

# Bullying Behaviors Among US Youth

## Prevalence and Association With Psychosocial Adjustment

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**B**ULLYING 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.<sup>1-4</sup> 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

**Context** Although violence among US youth is a current major concern, bullying is infrequently addressed and no national data on the prevalence of bullying are available.

**Objectives** To measure the prevalence of bullying behaviors among US youth and to determine the association of bullying and being bullied with indicators of psychosocial adjustment, including problem behavior, school adjustment, social/emotional adjustment, and parenting.

**Design, Setting, and Participants** Analysis of data from a representative sample of 15 686 students in grades 6 through 10 in public and private schools throughout the United States who completed the World Health Organization's Health Behaviour in School-aged Children survey during the spring of 1998.

**Main Outcome Measure** Self-report of involvement in bullying and being bullied by others.

**Results** A total of 29.9% of the sample reported moderate or frequent involvement in bullying, as a bully (13.0%), one who was bullied (10.6%), or both (6.3%). Males were more likely than females to be both perpetrators and targets of bullying. The frequency of bullying was higher among 6th- through 8th-grade students than among 9th- and 10th-grade students. Perpetrating and experiencing bullying were associated with poorer psychosocial adjustment ( $P < .001$ ); however, different patterns of association occurred among bullies, those bullied, and those who both bullied others and were bullied themselves.

**Conclusions** The prevalence of bullying among US youth is substantial. Given the concurrent behavioral and emotional difficulties associated with bullying, as well as the potential long-term negative outcomes for these youth, the issue of bullying merits serious attention, both for future research and preventive intervention.

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some countries to a high of 70% in others.<sup>5,6</sup> 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.<sup>1,7-12</sup>

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.<sup>13</sup> 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.<sup>14</sup> The most common forms for girls were name-calling, teasing, rumors, rejection, and taking of personal belongings.

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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.<sup>1-4,8,15-25</sup> Males who are bullied also tend to be physically weaker than males in general.<sup>2</sup> 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.<sup>15,17,19,26</sup>

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.<sup>6</sup> In one county-wide middle school survey, 24.1% of youth reported bullying others at least once in the past semester<sup>26</sup>; 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.<sup>27</sup> 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 pre-

vious WHO-HBSC surveys.<sup>27</sup> Measures were pretested.

**Bullying.** Questions about bullying were preceded with the following explanation.<sup>10,28</sup> *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 term. 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 term. 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-

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

| Sample   | Reported Bullying, % (95% CI) |                  |                  |                  |
|----------|-------------------------------|------------------|------------------|------------------|
|          | None                          | Once or Twice    | Sometimes        | Weekly           |
| Total    | 55.7 (53.6-57.8)              | 25.0 (23.9-26.1) | 10.6 (9.5-11.6)  | 8.8 (7.9-9.6)    |
| By sex   |                               |                  |                  |                  |
| Males    | 47.1 (44.8-49.4)              | 27.0 (25.5-28.5) | 13.0 (11.9-14.1) | 12.9 (11.5-14.3) |
| Females  | 63.2 (60.5-65.8)              | 23.2 (21.8-24.6) | 8.5 (7.0-9.9)    | 5.2 (4.4-6.0)    |
| By grade |                               |                  |                  |                  |
| 6th      | 54.3 (50.0-58.7)              | 26.9 (23.8-29.9) | 8.4 (6.7-10.2)   | 10.4 (8.2-12.6)  |
| 7th      | 53.5 (49.8-57.2)              | 26.9 (24.1-29.8) | 9.8 (8.0-11.5)   | 9.8 (8.0-11.5)   |
| 8th      | 50.5 (47.3-53.7)              | 25.4 (22.9-28.0) | 14.3 (11.8-16.8) | 9.8 (8.2-11.4)   |
| 9th      | 56.4 (53.2-59.5)              | 25.0 (22.9-27.1) | 11.6 (9.1-14.2)  | 7.0 (6.0-8.0)    |
| 10th     | 64.0 (60.7-67.4)              | 20.4 (18.3-22.5) | 8.6 (7.3-9.9)    | 6.9 (5.8-8.1)    |
| By race  |                               |                  |                  |                  |
| White    | 54.8 (52.2-57.4)              | 26.2 (24.7-27.7) | 10.5 (9.0-12.0)  | 8.5 (7.4-9.5)    |
| Black    | 59.8 (56.2-63.5)              | 21.7 (19.0-24.4) | 10.2 (8.1-12.2)  | 8.3 (6.5-10.0)   |
| Hispanic | 53.2 (50.5-55.9)              | 24.4 (21.9-26.9) | 12.0 (10.4-13.5) | 10.4 (8.4-12.4)  |

