Childhood Bullying Behaviors as a Risk for Suicide Attempts and Completed Suicides: A Population-Based Birth Cohort Study

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ABSTRACT

Objective: There are no previous studies about the association of childhood bullying behavior with later suicide attempts and completed suicides among both sexes. The aim was to study associations between childhood bullying behaviors at age 8 years and suicide attempts and completed suicides up to age 25 years in a large representative population-based birth cohort. Method: The sample includes 5,302 Finnish children born in 1981. Information about bullying was gathered at age 8 years from self-report, as well as parent and teacher reports. Information about suicide attempts requiring hospital admission and completed suicides was gathered from three different Finnish registries until the study participants were 25 years old. Regression analyses were conducted to determine whether children who experience childhood bullying behaviors are at risk for later suicide attempts and completed suicides after controlling for baseline conduct and depression symptoms. Results: The association between bullying behavior at age 8 years and later suicide attempts and completed suicides varies by sex. Among boys, frequent bullying and victimization are associated with later suicide attempts and completed suicides but not after controlling for conduct and depression symptoms; frequent victimization among girls is associated with later suicide attempts and completed suicides, even after controlling for conduct and depression symptoms. Conclusions: When examining childhood bullying behavior as a risk factor for later suicide attempts and completed suicides, each sex has a different risk profile. J. Am. Acad. Child Adolesc. Psychiatry, 2009;48(3):254–261.

Key Words: bullying, peer victimization, suicide, attempted suicide.

Population-based studies indicate that 20% to 30% of schoolchildren are frequently involved in bullying as perpetrators and/or victims. Based on cross-sectional studies, bullying behavior seems to be linked to suicidal ideation and suicide attempts. Predictive associations between bullying and victimization at age 8 years and various early adulthood outcomes among boys have been examined using the same database as used in the present study. Sourander et al. have recently reported that both bullying and victimization at age 8 years predicted psychiatric disorders in early adulthood. Frequent victimization independently predicted anxiety disorders, frequent bullying predicted antisocial personality disorder, and frequent bully-victimization predicted both of these disorders. Haavisto et al. have reported that boys who were victims but not those who were bullies at age 8 years had significantly more depressive symptoms at age 18 years. In the study by Haavisto et al., infrequent and frequent bullying behavior were combined, and only self-reports were used. Examining the relation between childhood bullying behavior and later depression and suicidal ideation, we

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found that childhood bullying behavior among 8-year-old boys was a risk factor for later depression.11 The association between bullying others and suicidal ideation, however, became nonsignificant when controlling for depression at age 8 years. These three previous reports11–13 included only boys because the follow-up was conducted at military call-up. The present study is the first to examine the relation between bullying behavior and suicidal behavior among both sexes.

Previous studies did not focus on suicide attempts requiring hospitalization and did not include completed suicides. In addition, cross-sectional studies are unable to provide adequate evidence about the longitudinal nature of the relation of childhood bullying behavior with suicide attempts and completed suicide. To the best of the authors’ knowledge, there have been no longitudinal studies of bullying behavior and later suicide attempts or completed suicides. Furthermore, there is no population-based prospective study focusing on childhood bullying behavior and later suicidal behavior among both sexes.

The purpose of the present study was to examine the association of bullying behavior at age 8 years (based on pooled information from child, parent, and teacher) with suicide attempts and completed suicides until age 25 years among both sexes. Specifically, the study examined the extent to which children who experience infrequent or frequent bullying behaviors at age 8 years are at risk for later suicide attempts and completed suicides. Because suicide attempts and completed suicides are associated with both externalizing and internalizing disorders,14–16 we aimed to discover whether children who experience bullying behaviors at age 8 years are at risk for later suicide attempts and completed suicides after controlling for baseline conduct and depression symptoms.

METHOD

Subjects

This nationwide prospective study is included in the Epidemiological Multicenter Child Psychiatric Study in Finland.17 The research plan was approved by the ethics committee of Turku University and the Turku University Hospital. The first assessment was conducted in October and November 1989 at age 8 years. After complete description of the study, a written consent was obtained from the parents of the children who participated in the study. The follow-up assessment was made using Finnish registry data (see details below).

