Effects of Antibullying School Program on Bullying and Health Complaints

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**Objective:** To evaluate the effects of an antibullying school intervention in elementary schools.

**Design:** Two-year follow-up randomized intervention group–control group.

**Setting:** Forty-seven elementary schools in the Netherlands.

**Participants:** Three thousand eight hundred sixteen children aged 9 to 12 years.

**Intervention:** During the first study year, an antibullying school program was implemented in the schools in the intervention group.

**Main Outcome Measures:** A questionnaire measuring bullying behavior, depression, psychosomatic complaints, delinquent behavior, and satisfaction with school life and peer relationships was filled out by the students at 3 times to obtain the following data: a baseline measurement, a first-effect measurement at the end of the first year, and a second-effect measurement at the end of the second year.

**Results:** The number of bullied children decreased by 25% in the intervention group compared with the control group (relative risk, 0.75; 95% confidence interval, 0.57–0.98). The intervention group also showed a decline in the scale scores of victimization (−1.06 vs 0.28; P < .01) and active bullying behaviors (−0.47 vs 0.12, P < .05). Self-reported peer relationships also improved in the intervention schools (0.48 vs 0.11; P < .05), and there was a trend for a decrease in reported depression in the intervention schools (−0.33 vs −0.10; P < .10). At follow-up, there were no differences between the intervention and control groups for the outcome measures. Schools had also lowered their antibullying activities during the second study year.

**Conclusions:** An antibullying school policy can reduce bullying behavior. To keep bullying at a consistently low level, schools must continue antibullying measures every year. Continued counseling may help schools in their efforts to establish a lasting antibullying policy.

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BULLYING IS A FORM OF AGGRESSIVE BEHAVIOR THAT IS WIDESPREAD AMONG SCHOOL-CHILDREN AND IS OFTEN CHARACTERIZED BY REPEITION AND AN IMBALANCE OF POWER. Bullying can take many forms, such as hitting, kicking, and name-calling, as well as more indirect forms such as exclusion and gossiping. One of the first large-scale studies on bullying behavior in Norway indicated that 1 of every 7 children was bullied regularly. 1,2 Subsequent studies in several countries have also shown that a substantial number of children are bullied.3,4,7

Several studies also show that children who are being bullied, and to a lesser degree the bullies, have higher incidences of health complaints and depression.4,8,18 Other studies have found an association between bullying and suicidal thoughts.8,19

Since the 1980s, antibullying interventions have been implemented in schools in many countries.20 A first large-scale intervention campaign was carried out in Norway and was evaluated by Olweus.21 Results showed that schools implementing an antibullying policy had significant lasting decreases in bullying behavior.2,21 As a result, antibullying interventions were implemented in other countries.20,22-25

In the Netherlands, several antibullying measures have been developed to help schools prevent and diminish bullying. In 1999, school, teacher, and parent organizations joined in a collaborative effort to develop national standard antibullying guidelines for schools. This resulted in a protocol for schools to adopt antibullying measures that mirror many of the principles of the Olweus program.26 Adoption of these antibullying measures was voluntary. Many schools adopted the guidelines and instituted an antibullying school policy, but a substantial number of schools did not develop a specific antibullying policy or implement antibullying activities.

The purpose of our study was to evaluate the effects of this antibullying school program in elementary schools. We studied ef-
effects on bullying behavior and on related outcome measures such as depression and health complaints. To evaluate the effects, we used a randomized intervention group–control group design. We hypothesized that bullying and related health complaints in schools that participated in the antibullying intervention would decrease compared with schools that did not participate in the intervention.

**METHODS**

**PARTicipATING SCHOOLS**

To study the effect of an antibullying school program, the design included an intervention group and a control group (control group 1). For both groups, a baseline measurement (T0) and 2 follow-up measurements (T1 and T2) were obtained. In addition, another control group was added to the design (control group 2). This group was included in case the schools in control group 1 would start an antibullying school policy on their own during the first year as a result of the baseline measurement. However, this second control group did not contain any baseline measurement data and consequently was less than ideal for analysis. Therefore, control group 2 was included in the analyses only if schools in control group 1 started their own antibullying policy and had their staff trained.

Two hundred Dutch elementary schools were approached to participate in the study. Schools were eligible for participation if they did not have an antibullying school policy and their school staff was not recently trained in antibullying activities. Fifty schools agreed to participate. For logistic reasons, only 15 schools could participate in the intervention group. Schools were randomly assigned to either the intervention group or to 1 of the 2 control groups until each of the 3 groups contained 15 schools; the remaining schools were divided among the 2 control groups.

Children from the 3 highest grades (age, 9-12 years) participated by completing a questionnaire. The questionnaires were completed in classrooms under examination-like conditions 3 times during the study: the first and second measurements were obtained during the school year, in November 1999 and May 2000, respectively, and the third measurement was obtained at the end of the follow-up school year in May 2001.

