A Systematic Review of School-Based Interventions to Prevent Bullying

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Objective: To conduct a systematic review of rigorously evaluated school-based interventions to decrease bullying.

Data Sources: MEDLINE, PsycINFO, EMBASE, Educational Resources Information Center, Cochrane Collaboration, the Physical Education Index, and Sociology: A SAGE Full-Text Collection were searched for the terms bullying and bully.

Study Selection: We found 2090 article citations and reviewed the references of relevant articles. Two reviewers critically evaluated 56 articles and found 26 studies that met the inclusion criteria.

Interventions: The types of interventions could be categorized as curriculum (10 studies), multidisciplinary or "whole-school" interventions (10 studies), social skills groups (4 studies), mentoring (1 study), and social worker support (1 study).

Main Outcome Measures: Data were extracted regarding direct outcome measures of bullying (bullying, victimization, aggressive behavior, and school responses to violence) and outcomes indirectly related to bullying (school achievement, perceived school safety, self-esteem, and knowledge or attitudes toward bullying).

Results: Only 4 of the 10 curriculum studies showed decreased bullying, but 3 of those 4 also showed no improvement in some populations. Of the 10 studies evaluating the whole-school approach, 7 revealed decreased bullying, with younger children having fewer positive effects. Three of the social skills training studies showed no clear bullying reduction. The mentoring study found decreased bullying for mentored children. The study of increased school social workers found decreased bullying, truancy, theft, and drug use.

Conclusions: Many school-based interventions directly reduce bullying, with better results for interventions that involve multiple disciplines. Curricular changes less often affect bullying behaviors. Outcomes indirectly related to bullying are not consistently improved by these interventions.

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Bullying is a form of aggression in which 1 or more children repeatedly and intentionally intimidate, harass, or physically harm a victim. Victims of bullying are perceived by their peers as physically or psychologically weaker than the aggressor(s), and victims perceive themselves as unable to retaliate. Although bullying, harassment, and victimization can take many forms, the key elements of this behavior are aggression, repetition, and the context of a relationship with an imbalance of power.

Bullying can impact the physical, emotional, and social health of the children involved. Victims of bullying more often report sleep disturbances, enuresis, abdominal pain, headaches, and feeling sad than children who are not bullied. Bullies, their victims, and those who are both bullies and victims have significantly increased risk for depressive symptoms and suicidal ideation. Students who report victimization are 3 to 4 times more likely to report anxiety symptoms than uninvolved children. The effects of bullying on emotional health may persist over time; 1 study showed that children bullied repeatedly through middle adolescence had lower self-esteem and more depressive symptoms as adults. Victims of bullying are more likely to feel socially rejected or isolated and to experience greater social marginalization and lower social status.

Bullying impacts a child's experience of school on numerous levels. Bullying creates problems with school adjustment and bonding, affecting the victims' completion of homework or desire to do well at school. In 1 study, 20% of grade-school children reported being frightened through much of the school day. Bullying seems to increase school absenteeism,
with victimized children becoming more school avoidant as the victimization increases.\textsuperscript{14} Furthermore, involvement in bullying affects academic performance, although studies\textsuperscript{15-18} show mixed results regarding which children are most affected. Most bullying takes place at school, particularly at times and places where supervision is minimal.\textsuperscript{19} Schools where adults tolerate more bullying may have more severe bullying problems.\textsuperscript{10}

As school bullying increasingly becomes a topic of public concern and research efforts, a growing number of studies examines school-based interventions targeted to reduce bullying. Although many of these interventions have been rigorously evaluated, the evaluations reveal mixed results.\textsuperscript{20} For example, evaluations of the Olweus Bullying Prevention Program, a comprehensive “whole-school” intervention on which many subsequent programs have been based, report reductions of 30% to 70% in the student reports of being bullied and bullying others.\textsuperscript{2,20,22} In contrast, evaluation of a similar comprehensive prevention program implemented in Belgium did not show significant differences in victimization or bullying scores among primary or secondary school students.\textsuperscript{23} Although some review articles have described several of these interventions, to our knowledge, no systematic reviews of interventions to reduce bullying have been published in peer-reviewed literature. The objective of this study was to review rigorously evaluated school-based interventions to reduce or prevent bullying with the goal of determining whether these interventions worked.

**METHODS**

We searched several bibliographic databases, including MEDLINE (January 1, 1966, through August 23, 2004), PsycINFO, EMBASE, Educational Resources Information Center, the Physical Education Index, Sociology: A SAGE Full-Text Collection, and the Cochrane Clinical Trials Registry (all as of August 23, 2004). We used the search terms bullying or bully as Medical Subject Headings or keywords. We used a keyword search because it was more robust than searches using only Medical Subject Headings. One of us (R.C.V.) reviewed the titles of all returned articles and the bibliographies of all relevant review articles to determine which studies examined a school-based intervention to prevent or reduce bullying. Articles were immediately excluded if they obviously did not address an intervention or did not occur at a school.