The original representative study sample was composed of Finnish children born during 1981 (n = 60,007).17–19 A sample of 10% of the target population was selected from among all children living in a representative sample of municipalities and school districts. A child registered in a selected district remained eligible even if he or she went to school outside the district because of a need or desire for special education (e.g., classes for children with behavioral disturbances, special learning difficulties or disabilities). Of the selected 6,017 children, 5,813 (96.6%; 2,946 male and 2,867 female subjects) took part in the study at age 8 years, in 1989. At follow-up in 2005, information about completed suicides and hospital treatments due to suicide attempts was obtained on 5,302 of these 5,183 subjects (2,700 male and 2,602 female participants). Excluded cases included a subject who died, subjects who were not permanent residents in Finland in 2005, and those with social security numbers that were not coded correctly or were lost from baseline data at age 8 years and could not be linked with national registries at follow-up. Attrition during the 16-year follow-up was 9% of those who participated in the study in 1989.

Assessment At Age 8 Years

Data collection at baseline was organized through teachers. The teachers sent parent questionnaires via the child to the parents, and the parents returned them in a sealed envelope to the teachers. The children filled in questionnaires in the classroom.

Bullying. At baseline, three informants were used to assess bullying behavior: the child himself or herself, a parent, and a teacher. The children were asked about bullying other children at age 8 years. The alternatives were 1 = I do not usually bully other children, 2 = I sometimes bully other children, and 3 = I bully other children nearly every day. Furthermore, children were asked about being victims of bullying: 1 = Other children do not usually bully me, 2 = Other children sometimes bully me, and 3 = Other children bully me nearly every day. Similar questions focusing on bullying and victimization were included in parent and teacher questionnaires, with probe and response items worded as follows: The child bullies other children: 1, does not apply; 2, applies somewhat; and 3, certainly applies. An additional item about the child being a victim of bullying was also included in the parent and teacher questionnaires with the three alternatives (does not apply, applies somewhat, and certainly applies). The information obtained from self-reports, parents, and teachers was combined after the practice of combining reports from multiple informants in studies of childhood psychopathology.20–22 In a previous study from our database, the interrater agreement between informants (parent, teacher, and self-reports) was low (weighted k in range 0.11–0.22), but all three informant groups’ reports were similarly predictive of later psychopathology. Furthermore, a pooled measure yields the most sensitive assessment of bullying and victimization.

The respondents at age 8 years were classified as never bullying, bullying sometimes, or bullying frequently. Similarly, respondents were classified as never victimized, victimized sometimes, or victimized frequently. Sometimes, bullying or victimization was considered to exist if at least one informant reported the behavior as occurring sometimes. Similarly, frequent bullying or victimization was considered to exist if any informant reported the behavior occurring frequently. Reports of frequent behavior superseded those of less frequent (e.g., sometimes) behaviors. The respondents at age 8 years were also classified in the following groups: those who never or only sometimes bullied others or were victimized, those who frequently bullied (but were not victimized), those who were frequently only victimized, and those who frequently both bullied and were
victimized. For example, if a subject frequently bullied according to teachers and was frequently victimized according to self-reports, the subject was classified into the “bully-victim” group. Only subjects with complete information about bullying and victimization from all three informants were included in the analysis.

Confounding Factors

Parental and self-reports of the child’s psychiatric symptoms were analyzed as possible confounding variables.

Conduct Problems. Childhood conduct problems at age 8 years were assessed with Rutter parent questionnaire, a long-established and well-studied behavioral screening instrument that has been proven valid and reliable in many contexts. Because we wanted to focus on externalizing symptoms, we used only the conduct subscale of the Rutter questionnaire. The conduct scale items inquire about behaviors such as disobedience, defiance, fits of temper, aggression, destruction of property, stealing, and lying. The bullying items were removed from the conduct subscale created by summing item scores. This scale has been used in child psychiatric epidemiology, both internationally and in Finland.

Depression. The children completed the Children’s Depression Inventory (CDI). The original questionnaire consists of 27 items rated on a scale of 0 to 2, with a total score ranging from 0 to 54 points. The question concerning suicide was excluded at the baseline administration because of the age of the study group and the lack of a clinical follow-up after the self-reports in the classroom. Thus, the Finnish version of the CDI consisted of 26 questions. Good psychometric properties have been reported for the CDI, demonstrating its reliability and validity as an index of depressive symptoms.

Follow-up

The outcome variable of this study was suicidal behavior: suicide attempts and a completed suicide. Suicide attempts were attempts requiring hospital admission with any diagnosis of suicide attempt. Information about suicide attempts and completed suicides was gathered from three different registries up until the study participants were 25 years old. The follow-up information was linked to the baseline information using the personal identification number that was assigned to all residents of Finland by the Finnish Population Register in 1971.

