>
<td>9.8 (8.2-11.4)</td>
</tr>
<tr>
<td>9th</td>
<td>56.4 (53.2-59.5)</td>
<td>25.0 (22.9-27.1)</td>
<td>11.6 (9.1-14.2)</td>
<td>7.0 (6.0-8.0)</td>
</tr>
<tr>
<td>10th</td>
<td>64.0 (60.7-67.4)</td>
<td>20.4 (18.3-22.5)</td>
<td>8.6 (7.3-9.9)</td>
<td>6.9 (5.8-8.1)</td>
</tr>
<tr>
<td>By race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>54.8 (52.2-57.4)</td>
<td>26.2 (24.7-27.7)</td>
<td>10.5 (9.0-12.0)</td>
<td>8.5 (7.4-9.5)</td>
</tr>
<tr>
<td>Black</td>
<td>59.8 (56.2-63.5)</td>
<td>21.7 (19.0-24.4)</td>
<td>10.2 (8.1-12.2)</td>
<td>8.3 (6.5-10.0)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>53.2 (50.5-55.9)</td>
<td>24.4 (21.9-26.9)</td>
<td>12.0 (10.4-13.5)</td>
<td>10.4 (8.4-12.4)</td>
</tr>
</tbody>
</table>

*CI indicates confidence interval.

RESULTS

Prevalence of Bullying

Overall, 10.6% of the sample reported bullying others “sometimes” (moderate bullying) and 8.8% admitted to bullying others once a week or more (frequent bullying), providing a national estimate of 2027254 youth involved in moderate bullying and 1681030 youth in frequent bullying (Table 1). Experiencing bullying was reported with similar frequency, with 8.3% bullied “sometimes” and 8.4% bullied once a week or more, for a national estimate of 1634095 students bullied with moderate frequency and 1611809 bullied frequently (Table 2). A sizable number of students reported both bullying others and being bullied themselves. Of the total sample, 29.9% (an estimated 5736417 youth) reported some type of involvement in moderate or frequent bullying, as a bully (13.0%), a target of bullying (10.6%), or both (6.3%).

Demographic variation in the frequency of bullying was observed. Males both bullied others and were bullied significantly more often than females. Bullying occurred most frequently in 6th through 8th grade. Hispanic youth reported marginally higher involvement in moderate and frequent bullying of others, whereas black youth reported being bullied with significantly less frequency overall. No significant differences in the frequency of being bullied were observed among youth from urban, suburban, town, and rural areas (χ2 = 11.72, P = .24). However, small differences were observed in the frequency of bullying others (χ2 = 19.13, P = .03): 2% to 3% fewer suburban youth reported participation in moderate bullying, and 3% to 5% more rural youth reported ever bullying than youth from town, suburban, and urban areas (data not shown).

Table 3 presents the frequency with which those bullied reported being bullied in each of 5 specific ways. Being bullied

mance. Three items (α = .70) queried the frequency of feeling lonely, feeling left out, and being alone because others at school did not want to spend time with the person. One item assessed ease of making friends. Three items (α = .72) were used to assess relationship with classmates: “enjoy being together,” “are kind and helpful,” and “accept me.”

School climate was measured by 7 items (α = .82) related to the respondent’s perception of the school and teachers. Three items measured parental involvement in school (α = .82), and 1 item assessed respondents’ perceptions about their parents’ attitudes toward teen drinking.

Statistical Methods

Statistical sample weights were developed to adjust the minority oversampling and to obtain student totals by grade comparable to population grade estimates from the US National Center for Education Statistics. Weighted data analyses were conducted using SUDAAN software. Descriptive statistics were conducted using SUDAAN to obtain percentage distributions and confidence intervals (CIs) based on the weighted data, with SEs adjusted for the sample design. All CIs are shown at the 95% level.