\*CI indicates confidence interval.

mance. Three items ( $\alpha = .70$ ) 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 ( $\alpha = .72$ ) were used to assess relationship with classmates: “enjoy being together,” “are kind and helpful,” and “accept me.” School climate was measured by 7 items ( $\alpha = .82$ ) related to the respondent’s perception of the school and teachers. Three items measured parental involvement in school ( $\alpha = .82$ ), 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.<sup>29</sup> 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/being bullied, students were clas-

sified as noninvolved, bullies only, those bullied only, or both bully and bullied coincidentally, 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<sup>30</sup> 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  $\leq k$  is  $\exp[\beta'(x_1 - x_2)]$  times higher at the covariate vector  $x = x_1$  than at  $x = x_2$ , where the parameter vector  $\beta$  contains the regression coefficients for the covariate  $x$ . A cumulative logit function was used to estimate the model parameters via the generalized estimating equations.<sup>31</sup> The dependence of responses within clusters was specified using an exchangeable working correlation structure. To account for the dependence between outcomes in estimating the variances, robust variance estimates were used for the estimated parameters. The MULTLOG 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).

## 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 2 027 254 youth involved in moderate bullying and 1 681 030 youth in frequent bullying (TABLE 1). Experiencing bullying was reported with similar frequency, with 8.5% bullied “sometimes” and 8.4% bullied once a week or more, for a national estimate of 1 634 095 students bullied with moderate frequency and 1 611 809 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 5 736 417 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 ( $\chi^2 = 11.72$ ,  $P = .24$ ). However, small differences were observed in the frequency of bullying others ( $\chi^2 = 19.13$ ,  $P = .03$ ): 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 bul-

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. Being bullied through negative statements about one's religion or race occurred with the lowest frequency for both sexes.

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; poorer perceived school climate was related only to bullying,

Poorer relationships with classmates and increased loneliness, on the other hand, were associated with both being bullied and coincident bullying/being bullied. Ability to make friends was negatively related to being bullied and positively related to bullying. A permissive parental attitude toward teen drinking was associated only with coincident bullying/being bullied, while increased parental involvement in school was related to both being bullied and coincident bullying/being bullied.

Results from the analyses of the 4 sex/age subgroups (data not shown) yielded findings similar to the model based on the full sample. No notable differences among groups were observed for fighting, academic achievement, perceived school climate, and relationship with classmates. However, differences by sex and age were observed for several vari-

ables. 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\*

| Sample   | Reported Being Bullied, % (95% CI) |                  |                 |                  |
|----------|------------------------------------|------------------|-----------------|------------------|
|          | None                               | Once or Twice    | Sometimes       | Weekly           |
| Total    | 58.9 (57.1-60.8)                   | 24.2 (23.0-25.3) | 8.5 (7.4-9.6)   | 8.4 (7.6-9.2)    |
| By sex   |                                    |                  |                 |                  |
| Males    | 53.3 (50.7-55.9)                   | 26.1 (24.5-27.7) | 9.9 (8.3-11.5)  | 10.8 (9.5-12.0)  |
| Females  | 63.8 (61.8-65.9)                   | 22.5 (21.0-23.9) | 7.3 (6.4-8.3)   | 6.4 (5.3-7.4)    |
| By grade |                                    |                  |                 |                  |
| 6th      | 49.6 (45.7-53.4)                   | 26.2 (23.3-29.1) | 10.9 (9.0-12.9) | 13.3 (11.3-15.3) |
| 7th      | 51.5 (48.2-54.8)                   | 28.6 (26.2-31.0) | 9.4 (7.8-11.0)  | 10.5 (8.4-12.6)  |
| 8th      | 58.7 (54.9-62.5)                   | 25.0 (22.7-27.3) | 8.7 (5.9-11.4)  | 7.6 (6.4-8.9)    |
| 9th      | 63.4 (61.2-65.6)                   | 22.1 (20.4-23.8) | 8.8 (7.3-10.3)  | 5.7 (4.3-7.2)    |
| 10th     | 71.9 (69.6-74.1)                   | 18.8 (17.1-20.4) | 4.6 (3.4-5.8)   | 4.8 (3.8-5.8)    |
| By race  |                                    |                  |                 |                  |
| White    | 56.3 (54.2-58.4)                   | 26.2 (24.8-27.6) | 8.7 (7.2-10.1)  | 8.8 (7.9-9.7)    |
| Black    | 70.1 (66.6-73.6)                   | 15.8 (13.4-18.3) | 7.4 (5.9-8.9)   | 6.7 (4.7-8.7)    |
| Hispanic | 59.4 (55.9-62.9)                   | 24.5 (21.8-27.2) | 8.0 (6.9-9.2)   | 8.1 (6.7-9.5)    |

\*CI indicates confidence interval.