The three registries in this study are as follows:

Statistics Finland’s Cause of Death Registry. Information about deaths and the causes of death of cohort members before the end of the year 2005 were collected from Statistics Finland and further ascertained from death certificates. Statistics Finland produces statistics on causes of death. It also maintains an archive of death certificates from which information or copies of death certificates can be obtained for research purposes prescribed in law. The statistics on causes of death are compiled from data obtained from death certificates, which are supplemented with data from the population information system of the Population Register Center. The statistics on causes of death cover people who have died in Finland or abroad during the calendar year and who, at the time of death, were domiciled in Finland.

Copies of death certificates from forensic medical-legal investigations. Death certificates were completed by pathologists. These certificates included additional information about the cause and manner of death. For example, in fatal poisonings, the most important toxicological finding was indicated in the death certificate by a code stating the underlying cause of death.

The Finnish Hospital Discharge Register was used to identify all subjects who had a hospital admission with a diagnosis of suicide attempt during the years 1994–2005. The computerized discharge register includes, among other things, data on the date of all hospital admissions, discharge diagnoses, and type of accidental injuries. The Finnish Hospital Register was established in 1967, and its good validity is widely documented in the field of epidemiological research.

Outcome

The examined outcome was suicide attempts and/or completed suicides. In the Finnish Hospital Discharge Register, the diagnostic codes for suicide attempts between 1994 and 1995 were ICD-9, codes E950 to E959, V156, or V658, and those between 1996 and 2005 were ICD-10 codes X60 to X84, Z72.8, or Z91.5. Of note, all suicide attempts in the cohort were recorded between 1996 and 2005 with ICD-10 codes X60 to X84.

Suicide death was defined as any death certificate diagnosis of suicide. The method of suicide was classified as hanging, shooting, drowning, deliberate traffic accident, jumping from a high place, or intoxication (poisoning or gas). The cohort members who had died of causes other than suicide were excluded. All forensic medical documents of suicide and accidental death were reviewed by three specialists in psychiatry who had consensus on all of the cases. (Only in one case was there disagreement, but after a discussion, this case was categorized as accidental death according to the forensic medical document classification.)

Statistical Analysis

Associations between bullying behaviors and suicidal behavior were established by using the suicide attempts and completed suicides as outcome variables and the bullying variables as predictive factors. All analyses were performed separately for male and female subjects.

The first logistic regression analysis was used to determine whether bullying and victimization (sometimes and frequently) at age 8 years were associated with later suicidal behavior. The categories never victimized and never bullied were the reference groups in these analyses. In addition, a series of regression analyses was used to determine whether bullying and victimization at age 8 years were associated with later suicidal behavior after separately and simultaneously controlling for baseline conduct symptoms (based on the parent’s Rutter conduct scale) and/or baseline depression (based on the CDI).

A second series of logistic regression models was conducted to examine the association of the co-occurrence of being victimized and bullying others frequently with later suicidal behavior. Respondents were classified into four mutually exclusive categories: never frequently bully nor victim, frequently only victim, frequently only bully, or frequently both bully and victim (“bully-victims”). Respondents who were neither victims nor bullies served as the reference group in these analyses. In addition, a series of regression analyses was conducted to examine the association of the co-occurrence of being victimized and bullying others frequently with later suicidal behavior after separately and simultaneously controlling for baseline conduct symptoms (based on the parent’s Rutter conduct scale) and/or baseline depression (based on the CDI). All analyses were performed using SAS systems for Windows, release 9.1.3/2003.
RESULTS

Using pooled information (parent reports, teacher reports, and self-reports), 47.2% of the male subjects bullied “sometimes,” and 9.0% bullied “frequently,” whereas the corresponding rates for the female subjects were 23.2% and 0.9%, respectively. Furthermore, 47.8% of the male subjects were victimized “sometimes,” and 9.4% were victimized “frequently”; the rates for the female subjects were 36.1% and 3.7%, respectively.

Of all 24 deaths among the male subjects, 13 (54%) were suicides. Among the female subjects, of the 16 deaths, only 2 (11%) were suicides. During the study period, 42 subjects (17 male and 25 female subjects) were admitted for hospital treatment because of a suicide attempt. Three of these male subjects completed suicide later.