To examine the relationship between psychosocial adjustment and bullying/bullied students, were classified as noninvolved, bullied only, those bullied only, or both bully and bullied coincidently, and a separate model was fit for each outcome. Students who were neither bullies nor bullied served as the reference group. Each outcome had 4 ordinal levels based on frequency of the behavior—never, once or twice, sometimes, and once a week or more. The proportional odds model was used to examine the relationship between a range of psychosocial adjustment constructs and each of the outcomes. Inherent in this model is the proportional odds assumption, which states that the cumulative odds ratio for any 2 values of the covariate is constant across response categories. Its interpretation is that the odds of being in category ≤x1 is exp([β1(x1-x2)]) times higher at the covariate vector x=x1 than at x=x2, where the parameter vector β contains the regression coefficients for the covariate x. A cumulative logit function was used to estimate the model parameters via the generalized estimating equations.

The dependence of responses on all of the covariates was assumed to be the same across the categories, and the model was fit. The exchangeable working correlation structure was used to account for the dependence between outcomes in estimating the variances, robust variance estimates were used for the estimated parameters. The MULTILOG procedure of SUDAAN was used to fit the proportional odds model with exchangeable correlation structure. Each model was first fit using the full sample, and then refit using 4 subsamples stratified by sex and education level (middle school vs high school).

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lied through belittling one’s looks or speech was common for both sexes. Males reported being bullied by being hit, slapped, or pushed more frequently than did females. Females more frequently reported being bullied through rumors or sexual comments.

Results of the analyses of the relationship among indicators of psychosocial adjustment and bullying/being bullied using the proportional odds model are presented in Table 4. The overall model for each of the outcomes was significant (P<.001). All main effects were significant in at least 1 of the models. Table 4 also shows the estimated odds ratios for each psychosocial adjustment construct in the model (adjusting for all other constructs in the model), indicating the odds of having a greater frequency of the outcome variable compared with the reference group.

Bullies, those bullied, and individuals reporting both bullying and being bullied all demonstrated poorer psychosocial adjustment than noninvolved youth; however, differences in the pattern of maladjustment among the groups were observed. Fighting was positively associated with all 3 outcomes. Alcohol use was positively associated with bullying and negatively associated with being bullied. Smoking and poorer academic achievement were associated with both bullying and coincident bullying/being bullied, whereas differences by sex and age were observed for several variables. While smoking was positively associated with bullying and coincident bullying/being bullied among all groups, the magnitude of the relationship was greater for middle school youth than high school youth. Middle school males also showed a positive relationship between loneliness and bullying; this was not the case for any of the other groups. Among high school youth, bullying/being bullied was positively related to alcohol consumption; this relationship was not observed among middle school youth. High school females, on the other hand, did not demonstrate a significant relationship between poorer friendship-making and being bullied, whereas the other groups did. In addition, permissive parental attitude toward teen drinking was associated with bullying/being bullied for all groups except high school females. Finally, greater paren-

Table 2. Weighted Percentage of Students Reporting Being Bullied During the Current Term