After articles that clearly did not meet the inclusion criteria were excluded, both of us (R.C.V. and A.E.C.), blinded to the journal citation and article text other than the “Methods” section, independently reviewed the articles. The 2 reviewers independently decided on trial inclusion using a standard form with predetermined eligibility criteria. Disagreements were resolved by consensus reached after discussion. For inclusion, a study needed to describe an experimental intervention with control and intervention groups and to include a follow-up evaluation with measured outcomes. In addition, the intervention needed to be school based and designed to reduce or prevent bullying. Each article was analyzed to determine the study method, intervention components, outcomes measured, and results. There was no assessment of quality in choosing or evaluating study outcomes beyond the inclusion criteria. We did not exclude or discount studies based on baseline similarities among treatment groups, study power, retention rates, or program intensity because these characteristics are not associated definitively with the strength of treatment effects.\textsuperscript{24} Duplicate publications or multiple articles that reported identical outcomes measured over the same period on the same population were excluded.

We extracted data from the selected articles regarding direct outcome measures of bullying, including bullying, victimization, aggressive behavior, violence, school responses to violence, and violent injuries. Data were also extracted for outcomes thought to be indirectly related to bullying, such as school achievement, perception of school safety, self-esteem, or knowledge about or attitudes toward bullying.

The systematic literature search identified 2090 articles. The online search of MEDLINE yielded 353 articles, and the search of EMBASE yielded 269 articles, 9 of which were not found by the MEDLINE search. The search of PsycINFO yielded 897 articles, Educational Resources Information Center yielded 552 articles, the Physical Education Index yielded 16 articles, and Sociology: A SAGE Full-Text Collection yielded 3 articles. An additional 4 potential studies\textsuperscript{25-28} were identified through searches of bibliographies and were also reviewed. Once articles that obviously did not address school-based interventions were excluded, 321 relevant articles remained. Reviewing the abstracts of these articles allowed for the further exclusion of articles that did not address school-based interventions. Fifty-six articles were then assessed by both of the reviewers. Articles were most commonly excluded at this stage because they were not evaluations of interventions, they did not have control groups, or they did not address bullying.

The 26 studies that met the selection criteria varied substantially in intervention type, study population, study design, and outcome measures. The detailed characteristics of the studies are reported in Table 1. The interventions could be divided into 5 categories: curriculum interventions, multidisciplinary or whole-school interventions, targeted social and behavioral skills groups, mentoring, and increased social work support. To maximize clarity and clinical usefulness, we present the subsequent results of the review based on the type of intervention. All 26 studies investigated interventions for some group of primary school students, but the primary grade levels varied from first to eighth grade. Six studies\textsuperscript{22,23,30,39,41,48} included secondary school students (older than eighth grade) in their interventions and outcomes. The selected studies reported a range of outcomes that were subsequently categorized into direct and indirect outcomes. The direct and indirect outcomes of all of the studies are reported in Table 2.

**CURRICULUM INTERVENTIONS**

Ten studies\textsuperscript{23,20,20-36} evaluated the implementation of new curriculum. The curriculum interventions included videotapes, lectures, and written curriculum, and varied in intensity from a single videotape followed by classroom discussion to 15 weeks of classroom modules. The details of the study designs, participants, intervention type, and important outcomes of the curriculum interven-
tions are all described in Table 1. The studies all used a pretest, posttest, control group design; 6 of the 10 studies randomized the assignment of the groups.23,29-31,35,36

The curriculum interventions did not consistently decrease bullying, and several actually suggested that the bullying within the intervention group increased (Table 2). Of the 10 studies of curriculum interventions, 6 showed no significant improvements in bullying.23,20,30,32,33,36 Although bullying and victimization did not change significantly, Boulton and Fleming20 did find that the students in the intervention group broadened their definition of bullying slightly, and Englert32 did find that the teachers reported a significant decrease in observed physical and verbal violence (P<.01).