The design of the study was approved by the local medical ethics committee. All parental advisory boards of the participating schools were informed about the study and gave written informed consent for participation.

**BULLYING BEHAVIOR**

Two questions were asked about general bullying behavior: How often did other children bully you in recent months? How often did you bully other children in recent months? Questions were based on the Dutch version of the Olweus Bully/Victim Questionnaire with somewhat modified answer categories. Children could answer both questions on a 6-point scale: “not bullied at all,” “1 or 2 times,” “a few times a month,” “once a week,” “2 or 3 times a week,” and “almost every day.” Items were dichotomized into bullied (“a few times a month” or more often) and not bullied (“1 or 2 times” or less often). In addition, active and experienced bullying behavior was measured with items addressing 6 types of victimization: name-calling, exclusion, hitting or kicking, having things stolen or hidden, being rumored or gossiped about, and being teased. Children were asked if they experienced or performed any of these behaviors during the last 4 weeks. Items were summed for both scales of active and experienced bullying behavior.

**PSYCHOSOMATIC COMPLAINTS**

Students were asked about a series of health symptoms (eg, headache, sleeping problems, or abdominal pain) and for each symptom were asked to report whether in the last 4 weeks they had experienced the symptom never, sometimes, or often. Items were summed into a scale.

**DEPRESSION**

Depression was evaluated with the Short Depression Inventory for Children. This questionnaire contains 9 items, for example, “The last weeks I felt down.” For each item, respondents answered whether this was true or not true. All items answered as true were summed.

**DELINQUENT BEHAVIOR**

Delinquent behavior was measured with a 7-item scale. Each item addressed a different form of delinquent behavior, such as “Have you stolen something at school?” All items that were answered positively were summed.

**SCHOOL SATISFACTION**

Experience of school life was measured with 3 scales from the Dutch School Experience Questionnaire, “satisfaction with contact with other students” (8 items, eg, “I would rather be in a classroom with other children”), general satisfaction with school life (10 items), and satisfaction with contact with teachers (15 items). For each item, answer options were always, often, sometimes, or never. Items were summed, with higher scores indicating more satisfaction.

**ANTIBULLYING ACTIVITIES**

Compliance with the components of the intervention was measured by teacher reports. A questionnaire with questions regarding antibullying activities performed during the school year was distributed among teachers in the participating classes at the end of the second and third years (T1 and T2).

**STATISTICAL ANALYSES**

Multilevel logistic and linear regression analyses (MLwiN; Multilevel Models Project, Institute of Education, London, England) were used to calculate effects of the intervention at the end of the first and second years of the study. Three levels were included in the analyses: school, classroom, and individual. Outcomes were measured at the individual level, corrected for influences from a higher level, that is, classroom and school. Baseline levels of the outcome measure and grade, sex, and school size were included as covariates in the regression model. Odds ratios obtained from logistic regression were converted to relative risk by using the method described by Zhang and Yu. P values were 2-tailed. Significance levels for an effect were P<.05, and for a trend were P<.10.

**ANTIBULLYING PROGRAM**

The antibullying program was developed in the Netherlands and mirrors many principles that also underlie antibullying programs in other countries, such as the Olweus program. The program aims to include teachers, bullied children, bullies, noninvolved children, and parents in the efforts to lower the bullying behavior.

An important part of the program is that teachers undergo training. Another important component is the development of a written antibullying school policy describing the activities that a school
Table 1. Activities During First Year for Intervention and Control Schools

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intervention Group (n = 34)</th>
<th>Control Group 1 (n = 37)</th>
<th>Control Group 2 (n = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibully training for teachers, %*</td>
<td>97</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Bullying survey, %†</td>
<td>71</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td>Antibullying rules, %‡</td>
<td>71</td>
<td>46</td>
<td>27</td>
</tr>
<tr>
<td>Use of antibullying curriculum, %</td>
<td>65</td>
<td>51</td>
<td>61</td>
</tr>
<tr>
<td>Intensity of surveillance (mean No. of teachers per group of students during recess)</td>
<td>0.42</td>
<td>0.36</td>
<td>0.42</td>
</tr>
<tr>
<td>Organizing information meeting on bullying for parents, %</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

*χ² = 79.55; P < .001.
†χ² = 14.60; P < .001.
‡χ² = 14.27; P < .001.

Table 2. Activities During Second Year for Intervention and Control Schools

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intervention Group (n = 29)</th>
<th>Control Group 1 (n = 41)</th>
<th>Control Group 2 (n = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullying survey, %</td>
<td>25</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Antibullying rules, %</td>
<td>74</td>
<td>59</td>
<td>50</td>
</tr>
<tr>
<td>Use of antibullying curriculum, %</td>
<td>41</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Intensity of surveillance (mean No. of teachers per group of students during recess)</td>
<td>0.41</td>
<td>0.41</td>
<td>0.64</td>
</tr>
<tr>
<td>Organizing information meeting on bullying for parents, %</td>
<td>4</td>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

The main criterion for including schools in the intervention group was that their teachers participate in the 2-day training. One school was originally part of the intervention group but indicated having no time for the training and, consequently, was excluded from the intervention group and the study.