Bullying and Victimization at Age 8 Years and Later Suicidal Behavior (Before Age 25 Years)

The boys who were sometimes bullies and those who were sometimes victims were not significantly more likely to be suicidal than the boys who were not involved in these behaviors (Table 1). The boys who were bullies frequently and those who were victims frequently, however, were more likely to be suicidal than the boys who were not involved. The girls who were sometimes bullies were not significantly more likely to be suicidal than the girls who were not bullies. None of the girls who were bullies frequently had made an attempt or completed suicide, which precluded any analysis of this factor. The girls who were sometimes victimized were not more likely to be suicidal than the girls who were not victims. The girls who were frequently victims, however, were more likely to be suicidal than the girls who were not victims.

When adjusting for baseline depression at age 8 years (based on the CDI), the results remained similar to the nonadjusted results. The frequent bullies and the frequent victims were at significantly higher risk for suicidal behavior compared with the children who were not involved (boys: frequent bullies odds ratio [OR] 9.9, 95% confidence interval [CI] 3.1–31.5, \( p < .001 \); frequent victims OR 7.7, 95% CI 2.2–26.9,

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tr>
<td>Bullying and Victimization at Age 8 Years and Suicide Attempts or Completed Suicides Before Age 25 Years</td>
</tr>
<tr>
<td>Total</td>
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<tr>
<td>Boys</td>
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<tr>
<td><strong>Bullying</strong></td>
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<tr>
<td>No</td>
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<tr>
<td>Sometimes</td>
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<tr>
<td>Frequently</td>
</tr>
<tr>
<td><strong>Victimization</strong></td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>Frequently</td>
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<tr>
<td>Girls</td>
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<tr>
<td><strong>Bullying</strong></td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>Frequently</td>
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<tr>
<td><strong>Victimization</strong></td>
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<tr>
<td>No</td>
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<tr>
<td>Sometimes</td>
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<tr>
<td>Frequently</td>
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</table>

*Note: CI = confidence interval; NA = not applicable; OR = odds ratio.
\( ^a \)Adjusted for Children’s Depression Inventory at age 8 years.
\( ^b \)Adjusted for parent’s Rutter conduct scale at age 8 years.
\( ^c \)Adjusted for both Children’s Depression Inventory and parent’s Rutter conduct scale at age 8 years.
\( \^p < .05; \^p < .01; \^p < .001. \)
frequent bullies—not applicable (NA); frequent victims OR 5.3, 95% CI 1.3–21.0, p < .05).

When adjusting for baseline conduct symptoms at age 8 years (based on parent’s Rutter conduct scale), the association between bullying others and suicidal behavior among boys was no longer significant. The association between frequent victimization and later suicidal behavior remained significant among both sexes.

When adjusting for both baseline conduct symptoms and depression at age 8 years, the associations between frequent bullying/victimization and suicidal behavior among boys were no longer significant. The association between frequent victimization and suicidal behavior remained significant among girls.

**Bully-Victim Co-occurrence at Age 8 Years and Later Suicidal Behavior (Before Age 25 Years)**

The boys who were frequently both bullies and victims (“bully-victims”) at age 8 years had the highest percentage of later suicidal behavior compared with the other groups (Table 2). The boys who were frequently bully-victims and those who were frequently only bullies were more likely to be suicidal compared with the boys who were frequently neither bullies nor victims. The boys who were frequently only victims were not significantly more likely to be suicidal than the boys who were frequently neither victims nor bullies. The girls who were frequently only victims were significantly more likely to be suicidal than the girls who were frequently neither victims nor bullies. As previously noted, the finding that none of the girls who were frequently bully-victims or frequently only bullies had made an attempt or completed suicide precluded any further examination of these factors.

When adjusting for baseline depression at age 8 years (based on the CDI), the results remained similar to the nonadjusted results (boys: frequently only victim OR 3.6, 95% CI 0.96–13.2, p > .05; frequently only bully OR 4.7, 95% CI 1.5–14.7, p < .01; frequently bully-victim OR 11.8, 95% CI 3.5–40.4, p < .001; girls: frequently only victim OR 4.7, 95% CI 1.3–17.3, p < .05; frequently only bully—NA; frequently bully-victim—NA).

When adjusting for conduct symptoms at age 8 years (based on parent’s Rutter conduct scale) the association between frequent bullying only and later suicidal behavior among the boys became nonsignificant, whereas the association between being a frequent bully-victim and later suicidal behavior remained significant. Among the girls, however, the results remained the same. The girls who were frequently victimized were at significantly greater risk for suicidal behavior compared with the girls who were frequently neither victims nor bullies.