Table 1. Study Characteristics

<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Subjects</th>
<th>Control Group</th>
<th>Intervention Group</th>
<th>Grade Level or Age Group</th>
<th>Study Design</th>
<th>Intervention</th>
<th>Educational Theory*</th>
<th>Method of Group Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldry and Farrington</td>
<td>Italy</td>
<td>239 students</td>
<td>106 students</td>
<td>131 students (aged 10-16 y)</td>
<td>Pretest, posttest, randomized, controlled trial</td>
<td>3-d intervention program (3-h sessions, once a week, for 3 wk)</td>
<td>Social cognitive competence skills</td>
<td>Random allocation by class</td>
<td></td>
</tr>
<tr>
<td>Boulton and Fleming</td>
<td>United Kingdom</td>
<td>170 students</td>
<td>4 classes</td>
<td>4 classes (Grades 7-10, aged 11-14 y)</td>
<td>Randomized matched pairs</td>
<td>Short videotaped intervention (&quot;Sticks and Stones&quot;) with class discussion</td>
<td>Cooperative group work curriculum</td>
<td>Not given</td>
<td></td>
</tr>
<tr>
<td>Cowie et al.</td>
<td>United Kingdom</td>
<td>2 schools, 16 classes, 148 students</td>
<td>5 classes</td>
<td>11 classes (Aged 7-12 y)</td>
<td>Pretest, posttest, control group design</td>
<td>Cooperative group work, effect on interpersonal relationships</td>
<td>Group interpersonal problem solving</td>
<td>Schools selected based on interest</td>
<td></td>
</tr>
<tr>
<td>Elliott and Faupel</td>
<td>United Kingdom</td>
<td>64 students</td>
<td>32 students</td>
<td>32 students (Grades 4 and 5)</td>
<td>Pretest, posttest, randomized, controlled trial</td>
<td>Videotape and curriculum</td>
<td>Group interpersonal problem solving</td>
<td>Randomized by student</td>
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</tr>
<tr>
<td>Englert</td>
<td>United States</td>
<td>71 students</td>
<td>23 students (1 class)</td>
<td>24 students in the problem-solving group (1 class) and 24 students in the cooperative task group (1 class)</td>
<td>Pretest, posttest, control group design</td>
<td>2 curricula: one in problem-solving training and one in cooperative task development</td>
<td>Problem-solving and cooperative task development</td>
<td>Assigned by class</td>
<td></td>
</tr>
<tr>
<td>Kaiser-Ulrey</td>
<td>United States</td>
<td>125 students</td>
<td>67 students</td>
<td>58 students (Grade 7)</td>
<td>Pretest, posttest, control group design</td>
<td>12-wk antibullying curriculum</td>
<td>Psychoeducation, empathy, problem-solving, dissemination</td>
<td>Assigned in cohort groups</td>
<td></td>
</tr>
<tr>
<td>Rican et al.</td>
<td>Czechoslovakia</td>
<td>198 students</td>
<td>98 students</td>
<td>100 students (Grade 4, median age, 10 y)</td>
<td>Pretest, posttest, randomized, controlled trial</td>
<td>Videotape, curriculum changes, &quot;class charter&quot;</td>
<td>Social cognitive orientation emphasizing cognitive perspective taking, problem-solving strategies, and social skills</td>
<td>Assigned by class</td>
<td></td>
</tr>
<tr>
<td>Stevens</td>
<td>Belgium</td>
<td>24 schools (total 728 primary school students and 1465 secondary school students)</td>
<td>193 primary school students and 229 secondary school students</td>
<td>130 primary school students and 219 secondary school students</td>
<td>Pretest, posttest, randomized, controlled trial</td>
<td>Videotape, curriculum changes, &quot;class charter&quot;, role-playing within classes</td>
<td>Social problem-solving skills; reorganization of schemas for social information processing and problem-solving through experiential learning</td>
<td>Randomly assigned by school to experimental or control group</td>
<td></td>
</tr>
<tr>
<td>Teglasi and Rothman</td>
<td>United States</td>
<td>59 students: 17 &quot;aggressive&quot; and 42 &quot;nonaggressive&quot;</td>
<td>8 aggressive students</td>
<td>8 aggressive students (Grades 4 and 5)</td>
<td>Pretest, posttest, time-lagged comparison</td>
<td>15-wk curriculum</td>
<td>Social problem-solving skills; reorganization of schemas for social information processing and problem-solving through experiential learning</td>
<td>Partial randomization: nonaggressive children randomly placed in groups of 4; 1-2 aggressive children randomly selected, added to groups</td>
<td></td>
</tr>
<tr>
<td>Warden et al.</td>
<td>United Kingdom</td>
<td>120 students</td>
<td>60 students (10 from each of the 2 primary classes in each of 6 schools)</td>
<td>60 students (10 from each of the 2 primary classes in each of 6 schools)</td>
<td>Pretest, posttest, randomized, controlled design</td>
<td>Kidscape Children’s Safety Training Program curriculum implemented over 4 wk</td>
<td>General safety rules applied with specific stories and role plays</td>
<td>Kids randomly selected within school groups, but 3 intervention schools selected the program</td>
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</tbody>
</table>