RESULTS

The participating schools included 156 classes participating in the study during the first year. A questionnaire regarding the antibullying activities during the first year was returned for 107 classes (response rate, 69%). Results are given in Table 1. Most teachers in the intervention group participated in the training. None of the control schools had a substantial part of their staff trained in antibullying measures during the study. The results indicate further that intervention schools performed more antibullying activities, although not for all components of the intervention. Specifically, the use of an antibullying survey in the classrooms and the creation of antibullying rules were done significantly more often in the intervention group. At the end of the first year, 6 of the 14 schools in the intervention group had a written antibullying policy. One of the 18 schools in control group 1 had a written policy, and no school in control group 2 had a written antibullying policy.

ANTIBULLYING ACTIVITIES DURING THE FIRST YEAR

The participating schools included 113 classes participating in the study during the second year. A questionnaire regarding the antibullying activities during this second year was returned for 105 classes (response rate, 93%). Results are given in Table 2. There was no significant difference in activities between the intervention group and the control groups. The main reasons why schools in the intervention group discontinued activities during the second year of the study were that they considered the antibullying activities to be a 1-year project, the school decided that an-
other issue should get priority during the following year, or simply that there was no time to perform the activities every year. Schools with a written antibullying policy performed more antibullying activities during the follow-up year than those without a written policy.

EFFECTS OF ANTIBULLYING POLICY

A total of 3816 children participated in the study: 1214 students in the intervention group (at T0), 1552 students in control group 1 (at T0), and 1050 students in control group 2 (at T1) (Figure). Because most of the schools in both control groups did not have their staff trained and did not have a written antibullying school policy during the first year, control group 1 was used in the main effect analysis as the comparison group because this group also included a baseline measurement (T0).

NONRESPONSE

The intervention group and control group 1 included 2848 students in the upper 3 grades; 2766 (97%) participated in the baseline measurement (T0), and 2224 (78%) participated in the first-effect measurement (T1). During the following school year children in the lower 2 grades of the initial sample, who were still in elementary school, participated in the second-effect measurement (T2), and 1591 children (58% of the initial total sample, 82% of the initial lower 2 grades) filled out the questionnaire (Figure).

For the nonresponders of the first-effect measurement (T1), there were no differences in outcome variables of the initial measurement between nonresponders from the intervention group and those from the control group. Nonresponders of the second-effect measurement (T2) differed only on the baseline scores of psychosomatic complaints (0.97 vs 1.21; t = 2.71; P = .007).

INITIAL SAMPLE

Mean (SD) age of students at the baseline measurement was 10.1 (1.1) years. Fifty percent of the sample were girls. Table 3 gives data on general bullying behavior in intervention schools and control schools.

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INITIAL SAMPLE

Mean (SD) age of students at the baseline measurement was 10.1 (1.1) years. Fifty percent of the sample were girls. Table 3 gives data on general bullying behavior in intervention schools and control schools.

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INITIAL SAMPLE

Mean (SD) age of students at the baseline measurement was 10.1 (1.1) years. Fifty percent of the sample were girls. Table 3 gives data on general bullying behavior in intervention schools and control schools.
At the end of the first year, the number of bullied children decreased significantly in the intervention schools compared with the control schools. In the intervention schools, the number of bullied children decreased from 17.7% to 15.5%, while the number of bullied children in the control group increased from 14.6% to 17.3%. Multilevel regression analyses indicated that children in the intervention group were at a relative risk of 0.75 (95% confidence interval, 0.57-0.98) of being bullied at the end of the first school year compared with the control group (Table 4). Thus, the number of bullied children decreased by 25% in the intervention group compared with the control group.

Scale scores on specific bullying behavior also indicated that children in the intervention schools experienced significantly less bullying behavior (Table 5). Children also indicated less active bullying behavior. Furthermore, there was a trend for fewer depressive symptoms in the intervention schools compared with the control schools at the end of the first year. Children in the intervention group also indicated higher satisfaction with contact with other students.

At the end of the follow-up year there were no significant differences in bullying behavior between schools in the intervention group and the control group (Table 6). There were also no differences between the groups in other outcome measures such as depression, psychosomatic complaints, and satisfaction with school life (Table 7).
Table 6. Relative Risk for General Bullying Behavior at End of Second Study Year*

<table>
<thead>
<tr>
<th>Behavior</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being bullied</td>
<td></td>
</tr>
<tr>
<td>Control group A</td>
<td>1.00</td>
</tr>
<tr>
<td>Intervention group</td>
<td>1.14 (0.81-1.59)</td>
</tr>
<tr>
<td>Active bullying</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>1.00</td>
</tr>
<tr>
<td>Intervention group</td>
<td>0.75 (0.43-1.29)</td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval; RR, relative risk. *Intervention group, n = 692; control group 1, n = 899.