<table>
<thead>
<tr>
<th>Sample</th>
<th>None</th>
<th>Once or Twice</th>
<th>Sometimes</th>
<th>Weekly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>58.9 (57.1-60.8)</td>
<td>24.2 (23.0-25.3)</td>
<td>8.5 (7.4-9.6)</td>
<td>8.4 (7.6-9.2)</td>
</tr>
<tr>
<td>By sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>53.3 (50.7-55.9)</td>
<td>26.1 (24.5-27.7)</td>
<td>9.9 (8.3-11.5)</td>
<td>10.8 (9.5-12.3)</td>
</tr>
<tr>
<td>Females</td>
<td>63.8 (61.8-65.9)</td>
<td>22.5 (21.0-23.9)</td>
<td>7.3 (6.4-8.3)</td>
<td>6.4 (5.3-7.4)</td>
</tr>
<tr>
<td>By grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>49.6 (45.7-53.4)</td>
<td>26.2 (23.3-29.1)</td>
<td>10.9 (9.0-12.9)</td>
<td>13.3 (11.3-15.3)</td>
</tr>
<tr>
<td>7th</td>
<td>51.5 (48.2-54.8)</td>
<td>28.6 (26.2-31.0)</td>
<td>9.4 (7.8-11.0)</td>
<td>10.5 (8.4-12.6)</td>
</tr>
<tr>
<td>8th</td>
<td>58.7 (54.9-62.5)</td>
<td>25.0 (22.7-27.3)</td>
<td>8.7 (5.9-11.4)</td>
<td>7.6 (6.4-8.9)</td>
</tr>
<tr>
<td>9th</td>
<td>63.4 (61.2-65.6)</td>
<td>22.1 (20.4-23.8)</td>
<td>8.8 (7.3-10.3)</td>
<td>5.7 (4.3-7.2)</td>
</tr>
<tr>
<td>10th</td>
<td>71.9 (69.6-74.1)</td>
<td>18.8 (17.1-20.4)</td>
<td>4.6 (3.4-5.8)</td>
<td>4.0 (3.5-5.8)</td>
</tr>
<tr>
<td>By race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>56.3 (54.2-58.4)</td>
<td>26.2 (24.8-27.6)</td>
<td>8.7 (7.2-10.1)</td>
<td>8.8 (7.9-9.7)</td>
</tr>
<tr>
<td>Black</td>
<td>70.1 (66.6-73.5)</td>
<td>15.8 (13.4-18.3)</td>
<td>7.4 (5.9-8.9)</td>
<td>6.7 (4.7-8.7)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>59.4 (55.9-62.9)</td>
<td>24.5 (21.8-27.2)</td>
<td>8.0 (6.9-9.2)</td>
<td>8.1 (6.7-9.5)</td>
</tr>
</tbody>
</table>

*CI indicates confidence interval.

Table 3. Weighted Percentage of Those Bullied Reporting 5 Specific Types of Bullying

<table>
<thead>
<tr>
<th>Reported Being Bullied, % (95% CI)</th>
<th>Ever</th>
<th>Frequent</th>
<th>Ever</th>
<th>Frequent</th>
<th>Ever</th>
<th>Frequent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belittled about religion or race</td>
<td>25.8 (23.1-28.5)</td>
<td>8.0 (6.9-9.3)</td>
<td>27.7 (24.5-30.8)</td>
<td>8.8 (7.1-10.6)</td>
<td>23.7 (20.8-26.7)</td>
<td>7.2 (5.7-8.8)</td>
</tr>
<tr>
<td>Belittled about looks or speech</td>
<td>61.6 (60.0-63.3)</td>
<td>20.1 (18.5-21.7)</td>
<td>58.4 (55.9-60.9)</td>
<td>19.8 (17.8-21.7)</td>
<td>65.3 (62.9-67.6)</td>
<td>20.5 (18.3-22.7)</td>
</tr>
<tr>
<td>Hit, slapped, or pushed</td>
<td>55.6 (53.0-58.2)</td>
<td>14.6 (13.0-16.2)</td>
<td>66.1 (62.5-69.7)</td>
<td>17.8 (15.4-20.1)</td>
<td>43.9 (41.5-46.3)</td>
<td>11.1 (9.0-13.2)</td>
</tr>
<tr>
<td>Subjects of rumors or gestures</td>
<td>59.9 (57.9-61.8)</td>
<td>17.0 (15.2-18.8)</td>
<td>55.0 (52.0-57.9)</td>
<td>16.7 (14.1-19.4)</td>
<td>65.3 (62.8-67.8)</td>
<td>17.3 (14.8-19.8)</td>
</tr>
<tr>
<td>Subjects of sexual comments or gestures</td>
<td>52.0 (49.7-54.3)</td>
<td>18.9 (17.5-20.3)</td>
<td>47.3 (44.4-50.2)</td>
<td>17.5 (15.6-19.5)</td>
<td>57.2 (54.1-60.3)</td>
<td>20.5 (18.0-22.9)</td>
</tr>
</tbody>
</table>

*“Ever” includes all those reporting the behavior “once or twice” or more. “Frequent” includes those reporting the behavior “once a week” or “several times a week.” CI indicates confidence interval.
nal involvement in school was related to being bullied and bullying/being bullied for males (both middle and high school) but not females. It was related to bullying for high school males only.