(continued)
Table 1. Study Characteristics (cont)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Alsaker and Valkanover, 2001</td>
<td>Switzerland</td>
<td>319 students in 16 kindergartens</td>
<td>8 kindergartens (n = 152)</td>
<td>Multidisciplinary or &quot;Whole-School&quot; Intervention</td>
<td>Kindergarten (aged 5-7 y)</td>
<td>Whole-school approach</td>
<td>Teacher training on whole-school approach with emphasis on rule and social-cognitive skills</td>
<td>By school: interested teachers selected for the intervention</td>
<td></td>
</tr>
<tr>
<td>Meltzer et al, 2001</td>
<td>United States</td>
<td>6389 students in 39 schools</td>
<td>Year 1: 28 schools; year 2: 21 schools</td>
<td>Pretest, posttest, control group design</td>
<td>Grades 4-6 (aged 9-11 y)</td>
<td>Whole-school approach</td>
<td>Interventions at level of school, curriculum, individual students; materials for school staff and involved community members</td>
<td>Districts matched by demographics; one district in each pair assigned to first year of intervention</td>
<td></td>
</tr>
<tr>
<td>Menesini et al, 2003</td>
<td>Italy</td>
<td>293 students in 2 middle schools</td>
<td>5 classes (n = 115)</td>
<td>Pretest, posttest, control group design</td>
<td>Grades 6-8</td>
<td>Whole-school approach</td>
<td>&quot;Befriending&quot; intervention</td>
<td>Assigned by class based on teacher’s willingness to participate</td>
<td></td>
</tr>
<tr>
<td>Metzler et al, 2001</td>
<td>United States</td>
<td>1403 students in 3 middle schools</td>
<td>2 schools (n = 758)</td>
<td>Pretest, posttest, control group design</td>
<td>Grades 6-8</td>
<td>Whole-school approach</td>
<td>Comprehensive behavior management program</td>
<td>Assigned by school</td>
<td></td>
</tr>
<tr>
<td>Mitchell et al, 2000</td>
<td>Australia</td>
<td>38 schools, primary and secondary</td>
<td>18 schools</td>
<td>Pretest, posttest, controlled design</td>
<td>Primary and secondary</td>
<td>Health-promoting schools intervention</td>
<td>School staff workshop, resource kit for school, network meetings for staff, financial support for school-based activities</td>
<td>Randomized by school</td>
<td></td>
</tr>
<tr>
<td>Ohues, 1994</td>
<td>Norway</td>
<td>2500 students in 42 primary and secondary schools</td>
<td>NA</td>
<td>Quasi-experimental with time-lagged age cohort</td>
<td>Primary and secondary</td>
<td>Whole-school approach</td>
<td>Teacher training, parent advice, videotaped curriculum, feedback for staff; emphasis on rules and sanctions</td>
<td>Time-lagged cohorts, not randomized</td>
<td></td>
</tr>
<tr>
<td>Rahey and Craig, 2002</td>
<td>Canada</td>
<td>491 students in 2 primary schools</td>
<td>1 school (n = 251)</td>
<td>Pretest, posttest, control group design</td>
<td>Grades 1-8</td>
<td>Whole-school program implemented over 12 wk</td>
<td>Curriculum, peer mediation program, groups for bullies and victims, teacher training; emphasis on conflict resolution, empathy, and listening skills</td>
<td>Assigned by school</td>
<td></td>
</tr>
<tr>
<td>Roland, 2000</td>
<td>Norway</td>
<td>7000 students in 37 primary and secondary schools</td>
<td>NA</td>
<td>Age-cohort design with time-lagged comparisons</td>
<td>Primary and secondary students</td>
<td>Whole-school approach</td>
<td>Teacher training, curriculum, emphasis on rules and sanctions</td>
<td>Time-lagged cohorts, not randomized</td>
<td></td>
</tr>
<tr>
<td>Sanchez et al, 2001</td>
<td>United States</td>
<td>747 students at 12 schools</td>
<td>6 schools (n = 378-380)</td>
<td>Pretest, posttest, randomized, matched pairs, controlled design</td>
<td>Grade 5</td>
<td>Whole-school approach</td>
<td>&quot;Expect Respect Model&quot; with classroom curriculum, staff training, policy development, and support services for individuals</td>
<td>6 pairs of matched schools, 1 school in each pair randomly assigned to the intervention</td>
<td></td>
</tr>
<tr>
<td>Twemlow et al, 2001</td>
<td>United States</td>
<td>110 students at 2 schools</td>
<td>1 school (n = 64)</td>
<td>Pretest, posttest, control group design</td>
<td>Primary school</td>
<td>Whole-school approach</td>
<td>Social systems/ psychodynamic intervention, including &quot;zero tolerance&quot;, discipline plan, physical education plan, and mentoring program</td>
<td>Assigned by school; method not given</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Of the 4 studies that did show less bullying after a curriculum intervention, 3 also showed more bullying or victimization in certain populations or with certain measurement tools. The study by Baldry and Farrington showed a decrease in self-reported victimization among older children (P < .05), but younger children actually reported more victimization (P < .01), and there were no significant differences in either victimization or bullying overall. Teglasi and Rothman found that teachers reported decreased antisocial behavior for children not identified as aggressive and increased aggressive behavior for the children previously identified as aggressive (P < .01 for both). The individual self-reports for aggression did not reveal any significant effects from the intervention. A study by Rican et al. found significant decreases in peer nominations of bullying (P = .02) and victims (P = .03) using unspecified “broad criteria,” but no change in victimization using “narrower criteria.” Only 1 curriculum intervention showed unequivocal improvements, and this was in an indirect outcome. The randomized trial of Elliott and Faupel of a group problem-solving curriculum resulted in increased generation of responses to a simulated bullying situation by the intervention group.