**TABLE 2**

<table>
<thead>
<tr>
<th></th>
<th>Total n</th>
<th>Suicide % (n)</th>
<th>Adjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
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<tr>
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<td>Depression</td>
<td>Conduct</td>
<td>Conduct and</td>
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<td>(95% CI)</td>
<td>(95% CI)</td>
<td>Depression (95% CI)</td>
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<tr>
<td><strong>Boys</strong></td>
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<tr>
<td>Not frequently</td>
<td>2,148</td>
<td>0.7 (14)</td>
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<td></td>
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<tr>
<td>bully or victim</td>
<td></td>
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<tr>
<td>Frequently only</td>
<td>161</td>
<td>1.9 (3)</td>
<td>2.9 (0.8–10.2)</td>
<td>3.6 (0.96–13.2)</td>
<td>2.1 (0.6–7.5)</td>
</tr>
<tr>
<td>victim</td>
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<td></td>
<td></td>
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<td>2.7 (0.7–10.1)</td>
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<tr>
<td>Frequently only</td>
<td>152</td>
<td>2.6 (4)</td>
<td>4.1 (1.4–12.7)****</td>
<td>4.7 (1.5–14.7)****</td>
<td>2.2 (0.7–7.5)</td>
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<tr>
<td>bully</td>
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<td>1.1 (0.2–4.8)</td>
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<tr>
<td>Frequently both</td>
<td>70</td>
<td>5.7 (4)</td>
<td>9.2 (3.0–28.8)*****</td>
<td>11.8 (3.5–40.4)*****</td>
<td>4.1 (1.1–15.0)*</td>
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<tr>
<td>bully and victim</td>
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<td>2.4 (0.5–11.9)</td>
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<tr>
<td><strong>Girls</strong></td>
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<tr>
<td>Not frequently</td>
<td>2,360</td>
<td>0.9 (21)</td>
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<tr>
<td>bully or victim</td>
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</tr>
<tr>
<td>Frequently only</td>
<td>86</td>
<td>3.5 (3)</td>
<td>4.0 (1.2–13.7)*</td>
<td>4.7 (1.3–17.3)*</td>
<td>4.0 (1.1–14.2)*</td>
</tr>
<tr>
<td>victim</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.2 (1.4–19.6)*</td>
</tr>
<tr>
<td>Frequently only</td>
<td>14</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>bully</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Frequently both</td>
<td>6</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>bully and victim</td>
<td></td>
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*Note: CI = confidence interval; NA = not applicable; OR = odds ratio.

*Adjusted for Children’s Depression Inventory at age 8 years.

*Adjusted for parent’s Rutter conduct scale at age 8 years.

*Adjusted for both Children’s Depression Inventory and parent’s Rutter conduct scale at age 8 years.

*p < .05; **p < .01; ***p < .001.
who were not involved even after adjusting for baseline conduct symptoms.

When adjusting for both baseline conduct symptoms and depression at age 8 years, the two significant associations among boys were no longer significant, whereas the association between frequent victimization and suicidal behavior among girls remained significant.

**DISCUSSION**

The main finding of this study was that the association between bullying behavior at age 8 years and later suicidal behavior varied by sex. Among the boys, bullying behavior at age 8 years was not associated with later suicide attempts and completed suicides, after controlling for both childhood conduct and depression symptoms. Frequent victimization among the girls at age 8 years, however, was associated with later suicide attempts and completed suicides, even after controlling for childhood conduct and depression symptoms.

Most of the studies examining the association between bullying and suicidality have been cross-sectional, thus limiting inferences about the directionality of this relation. The first longitudinal study that examined childhood bullying/peer victimization and later suicidal ideation included only male subjects. To the best of our knowledge, there are no comparable prospective population-based studies examining childhood bullying for later suicide attempts or completed suicides among both sexes.

Our finding that the association of frequent bullying at age 8 years with a high risk for later suicidal behavior among boys became nonsignificant when controlling for baseline psychopathology may be understood in light of previous studies, which indicate that bullying is a common phenomenon primarily among children who are psychologically disturbed. It may be that suicidal behavior among boys who frequently bully others is a function of psychopathology rather than of the bullying behavior per se. These findings support previous reports from the same database, examining only boys, that bullies and victims with psychiatric symptoms are at elevated risk for later psychiatric disorders, whereas all bullies and victims are not. The findings are also consistent with our previous finding among boys that the association between frequently bullying others and suicidal ideation became nonsignificant after controlling for baseline depression.