**COMMENT**

This study indicates that bullying is a serious problem for US youth. Consistent with previous studies, bullying was reported as more prevalent among males than females and occurred with greater frequency among middle school–aged youth than high school–aged youth. For males, both physical and verbal bullying were common, while for females, verbal bullying (both taunting and sexual comments) and rumors were more common. However, verbal bullying through derogatory statements about one’s religion or race occurred infrequently for both sexes. This finding may reflect stronger social norms among adolescents against such behavior. That is, it may be more socially acceptable for a youth to taunt peers about their appearance than to make derogatory racial statements.

Both bullying and being bullied were associated with poorer psychosocial adjustment; however, there were notable differences among those bullied, bullies, and those reporting both behaviors. Those bullied demonstrated poorer social and emotional adjustment, reporting greater difficulty making friends, poorer relationships with classmates, and greater loneliness. Youth who are socially isolated and lack social skills may be more likely targets for being bullied. This is consonant with the finding by Hoover and colleagues that the most frequent reason cited by youth for persons being bullied is that they “didn’t fit in.” At the same time, youth who are bullied may well be avoided by other youth, for fear of being bullied themselves or losing social status among their peers. Considering the high degree of relationship observed, it is likely that both processes occur. Being bullied was also associated with greater parental involvement in school, which may reflect parents’ awareness of their child’s difficulties. Conversely, parental involvement

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**Table 4. Results of Fitting the Proportional Odds Model to the HBSC Data**