### Whole-School Multidisciplinary Interventions

Ten studies evaluated interventions using a multidisciplinary whole-school approach that included some combination of schoolwide rules and sanctions, teacher training, classroom curriculum, conflict resolution training, and individual counseling. Table 1 describes the components of each of these multidisciplinary studies in detail. The whole-school studies involved more subjects than the curriculum interventions, with up to 42 schools in a single study. Only 2 of the studies evaluated interventions among secondary school students, and the rest looked at primary schools. In contrast to the curriculum studies, only 2 of the whole-school studies incorporated randomization in their study design. Two of the studies used a quasi-experimental design with time-lagged age cohorts.

Two studies, both evaluating the seminal Olweus Bullying Prevention Program, revealed disparate results. The Olweus Bullying Prevention Program pioneered the whole-school approach to preventing and reducing bullying with an intervention program in Bergen, Norway, that included training for school personnel, materials for

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### Table 1. Study Characteristics (cont)

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<th>Method of Group Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeRosier et al.</td>
<td>United States</td>
<td>415 students with significant peer relationship difficulties</td>
<td>n = 217</td>
<td>Social and Behavioral Skills Group Training Interventions</td>
<td>n = 198</td>
<td>Grade 3</td>
<td>Pretest, posttest, randomized, controlled design</td>
<td>“S.S. GRIN” social skills group training</td>
<td>Random assignment by student</td>
</tr>
<tr>
<td>Fast et al.</td>
<td>United States</td>
<td>127 students</td>
<td>n = 105</td>
<td></td>
<td></td>
<td></td>
<td>Peer mediator group training</td>
<td>Peer mediation to improve individual behavior and affect social norms</td>
<td>Selected based on aggression level</td>
</tr>
<tr>
<td>Meyer and Lesch</td>
<td>South Africa</td>
<td>54 students at 3 schools, all males identified as bullies</td>
<td>n = 18</td>
<td>Interventional behavioral skills group (n = 18) and supportive play group (n = 18)</td>
<td>Grades 6-7</td>
<td>Behavioral skills group</td>
<td>Behavioral skills group</td>
<td>Social interactional model for behavioral skills development</td>
<td>Matched by aggression level, then randomly allocated to experimental condition</td>
</tr>
<tr>
<td>Tierney and Dowd</td>
<td>United Kingdom</td>
<td>30 students with emotional and behavioral concerns, including victimization</td>
<td>n = 15</td>
<td></td>
<td></td>
<td></td>
<td>Social skills training group (6 sessions)</td>
<td></td>
<td>Students selected if “causing concern”; matched to control</td>
</tr>
</tbody>
</table>

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**Abbreviation:** NA, data not applicable.

*For multidisciplinary or whole-school interventions, components are given.
<table>
<thead>
<tr>
<th>Source</th>
<th>Intervention Type</th>
<th>Direct Outcomes: Bullying, Aggressive Behavior, Violence, and School Responses to Violence</th>
<th>Indirect Outcomes: School Achievement, Perceived School Safety, Self-esteem, and Knowledge or Attitudes About Bullying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldry and Farrington</td>
<td>Curriculum</td>
<td>No difference in victimization or bullying overall (P = .08); less victimization in older students (aged 14-16 y) (t = 2.19, P &lt; .05); worse victimization for younger students (t = 2.73, P &lt; .01)</td>
<td>Not measured</td>
</tr>
<tr>
<td>Boulton and Fleming</td>
<td>Curriculum</td>
<td>No significant change in bullying others</td>
<td>No significant difference in attitudes toward bullying; no significant difference in attitudes toward bullying; no significant differences between intervention and control group (P &lt; .05)</td>
</tr>
<tr>
<td>Alsaker and Valkanover</td>
<td>Multidisciplinary</td>
<td>No changes in teacher or child reports of bullying behavior; decreased victimization on teacher and child reports; teacher reports showed reduction in physical bullying and indirect bullying through isolation, but an increase in verbal bullying;</td>
<td>No significant changes in attitudes toward bullying; responses of the intervention group were rated significantly more positive than those of the untrained control group; responses of older children were rated significantly more positive than those of younger children on all 3 testings (P &lt; .001)</td>
</tr>
<tr>
<td>Warden et al.</td>
<td>Curriculum</td>
<td>Not measured</td>
<td>No improvement in responses to bullying situation for either 6- or 10-year-old children; for other safety situations, responses of the intervention group were rated significantly more positive than those of the untrained control group; responses of older children were rated significantly more positive than those of younger children on all 3 testings (P &lt; .001)</td>
</tr>
<tr>
<td>Elliott and Faupel</td>
<td>Curriculum</td>
<td>Improved social skills; MANCOVA for outcomes of empathy, prosocial behaviors, global self-esteem, and parental involvement revealed no significant multivariate effect between groups; nonparametric analysis of social skills development, talking to friends about bullying, talking to parents about bullying, and program success revealed no improvement, except for increased awareness of school rules regarding bullying</td>
<td>Improved social skills; MANCOVA for outcomes of empathy, prosocial behaviors, global self-esteem, and parental involvement revealed no significant multivariate effect between groups; nonparametric analysis of social skills development, talking to friends about bullying, talking to parents about bullying, and program success revealed no improvement, except for increased awareness of school rules regarding bullying</td>
</tr>
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(continued)
### Table 2. Study Outcomes by Intervention Type (cont)