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

|   | Reported Being Bullied, % (95% CI) |                  |                  |                  |                  |                  |
|---|------------------------------------|------------------|------------------|------------------|------------------|------------------|
|   | Total of Those Bullied             |                  | Males Bullied    |                  | Females Bullied  |                  |
|   | Ever                               | Frequent         | Ever             | Frequent         | Ever             | Frequent         |
| Belittled about religion or race        | 25.8 (23.1-28.5)                   | 8.08 (6.9-9.3)   | 27.7 (24.5-30.8) | 8.8 (7.1-10.6)   | 23.7 (20.8-26.7) | 7.2 (5.7-8.8)    |
| Belittled about looks or speech         | 61.6 (60.0-63.3)                   | 20.1 (18.5-21.7) | 58.4 (55.9-60.9) | 19.8 (17.8-21.7) | 65.3 (62.9-67.6) | 20.5 (18.3-22.7) |
| Hit, slapped, or pushed                 | 55.6 (53.0-58.2)                   | 14.6 (13.0-16.2) | 66.1 (62.5-69.7) | 17.8 (15.4-20.1) | 43.9 (41.5-46.3) | 11.1 (9.0-13.2)  |
| Subjects of rumors                      | 59.9 (57.9-61.8)                   | 17.0 (15.2-18.8) | 55.0 (52.0-57.9) | 16.7 (14.1-19.4) | 65.3 (62.8-67.8) | 17.3 (14.8-19.8) |
| Subjects of sexual comments or gestures | 52.0 (49.7-54.3)                   | 18.9 (17.5-20.3) | 47.3 (44.4-50.2) | 17.5 (15.6-19.5) | 57.2 (54.1-60.3) | 20.5 (18.0-22.9) |

\*"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.

tal 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,<sup>1,7,8,11,12</sup> 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<sup>32,33</sup> 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