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Being Bullied</th>
<th>Bullying</th>
<th>Bullying/Being Bullied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol use</td>
<td>P = .03</td>
<td>P = .001</td>
<td>P = .76</td>
</tr>
<tr>
<td>Never</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Rarely</td>
<td>0.98 (0.85-1.14)</td>
<td>1.44 (1.24-1.67)</td>
<td>1.09 (0.89-1.34)</td>
</tr>
<tr>
<td>Every month</td>
<td>0.67 (0.50-0.90)</td>
<td>2.11 (1.68-2.64)</td>
<td>1.09 (0.83-1.44)</td>
</tr>
<tr>
<td>Every week</td>
<td>0.76 (0.58-0.99)</td>
<td>1.89 (1.47-2.44)</td>
<td>1.12 (0.84-1.50)</td>
</tr>
<tr>
<td>Every day</td>
<td>0.56 (0.34-0.93)</td>
<td>1.42 (0.98-2.08)</td>
<td>0.97 (0.63-1.50)</td>
</tr>
<tr>
<td>Smoking</td>
<td>P = .03</td>
<td>P = .001</td>
<td>P = .001</td>
</tr>
<tr>
<td>Never</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>&lt;Once a week</td>
<td>1.36 (0.97-1.90)</td>
<td>1.66 (1.32-2.08)</td>
<td>1.59 (1.27-1.98)</td>
</tr>
<tr>
<td>Every week</td>
<td>0.94 (0.68-1.29)</td>
<td>1.79 (1.36-2.36)</td>
<td>2.11 (1.41-3.16)</td>
</tr>
<tr>
<td>Every day</td>
<td>0.70 (0.49-1.00)</td>
<td>1.67 (1.24-2.24)</td>
<td>1.68 (1.22-2.31)</td>
</tr>
<tr>
<td>Fighting</td>
<td>P &lt; .001</td>
<td>P &lt; .001</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>None</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Once</td>
<td>2.16 (1.85-2.52)</td>
<td>2.87 (2.42-3.39)</td>
<td>3.17 (2.59-3.89)</td>
</tr>
<tr>
<td>2 Times</td>
<td>2.34 (1.75-3.13)</td>
<td>3.31 (2.64-4.16)</td>
<td>4.39 (3.20-6.03)</td>
</tr>
<tr>
<td>3 Times</td>
<td>2.47 (1.72-3.55)</td>
<td>4.59 (3.41-6.19)</td>
<td>5.36 (3.76-7.64)</td>
</tr>
<tr>
<td>≥4 Times</td>
<td>2.39 (1.82-3.14)</td>
<td>5.20 (4.16-6.49)</td>
<td>3.58 (2.46-5.21)</td>
</tr>
<tr>
<td>Academic achievement</td>
<td>P = .97</td>
<td>P = .001</td>
<td>P = .048</td>
</tr>
<tr>
<td>Very good</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Good</td>
<td>0.99 (0.83-1.19)</td>
<td>1.19 (0.99-1.42)</td>
<td>1.15 (0.91-1.44)</td>
</tr>
<tr>
<td>Average</td>
<td>0.96 (0.80-1.16)</td>
<td>1.46 (1.22-1.74)</td>
<td>1.19 (0.97-1.46)</td>
</tr>
<tr>
<td>Below average</td>
<td>0.97 (0.68-1.38)</td>
<td>1.82 (1.33-2.47)</td>
<td>1.70 (1.16-2.49)</td>
</tr>
<tr>
<td>Perceived school climate</td>
<td>P = .85</td>
<td>P = .001</td>
<td>P = .65</td>
</tr>
<tr>
<td>1 (least positive)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>0.99 (0.90-1.09)</td>
<td>0.83 (0.73-0.93)</td>
<td>0.97 (0.86-1.09)</td>
</tr>
<tr>
<td>3</td>
<td>0.98 (0.80-1.19)</td>
<td>0.68 (0.54-0.87)</td>
<td>0.94 (0.74-1.19)</td>
</tr>
<tr>
<td>4</td>
<td>0.97 (0.72-1.31)</td>
<td>0.57 (0.40-0.81)</td>
<td>0.91 (0.64-1.31)</td>
</tr>
<tr>
<td>5 (most positive)</td>
<td>0.96 (0.65-1.43)</td>
<td>0.47 (0.29-0.75)</td>
<td>0.89 (0.55-1.43)</td>
</tr>
<tr>
<td>Relationship with classmates</td>
<td>P &lt; .001</td>
<td>P = .64</td>
<td>P = .73</td>
</tr>
<tr>
<td>1 (least positive)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>0.69 (0.63-0.76)</td>
<td>0.98 (0.90-1.07)</td>
<td>0.79 (0.71-0.87)</td>
</tr>
<tr>
<td>3</td>
<td>0.48 (0.39-0.58)</td>
<td>0.96 (0.85-1.13)</td>
<td>0.62 (0.51-0.75)</td>
</tr>
<tr>
<td>4</td>
<td>0.33 (0.24-0.44)</td>
<td>0.94 (0.74-1.19)</td>
<td>0.49 (0.36-0.66)</td>
</tr>
<tr>
<td>5 (most positive)</td>
<td>0.23 (0.15-0.34)</td>
<td>0.92 (0.67-1.27)</td>
<td>0.38 (0.26-0.57)</td>
</tr>
<tr>
<td>Friendship making</td>
<td>P &lt; .001</td>
<td>P &lt; .001</td>
<td>P &lt; .73</td>
</tr>
<tr>
<td>Very easy</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Easy</td>
<td>1.05 (0.91-1.20)</td>
<td>0.80 (0.72-0.89)</td>
<td>1.01 (0.85-1.20)</td>
</tr>
<tr>
<td>Difficult</td>
<td>1.46 (1.13-1.87)</td>
<td>0.74 (0.59-0.93)</td>
<td>0.98 (0.66-1.17)</td>
</tr>
<tr>
<td>Very difficult</td>
<td>1.92 (1.42-2.59)</td>
<td>0.67 (0.43-1.05)</td>
<td>1.15 (0.70-1.99)</td>
</tr>
<tr>
<td>Loneliness</td>
<td>P &lt; .001</td>
<td>P = .62</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>1 (least lonely)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>2.41 (2.17-2.69)</td>
<td>1.02 (0.94-1.12)</td>
<td>1.90 (1.67-2.16)</td>
</tr>
<tr>
<td>3</td>
<td>5.81 (4.77-7.09)</td>
<td>1.04 (0.85-1.27)</td>
<td>3.60 (2.84-4.56)</td>
</tr>
<tr>
<td>4</td>
<td>14.01 (10.41-18.86)</td>
<td>1.06 (0.79-1.43)</td>
<td>6.82 (4.78-9.74)</td>
</tr>
<tr>
<td>5 (most likely)</td>
<td>33.78 (22.74-50.20)</td>
<td>1.08 (0.73-1.61)</td>
<td>12.94 (8.04-20.81)</td>
</tr>
<tr>
<td>Parental attitude toward teen drinking</td>
<td>P = .29</td>
<td>P = .55</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Shouldn’t drink</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Don’t like but allow</td>
<td>1.19 (0.98-1.45)</td>
<td>1.05 (0.89-1.25)</td>
<td>1.33 (1.07-1.64)</td>
</tr>
<tr>
<td>Okay to drink/not get drunk</td>
<td>1.13 (0.86-1.49)</td>
<td>1.16 (0.86-1.57)</td>
<td>1.43 (1.06-1.94)</td>
</tr>
<tr>
<td>Okay to get drunk</td>
<td>1.12 (0.82-1.53)</td>
<td>1.19 (0.90-1.58)</td>
<td>2.10 (1.53-2.88)</td>
</tr>
</tbody>
</table>