<table>
<thead>
<tr>
<th>Source</th>
<th>Intervention Type</th>
<th>Direct Outcomes: Bullying, Aggressive Behavior, Violence, and School Responses to Violence</th>
<th>Indirect Outcomes: School Achievement, Perceived School Safety, Self-esteem, and Knowledge or Attitudes About Bullying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menesini et al. 2003</td>
<td>Multidisciplinary</td>
<td>Bullying remained stable for the intervention group (although it increased for the control group); no change in victim or defendant scales; levels of bullying or probullying behaviors in the intervention group remained stable, whereas probullying scales increased in the control group (P &lt; .05)</td>
<td>No decrease in provictim attitudes as seen in the control group</td>
</tr>
<tr>
<td>Metzler et al. 2001</td>
<td>Multidisciplinary</td>
<td>Improved discipline referrals for seventh graders (P = .04); improved harassment among males (P = .02); no changes for sixth and eighth graders; no change in physical or verbal attacks</td>
<td>Improved perception of safety for sixth graders (59.3% to 73% at the first year to 72.2% at the second year) and seventh graders (56.4%-60.2% at the first year to 69% at the second year); no change for eighth graders, nor in the comparison school</td>
</tr>
<tr>
<td>Mitchell et al. 2000</td>
<td>Multidisciplinary</td>
<td>Not measured</td>
<td>Improved awareness of health-promoting school concept with significantly greater proportion of staff hearing of health-promoting school concept (P = .04), reading relevant material (P &lt; .001), and attending in-service training on health-promoting schools (P &lt; .001); no significant changes in health-related policies or practices occurred in the intervention group, including those related to bullying</td>
</tr>
<tr>
<td>Owusu 1994</td>
<td>Multidisciplinary</td>
<td>Decreased level of bully-victim problems, peer reports of bullying, and general antisocial behavior; for outcomes of bullying others, boys averaged a 16% reduction and girls averaged a 30% reduction after 8 mo; after 20 mo, reductions averaged 35% for boys and 74% for girls; reductions in victimization averaged 48% for boys after 8 mo and 58% for girls; reductions increased to 52% for boys and 62% for girls after 20 mo</td>
<td>Improved, with better social climate and satisfaction with the school</td>
</tr>
<tr>
<td>Rehe and Crag 2002</td>
<td>Multidisciplinary</td>
<td>No significant decrease in bullying; decreased level of victimization (P &lt; .05) and peer isolation (P &lt; .01) for older students (grades 5-8); increased level of victimization (P &lt; .05) and exclusion (P &lt; .01) for younger students (grades 1-4)</td>
<td>Improved perception of school safety (P &lt; .01) and being well liked (P &lt; .001) for older students (grades 3-8); worsened perception of school safety (P &lt; .01) and of being well liked (P &lt; .01) for younger students (grades 1-2)</td>
</tr>
<tr>
<td>Roland 2000</td>
<td>Multidisciplinary</td>
<td>Improved bullying and fighting; at posttest, mentored students more likely to report seeing bullying (P &lt; .001), expressed greater readiness to intervene personally (P &lt; .05); intervention students were less likely to tell an adult about bullying (P &lt; .05)</td>
<td>Not measured</td>
</tr>
<tr>
<td>Sanchez et al. 2001</td>
<td>Multidisciplinary</td>
<td>Not measured</td>
<td>Improved academic achievement scores (from 40th to 58th percentile for third and fifth graders), whereas the control school did not change over the same period</td>
</tr>
<tr>
<td>Tveralow et al. 2001</td>
<td>Multidisciplinary</td>
<td>Improved discipline referrals and suspension rates; discipline referrals decreased from 74 for physical aggressiveness in 1994-1995 to 34 after the first year of the intervention, and stabilized at 36 during the second year of the intervention; referrals for other infractions went from 162 to 97 after the first year, and to 93 after the second year; suspension rates were significantly lower in the intervention group, at about 9% after the first year (P &lt; .02) and 4% after the second year (P &lt; .004) (the control school suspension rate did not vary significantly; ranging between 14% and 19%)</td>
<td>Improved peer liking (P &lt; .05); improved self-esteem (P &lt; .05); improved self-efficacy (P &lt; .05); improved social anxiety (P &lt; .05) for all children in the treatment group; significant multivariate main effect for treatment condition (P &lt; .05)</td>
</tr>
<tr>
<td>DeRosier 2004</td>
<td>Social skills group</td>
<td>Significantly improved aggression on peer report (P &lt; .001); improved bullying behavior on self-report (P &lt; .05); fewer antisocial affiliations on self-report (P &lt; .05) only for children who were more aggressive at baseline</td>
<td>Improved peer liking (P &lt; .05); improved self-esteem (P &lt; .05); improved self-efficacy (P &lt; .05); improved social anxiety (P &lt; .05) for all children in the treatment group; significant multivariate main effect for treatment condition (P &lt; .05)</td>
</tr>
<tr>
<td>Fast et al. 2003</td>
<td>Social skills group</td>
<td>No significant change in discipline referrals, aggressive behavior, or impulsivity; improved scores on teachers’ Behavior Rating Index for Children for highly aggressive students, with a difference in means of 9.06 (P &lt; .05)</td>
<td>Improved self-concept for highly aggressive students by an average of 11.33 points (P &lt; .05), while the remainder of the class had a declining self-concept (P &lt; .05)</td>
</tr>
<tr>
<td>Meyer and Leach 2000</td>
<td>Social skills group</td>
<td>No improvement in bullying on peer reports or self-reports</td>
<td>Not measured</td>
</tr>
<tr>
<td>Terney and David 2000</td>
<td>Social skills group</td>
<td>Improved interactions with peers by teacher report; no clear change in victimization on self-report</td>
<td>Decreased level of teacher worry; significant progress in areas of friendships and behavior on teacher reports, but no significant change in level of happiness or confidence</td>
</tr>
<tr>
<td>Bagley and Pritchard 1998</td>
<td>Increased social workers by 2.5 workers</td>
<td>Improved bullying in primary school and no improvement in secondary school; improved theft, truancy, fighting, and drug use in primary and secondary schools (P &lt; .05); primary project school’s self-reports of bullying incidents went from 28% to 22%, a 21% decrease, with P &lt; .05 (control school rates went from 28% to 30%, a 7% increase); secondary intervention school’s self-reported rates of bully or bullied involvement went from 10% to 12% (a 20% increase), while control school went from 14% to 13% (a 7% decrease)</td>
<td>Not measured</td>
</tr>
<tr>
<td>King et al. 2002</td>
<td>Mentoring program</td>
<td>Improved bullying and fighting; at posttest, mentored students were significantly less likely to have bullied a peer in the past 30 d (OR = 3.47, P &lt; .002) and to have physically fought with a peer in the past 30 d (OR = 3.48, P &lt; .001) than at pretest (results not compared with the control group)</td>
<td>Less depression (t0 = 2.97, P = .006); significant improvements in mentored students’ overall self-esteem, school connectedness, peer connectedness, and family connectedness; compared with control group children, the mentoring group achieved significantly higher school connectedness and family connectedness, but self-esteem and peer connectedness did not differ significantly; of the 28 students in the program, 20 (71%) showed academic letter-grade improvements from the first quarter</td>
</tr>
</tbody>
</table>