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

| Covariate                              | Outcome, OR (95% CI) |                  |                        |
|--|----------------------|------------------|------------------------|
|  | Being Bullied        | Bullying         | Bullying/Being Bullied |
| Alcohol use                            | P = .03              |                  |                        |
| Never                                  | 1.00                 | 1.00             | 1.00                   |
| Rarely                                 | 0.98 (0.85-1.14)     | 1.44 (1.24-1.67) | 1.09 (0.89-1.34)       |
| Every month                            | 0.67 (0.50-0.90)     | 2.11 (1.68-2.64) | 1.09 (0.83-1.44)       |
| Every week                             | 0.76 (0.58-0.99)     | 1.89 (1.47-2.44) | 1.12 (0.84-1.50)       |
| Every day                              | 0.56 (0.34-0.93)     | 1.42 (0.98-2.08) | 0.97 (0.63-1.50)       |
| Smoking                                | P = .03              |                  |                        |
| Never                                  | 1.00                 | 1.00             | 1.00                   |
| <Once a week                           | 1.36 (0.97-1.90)     | 1.66 (1.32-2.08) | 1.59 (1.27-1.98)       |
| Every week                             | 0.94 (0.68-1.29)     | 1.79 (1.36-2.36) | 2.11 (1.41-3.16)       |
| Every day                              | 0.70 (0.49-1.00)     | 1.67 (1.24-2.24) | 1.68 (1.22-2.31)       |
| Fighting                               | P < .001             |                  |                        |
| None                                   | 1.00                 | 1.00             | 1.00                   |
| Once                                   | 2.16 (1.85-2.52)     | 2.87 (2.42-3.39) | 3.17 (2.59-3.89)       |
| 2 Times                                | 2.34 (1.75-3.13)     | 3.31 (2.64-4.16) | 4.39 (3.20-6.03)       |
| 3 Times                                | 2.47 (1.72-3.55)     | 4.59 (3.41-6.19) | 5.36 (3.76-7.64)       |
| ≥4 Times                               | 2.39 (1.82-3.14)     | 5.20 (4.16-6.49) | 3.58 (2.46-5.21)       |
| Academic achievement                   | P = .97              |                  |                        |
| Very good                              | 1.00                 | 1.00             | 1.00                   |
| Good                                   | 0.99 (0.83-1.19)     | 1.19 (0.99-1.42) | 1.15 (0.91-1.44)       |
| Average                                | 0.96 (0.80-1.16)     | 1.46 (1.22-1.74) | 1.19 (0.97-1.46)       |
| Below average                          | 0.97 (0.68-1.38)     | 1.82 (1.33-2.47) | 1.70 (1.16-2.49)       |
| Perceived school climate†              | P = .85              |                  |                        |
| 1 (least positive)                     | 1.00                 | 1.00             | 1.00                   |
| 2                                      | 0.99 (0.90-1.09)     | 0.83 (0.73-0.93) | 0.97 (0.86-1.09)       |
| 3                                      | 0.98 (0.80-1.19)     | 0.68 (0.54-0.87) | 0.94 (0.74-1.19)       |
| 4                                      | 0.97 (0.72-1.31)     | 0.57 (0.40-0.81) | 0.91 (0.64-1.31)       |
| 5 (most positive)                      | 0.96 (0.65-1.43)     | 0.47 (0.29-0.75) | 0.89 (0.55-1.43)       |
| Relationship with classmates‡          | P < .001             |                  |                        |
| 1 (least positive)                     | 1.00                 | 1.00             | 1.00                   |
| 2                                      | 0.69 (0.63-0.76)     | 0.98 (0.90-1.07) | 0.79 (0.71-0.87)       |
| 3                                      | 0.48 (0.39-0.58)     | 0.96 (0.82-1.13) | 0.62 (0.51-0.75)       |
| 4                                      | 0.33 (0.24-0.44)     | 0.94 (0.74-1.19) | 0.49 (0.36-0.66)       |
| 5 (most positive)                      | 0.23 (0.15-0.34)     | 0.92 (0.67-1.27) | 0.38 (0.26-0.57)       |
| Friendship making                      | P < .001             |                  |                        |
| Very easy                              | 1.00                 | 1.00             | 1.00                   |
| Easy                                   | 1.05 (0.91-1.20)     | 0.80 (0.72-0.89) | 1.01 (0.85-1.20)       |
| Difficult                              | 1.46 (1.13-1.87)     | 0.74 (0.59-0.93) | 0.88 (0.66-1.17)       |
| Very difficult                         | 1.92 (1.42-2.59)     | 0.67 (0.43-1.05) | 1.15 (0.70-1.89)       |
| Loneliness†                            | P < .001             |                  |                        |
| 1 (least lonely)                       | 1.00                 | 1.00             | 1.00                   |
| 2                                      | 2.41 (2.17-2.69)     | 1.02 (0.94-1.12) | 1.90 (1.67-2.16)       |
| 3                                      | 5.81 (4.77-7.09)     | 1.04 (0.85-1.27) | 3.60 (2.84-4.56)       |
| 4                                      | 14.01 (10.41-18.86)  | 1.06 (0.79-1.43) | 6.82 (4.78-9.74)       |
| 5 (most likely)                        | 33.78 (22.74-50.20)  | 1.08 (0.73-1.61) | 12.94 (8.04-20.81)     |
| Parental attitude toward teen drinking | P = .29              |                  |                        |
| Shouldn't drink                        | 1.00                 | 1.00             | 1.00                   |
| Don't like but allow                   | 1.19 (0.98-1.45)     | 1.05 (0.89-1.25) | 1.33 (1.07-1.64)       |
| Okay to drink/not get drunk            | 1.13 (0.86-1.49)     | 1.16 (0.86-1.57) | 1.43 (1.06-1.94)       |
| Okay to get drunk                      | 1.12 (0.82-1.53)     | 1.19 (0.90-1.58) | 2.10 (1.53-2.88)       |

(continued)

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

| Covariate                       | Outcome, OR (95% CI) |                  |                        |
|---------------------------------|----------------------|------------------|------------------------|
|                                 | Being Bullied        | Bullying         | Bullying/Being Bullied |
| Parental involvement in school† | <i>P</i> = .01       | <i>P</i> = .53   | <i>P</i> = .003        |
| 1 (least involved)              | 1.00                 | 1.00             | 1.00                   |
| 2                               | 1.12 (1.02-1.22)     | 1.02 (0.96-1.08) | 1.12 (1.04-1.21)       |
| 3                               | 1.25 (1.06-1.46)     | 1.04 (0.92-1.17) | 1.25 (1.06-1.46)       |
| 4                               | 1.39 (1.10-1.76)     | 1.06 (0.89-1.27) | 1.39 (1.10-1.76)       |
| 5 (most involved)               | 1.55 (1.13-2.13)     | 1.08 (0.85-1.37) | 1.55 (1.13-2.13)       |
| Wald $\chi^2_{27} \ddagger$     | 337.30               | 4878.42          | 2678.37                |

\*HBSC 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.