(continued)
enced or whether they were bullies who 
taxated the bullying behavior they experi-
youth were first bullied and then imi-
 risk group. It is not known whether these 
youth who both bully others and are bul-
 social isolation, lack of success in school, 
 behaviors. Considering the combination of 
emotional dimensions and problem be-
poorer adjustment across both social/
 In each case, the OR 
represent the significance of the category overall.
‡Odds ratios for continuous variables were calculated for each level for illustrative purposes. In each case, the OR 
provided at the level “2” represents the increase in odds attributable to an increase in 1 unit of the covariate.
*P<.001 for outcome overall.

Table 4. Results of Fitting the Proportional Odds Model to the HBSC Data* (cont)

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Being Bullied</th>
<th>Bullying</th>
<th>Bullying/Being Bullied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental involvement in school†</td>
<td>P = .01</td>
<td>P = .53</td>
<td>P = .003</td>
</tr>
<tr>
<td>1 (least involved)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>1.12 (1.02-1.22)</td>
<td>1.02 (0.96-1.08)</td>
<td>1.12 (1.04-1.21)</td>
</tr>
<tr>
<td>3</td>
<td>1.25 (1.06-1.46)</td>
<td>1.04 (0.92-1.17)</td>
<td>1.25 (1.06-1.46)</td>
</tr>
<tr>
<td>4</td>
<td>1.39 (1.10-1.76)</td>
<td>1.06 (0.89-1.27)</td>
<td>1.39 (1.10-1.76)</td>
</tr>
<tr>
<td>5 (most involved)</td>
<td>1.55 (1.13-2.13)</td>
<td>1.08 (0.85-1.37)</td>
<td>1.55 (1.13-2.13)</td>
</tr>
</tbody>
</table>

Wald χ²‡

| 337.30 | 4878.42 | 2678.37 |

*BHSC indicates Health Behaviour of School-aged Children survey; OR, odds ratio; CI, confidence interval. P values represent the significance of the category overall.
†Odds ratios for continuous variables were calculated for each level for illustrative purposes. In each case, the OR provided at the level “2” represents the increase in odds attributable to an increase in 1 unit of the covariate.