Abbreviation: MANCOVA, multiple analysis of covariance.
parents, a videotaped classroom curriculum, and evaluation through the bullying questionnaire developed by Olweus. By using unspecified composite measures involving student questionnaires and teacher ratings, the follow-up evaluation found decreased bullying, decreased victimization, decreased antisocial behavior, and improved school climate after the intervention. Evaluation of the nationwide Olweus Bullying Prevention Program in Rogaland, Norway, revealed strikingly different results. Roland reported increased victimization and social exclusion for boys, and increased bullying for boys and girls based on student self-reports. Unlike in Olweus’ protocol, the schools in this sample did not interact with the researchers during the intervention. The schools’ degree of involvement in the program was directly related to positive effects from the antibullying program, particularly for girls. Although the evaluations apparently involved the same nationwide campaign and evaluation tools, Olweus states that they “were completely different in terms of planning, data quality, times of measurement, and contact with the schools.”

Since the publication of the study by Olweus, interventions targeting the whole school have been implemented in several other countries. Overall, these whole-school studies had positive effects on bullying. Of the additional 8 studies, 7 revealed positive outcomes. Five of these studies reported decreases in bullying or victimization. Among kindergarteners, Alsaker and Valkanover found decreased victimization on teacher and student reports, although there was no significant change in bullying on either student nominations or teacher ratings. An Italian schoolwide peer support intervention prevented some of the increased negative behaviors and attitudes reported in the control group on student reports. Examining administrative office records, Metzler et al found decreased discipline referrals (P=.04) and harassment (P=.02) in select populations after 2 years of implementing a schoolwide behavioral management program. However, student reports of physical and verbal attacks did not significantly change. Twemlow et al found decreased disciplinary referral rates, decreased suspension rates, and increased achievement test scores after a schoolwide intervention. In their evaluation of a 12-week schoolwide program, Rayhey and Craig found mixed results. On peer and self-reports, the students in grades 5 through 8 had decreased victimization (P<.05) and decreased peer isolation (P<.01) compared with the controls. In contrast, the younger students reported increased levels of victimization (P<.05) and increased exclusion (P<.01). In addition, neither student nor teacher reports showed a significant decrease in bullying for any age group.