‡*P* < .001 for outcome overall.

may be related to a lower level of independence among these youth, potentially making them more vulnerable to being bullied. Interestingly, being bullied was associated with less frequency of alcohol use and had a nonlinear relationship with smoking. This is not altogether surprising, given Farrington's<sup>34,35</sup> finding that socially inept youth were less likely to be involved in delinquency than other youth.

Persons who bullied others were more likely to be involved in other problem behaviors such as drinking alcohol and smoking. They showed poorer school adjustment, both in terms of academic achievement and perceived school climate. Yet they reported greater ease of making friends, indicating that bullies are not socially isolated. Considering their greater involvement in other problem behaviors, it is likely that these youth have friends who endorse bullying and other problem behaviors, and who may be involved in bullying as well.

Those youth who reported both bullying and being bullied demonstrated poorer adjustment across both social/emotional dimensions and problem behaviors. Considering the combination of social isolation, lack of success in school, and involvement in problem behaviors, youth who both bully others and are bullied may represent an especially high-risk group. It is not known whether these youth were first bullied and then imitated the bullying behavior they experienced or whether they were bullies who

then received retaliation. Current understanding tends to support the former explanation. Olweus<sup>2</sup> describes a small subset of bullied youth he terms "provocative victims," individuals who demonstrate both anxious and aggressive behavior patterns and who are known for starting fights and engaging in disruptive behavior. Pellegrini and colleagues<sup>36,37</sup> further discuss the "aggressive victim," defined as youth who respond to bullying with reactive aggression. These youth do not tend to use aggression in a proactive or instrumental manner, but rather are aggressive in retaliatory circumstances.

The patterns of relationships between bullying/being bullied and psychosocial adjustment observed in this study were similar across age and sex groups, providing support for the stability of the findings. The differences that emerged may be useful for those conducting research or developing interventions targeting specific populations. For example, the stronger relationship between bullying and smoking observed among middle school youth may reflect an association of bullying with deviance; as smoking becomes more normative in the older youth, it is less associated with bullying. The lack of a relationship between being bullied and poorer friendship-making among high school females could indicate that by this age, females are more apt to find a peer group in which they "fit," even though the peer group may consist of youth of similar social status.<sup>38</sup>

Several limitations of the study should be noted. The HBSC is a broadly focused survey regarding the health behaviors of middle- and high school-aged youth. As such, more in-depth information, such as might be obtained from an intervention study addressing bullying, are not available. This study includes 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 cannot be determined. Another limitation is the reliance on self-report for measurement of bullying. While self-report is a common and accepted method of measuring bullying, individual perceptions of bullying nevertheless may vary. To minimize subjectivity, students were provided with a detailed definition of bullying along with examples.

While research on the long-term consequences of bullying is minimal, the studies that have been conducted show negative effects into adulthood. Olweus<sup>39</sup> found former bullies to have a 4-fold increase in criminal behavior at the age of 24 years, with 60% of former bullies having at least 1 conviction and 35% to 40% having 3 or more convictions. Their earlier pattern of achieving desired goals through bullying likely inhibited the learning of more socially acceptable ways of negotiating with others. Conversely, individuals formerly bullied were found to have higher levels of depression 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.<sup>40</sup> 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 outcomes 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 important data on the prevalence and psychosocial correlates of bullying among US youth, further research is needed.

Of particular importance would be prospective studies addressing factors that lead to bullying, as well as studies on the long-term consequences of bullying and being bullied. Longitudinal studies also would be valuable in better 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 targeting bullying behaviors. Effective prevention will require a solid understanding of the social and environmental factors that facilitate and inhibit bully-

ing and peer aggression. This knowledge could then be used to create school and social environments that promote healthy peer interactions and intolerance of bullying. School-based interventions have demonstrated positive outcomes in Norway and England,<sup>40-43</sup> with reductions in bullying of 30% to 50%. These interventions focused on changes within the school and classroom climate to increase awareness about bullying, increase teacher and parent involvement 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.

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