The impact of frequent victimization seems to be different for boys and girls. Among boys, frequent victimization in the absence of co-occurring bullying behavior was not associated with later suicidal behavior. When victimization and bullying co-occur, this was associated with later suicidal behavior, but this association became nonsignificant after controlling for both childhood depression and conduct symptoms. Among girls, frequent victimization in the absence of co-occurring bullying behavior was associated with later suicidal behavior, even after controlling for baseline psychopathology. In other words, frequent victimization among girls has an independent effect that goes beyond childhood psychopathology. Our findings support the notion that the long-term effects of victimization differ across sexes. This finding may be explained by the different types of peer victimization to which girls and boys are exposed. Boys often experience more overt physical victimization, whereas girls are more liable to indirect relational victimization. Relational victimization has been found to have a greater impact on mental conditions (e.g., depression, loneliness) than overt victimization.

Another possible mechanism by which bullying and victimization may lead to suicidal behavior is boys’ and girls’ differing response to victimization. For instance, girls have been found to be more vulnerable to stressful life events, which have been shown to increase vulnerability to depression among people with a functional variant in the serotonin transporter gene. This genetic risk has been found to be particularly high for female subjects. Furthermore, coping strategies among victimized girls may be less functional compared with boys. In a recent study, corumination was found to increase the risk for depression among girls, whereas for boys, corumination predicted increasing positive friendship.

By controlling for conduct and depression separately, we found that, when controlling only for baseline depression at age 8 years, the results remained similar to the unadjusted results. This is in contrast to the results we found when adjusting only for baseline conduct symptoms. These findings may indicate that it is the baseline conduct symptoms that mediate the association between bullying and suicidal behavior among male subjects. This is consistent with studies indicating an association between completed suicides and externalizing problems. It is also consistent with a previous report indicating that conduct disorder is a more
significant risk factor in male suicides compared with female suicides.\textsuperscript{41} Although depression is considered an important precipitant of suicidal behavior, aggression-related behaviors and impulsivity may be more important factors in some kinds of suicidal behaviors.\textsuperscript{42} This is not consistent with our previous report based only on a male sample\textsuperscript{11} indicating that the association between frequently bullying others and suicidal ideation became nonsignificant after controlling for baseline depression. The discrepancy between this study and our previous one may be explained by the type of suicidality assessed. In our previous report, the outcome variable was any suicidal ideation. In this report, we assessed suicide attempts and completed suicides.

Our study has several limitations. One limitation is the small number of suicides in this sample, especially among girls. Moreover, suicide completers and those suicide attempters requiring hospital admission were pooled together for statistical analysis. Because suicide is a rare phenomenon, even a large sample such as ours was not large enough to perform the statistical analysis separately for these two groups. The second limitation is that the bullying/victimization questions were general, and different types of bullying were not specified. Future studies should assess specific types of bullying behavior (e.g., physical bullying, verbal aggression, social exclusion). We also did not assess the duration of the bullying behavior. Third, our bullying data was pooled from self-reports as well as parent and teacher reports. We did not compare the different reports. Fourth, our study lacks information about childhood and family environmental risk factors (e.g., abuse at home) and sex nonconformity that may explain the results. Lastly, our finding can be generalized only to children who were involved in bullying at elementary school age. Future studies should assess bullying in later years.

Our community-based study has important clinical implications. The study improves our understanding of bullying as a risk factor for later suicidal behavior. Three main implications can be derived from our current findings. First, when discussing bullying behavior, it is critical to differentiate between bullying others and victimization because they have different implications. Second, those who are only victims or only bullies are different from those who are both bullies and victims. Lastly, no conclusions can be drawn for boys and girls together. Each sex has a markedly different risk profile.

Our findings indicate that, among boys, once psychopathology was controlled, bullying no longer significantly predicted suicide attempts and completed suicides. Among girls, however, frequent childhood victimization puts them at risk for later suicidal behavior, regardless of childhood psychopathology. These findings have an important public health message. The results suggest that a suicide prevention strategy during the first years of school should focus on those who are frequently involved in bullying behavior, particularly girls who are frequently victimized. We estimate that suicides among girls may be reduced by 10% if we will be able to eliminate frequent victimization (the population attributable risk\textsuperscript{43} is 0.10). Infrequent involvement in bullying seems to be less of a concern for later suicidal behavior. Our study provides support for actively collecting information on frequent bullying behavior as part of screening during the early school years.

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REFERENCES