Table 7. Changes in Bullying Behavior and Health Complaints at End of Second Study Year*

<table>
<thead>
<tr>
<th>Behavior/Health Complaint</th>
<th>T0</th>
<th>T2</th>
<th>Change from T0 to T2</th>
<th>Adjusted β</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total scale, being bullied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>2.96</td>
<td>2.09</td>
<td>−0.87</td>
<td>0.42</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>2.76</td>
<td>1.51</td>
<td>−1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total scale, active bullying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>1.86</td>
<td>1.23</td>
<td>−0.63</td>
<td>−0.16</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>1.13</td>
<td>1.14</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>2.19</td>
<td>1.64</td>
<td>−0.55</td>
<td>−0.03</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>1.97</td>
<td>1.55</td>
<td>−0.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychosomatic complaints</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>1.28</td>
<td>0.88</td>
<td>−0.40</td>
<td>−0.05</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>1.16</td>
<td>0.88</td>
<td>−0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delinquent behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>0.44</td>
<td>0.65</td>
<td>0.21</td>
<td>0.05</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>0.39</td>
<td>0.58</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General satisfaction with school life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>21.65</td>
<td>21.26</td>
<td>−0.39</td>
<td>0.51</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>21.39</td>
<td>20.68</td>
<td>−0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with contact with other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>18.86</td>
<td>19.57</td>
<td>0.71</td>
<td>0.14</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>19.08</td>
<td>19.59</td>
<td>0.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with contact with teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention group</td>
<td>32.30</td>
<td>30.71</td>
<td>−1.59</td>
<td>0.33</td>
<td>NS</td>
</tr>
<tr>
<td>Control group</td>
<td>32.37</td>
<td>30.73</td>
<td>−1.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: NS, not significant; T0, baseline; T2, end of second study year. *Intervention group, n = 692; control group 1, n = 899.

The questionnaire to establish levels of bullying behavior, and setting clear rules against bullying in the classroom. Compliance was low for some components of the intervention. For example, schools did not often involve the parents in their antibullying efforts. Awareness is considered important in combating bullying through a school-based intervention program. It may well be that attending the training sessions and frequent use of the Bullying Test raised awareness of the bullying problem and made teachers more vigilant during the first year.

In the longer term, at the end of the second study year, there were no significant differences in outcome variables between the intervention and control schools. One explanation might be the decline of antibullying measures in the intervention schools during the second year. Although schools were asked to continue their activities, no training or counseling was given in the second year. This absence of ongoing support may have been an important reason for discontinuation of the activities in the second year. Another explanation is that not all schools in the intervention group developed a written antibullying school policy. Schools with a written policy did continue more of their antibullying measures. Furthermore, several schools indicated that they considered the antibullying activities part of a 1-year project and wanted to give their extra time and attention each year to a different health subject that needed special attention.

Other studies have found mixed results on antibullying school measures. Olweus evaluated a nationally implemented antibullying intervention in Norway and found substantial (up to 50%) reductions in bullying victimization. However, other authors evaluated the same program and found no overall effects. This difference in results is explained by the higher level of counseling given to schools in the Olweus study. Evaluation of similar programs in England and Belgium reported positive effects, although smaller than those reported in Norway. A recent study in Finland found substantial reductions in bullying behavior, especially among schools with high levels of implementation of antibullying activities. Some strengths of our study are the randomized controlled design and the use of multilevel analysis, which controls for clustering effects at the group level. Effect analyses included baseline levels of bullying behavior to correct for initial differences between the groups. An adverse factor in the design was that schools in the control group performed several antibullying activities. All schools were expected to be involved in some antibullying activities. However, these control schools can still be considered part of the control group because their staff did not undergo any antibullying training and most control schools did not develop a written antibullying policy.

Future implementation of the antibullying intervention in elementary schools should be more focused on developing a written antibullying policy and include regular follow-up counseling. A follow-up project is under way to investigate how schools can implement more antibullying activities and continue their activities each year with the help of ongoing consultation.

We conclude that an antibullying school intervention can reduce bullying victimization. However, to keep bullying behavior at a consistently low level, schools must continue antibullying measures every year. Regular follow-up counseling could help schools to continue their antibullying school policy.

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REFERENCES


“The spirit of the Enlightenment of the eighteenth century and Rousseau’s writings were among the incentives to concentrate on the medical problems of children. Nils von Rosenstein, George Armstrong, and William Cadogan were pioneers in this specialty.”

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