Several limitations of the study should be noted. The HBSC is a broadly fo-
cused survey regarding the health beha-
aviors of middle– and high school–aged 
youth. As such, more in-depth 
formation, such as might be obtained 
from an intervention study addressing 
bullying, are not available. This study 
cludes middle– and high school–aged 
youth but does not address elementary school youth. The data are cross-
sectional, and as such, the direction of 
relationships among the variables can-
not be determined. Another limitation is 
the reliance on self-report for measure-
ment of bullying. While self-report is a 
common and accepted method of mea-
suring bullying, individual perceptions 
of bullying nevertheless may vary. To 
minimize subjectivity, students were pro-
vided with a detailed definition of bul-
lying along with examples.

While research on the long-term con-
sequences of bullying is minimal, the 
udies that have been conducted show 
negative effects into adulthood. Ol-
weus39 found former bullies to have a 
4-fold increase in criminal behavior at the 
age of 24 years, with 60% of former bull-
ies having at least 1 conviction and 35% 
to 40% having 3 or more convictions. 
Their earlier pattern of achieving de-
sired goals through bullying likely in-
hibited the learning of more socially ac-
ceptable ways of negotiating with others. 
Conversely, individuals formerly bull-
ied were found to have higher levels of 
pression and poorer self-esteem at the 
age of 23 years, despite the fact that, as 
adults, they were no more harassed or 
 socially isolated than comparison 
adults.60 Those who have been bullied 
may view such treatment as evidence that 
they are inadequate and worthless and 
may internalize these perceptions. No 
study has assessed the long-term out-
comes for those who both bully others 
and are bullied. Given their initial poorer 
adjustment status, it is possible that they 
fare worse than either bullies or those 
bullied.

While this study provides impor-
tant data on the prevalence and psy-
chosocial correlates of bullying among 
US youth, further research is needed.
Of particular importance would be pro-
spective studies addressing factors that
lead to bullying, as well as studies on
the long-term consequences of bull-
ying and being bullied. Longitudinal
studies also would be valuable in bet-
ter understanding the nature of those
who bully and are bullied.

The prevalence of bullying observed in
this study suggests the importance of
preventive intervention research target-
ning bullying behaviors. Effective pre-
vention will require a solid understand-
ing of the social and environmental
factors that facilitate and inhibit bully-
ing and peer aggression. This knowl-
edge could then be used to create school
and social environments that promote
healthy peer interactions and intolera-
tance of bullying. School-based interven-
tions have demonstrated positive out-
comes in Norway and England,40-43 with
reductions in bullying of 30% to 50%.
These interventions focused on changes
within the school and classroom cli-
mate to increase awareness about bul-
ying, increase teacher and parent in-
volvement and supervision, form clear
rules and strong social norms against
bullying, and provide support and pro-
tection for individuals bullied. This type
of approach has not been tested in the
United States.

Author Contributions: Study concept and design:
Nansel, Overpeck, Pilla, Simons-Morton, Scheidt.
Acquisition of data: Overpeck, Scheidt.
Analysis and interpretation of data: Nansel, Over-
peck, Pilla, Ruan, Simons-Morton, Scheidt.
Drafting of the manuscript: Nansel, Overpeck, Pilla.
Critical revision of the manuscript for important in-
tellectual content: Nansel, Overpeck, Pilla, Ruan,
Simons-Morton, Scheidt.
Statistical expertise: Nansel, Overpeck, Pilla, Ruan,
Simons-Morton.
Obtained funding: Overpeck, Simons-Morton, Scheidt.
Administrative, technical, or material support: Nansel,
Overpeck, Pilla, Simons-Morton, Scheidt.
Study supervision: Overpeck, Simons-Morton.

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