Two of the studies that revealed improvements after a multidisciplinary intervention only measured outcomes indirectly related to bullying. Some of the indirect outcomes were positively affected, but others remained unchanged. The evaluation by Sanchez et al indicated no significant increase in knowledge of bullying, but the intervention students were more likely to report seeing bullying and to express readiness to intervene personally (P<.05 for both). A randomized controlled trial evaluating an intervention to develop “health-promoting schools” revealed an increased awareness of health-related policies and practices among school administrators after the intervention (P=.04). No significant changes in health-related policies or practices occurred in the intervention group, including those related to bullying.

The other evaluation of a whole-school intervention that we identified revealed no significant decreases in bullying. Melton et al implemented an intervention based on the Olweus Bullying Prevention Program in 6 rural school districts in South Carolina. After 2 years, they found no significant differences in student self-reports of bullying, victimization, general antisocial behaviors, or attitudes toward bullying between the intervention and control students.

**SOCIAL AND BEHAVIORAL SKILLS GROUP TRAINING INTERVENTIONS**

Four studies looked at targeted interventions involving social and behavioral skills groups for children involved in bullying. Two of these interventions specifically targeted children with high levels of aggression, while the other 2 targeted children who were themselves victims. Of the 4 studies, 3 focused on older students, in sixth through eighth grades, while the fourth looked at third-grade students. The most positive outcomes occurred for the youngest students. DeRosier tested the efficacy of social skills group training for third-grade students with peer relationship difficulties in 11 public primary schools in North Carolina. The intervention resulted in decreased aggression on peer reports (P<.001), decreased bullying on self-reports (P<.05), and fewer antisocial affiliations on self-reports (P<.05) for the previously aggressive children. This was the only social skills training intervention that showed clear reductions in bullying from the intervention.

The other social skills group interventions, all of which involved older children, did not result in clear changes. Meyer and Lesch evaluated a behavioral skills modification program for boys identified as bullies in South Africa. This intervention did not produce any statistically significant decrease in bullying behaviors by peer report or self-report. Fast et al examined whether group training in peer mediation for aggressive seventh graders would reduce their level of aggression. The aggressive students in the intervention group had a significant decrease in their problem behaviors as measured by their teachers (P<.05); however, no significant changes in disciplinary referrals for aggressive behavior or impulsivity scores occurred. Tierney and Dowd used social skills group training for eighth-grade girls with emotional and behavioral concerns. Although the teacher data indicated statistically significant progress in the areas of friendships, behavior, interactions with peers, and level of teacher concern, the data and analysis were not given within the article. Data from the pupil questionnaires were not analyzed, but in student self-reports, 8 reported no difference in victimization and 7 reported improvement.

**OTHER INTERVENTIONS**

A single study, done by Bagley and Pritchard, examined the effects of an increase in the number of school
social workers focused on problem behaviors, including bullying. Compared with matched control schools, they found a significant decrease in self-reported bullying within the primary school ($P<.05$), but worsening bullying in the secondary school. For self-reports of theft, truancy, fighting, and drug use, the primary and secondary intervention schools had significant improvements ($P<.05$). A study by King et al$^{57}$ investigated the effects of a mentoring program for “at-risk” children. The mentored students were significantly less likely than their non-mentored age-matched peers to report bullying ($P<.002$), physically fighting ($P<.001$), and feeling depressed ($P=.006$) in the past 30 days.

**COMMENT**

As governments, schools, and educators invest increasing amounts of money and time into antibullying interventions, the findings of this review provide evidence for how to best achieve the desired outcome of decreased bullying within schools. By systematically gathering and compiling the growing number of studies evaluating these interventions, it becomes clear that some of the antibullying interventions actually decrease bullying, while others have no effect or even seem to increase the amount of bullying. Grouping the studies by the type of intervention seems to offer the most insight into what leads to success.

The curriculum interventions were generally designed to promote an antibullying attitude within the classroom and to help children develop prosocial conflict resolution skills. Most of these interventions drew on the social cognitive principles of behavioral change$^{52,53}$ with a focus on changing students’ attitudes, altering group norms, and increasing self-efficacy. Curriculum changes are often attractive because they usually require a smaller commitment of resources, personnel, and effort. Nevertheless, the interventions that consisted only of classroom-level curriculum seldom improved bullying. The basis in social, cognitive, behavioral change may explain part of the problem; previous work$^{54,55}$ suggests that younger children benefit less from these techniques. However, the failure of classroom-level interventions for older and younger students points to the systemic nature of bullying and supports the theory of bullying as a sociocultural phenomenon. If bullying is a systemic group process involving bullies, victims, peers, adults, parents, school environments, and home environments, an intervention on only 1 level is unlikely to have a significant consistent impact. Furthermore, if bullying is, as some propose, a sociocultural phenomenon springing from the existence of specified social groups with different levels of power,$^{56}$ then curriculum aimed at altering the attitudes and behaviors of only a small subset of those groups is unlikely to have an effect.

Similarly, the targeted interventions providing training in social skills did not clearly improve bullying or victimization.$^{55,57}$ The failure of these interventions, also based largely on social, cognitive, behavioral changes, points again to the inability of a single-level intervention to combat bullying effectively. Interestingly, the older children had worse outcomes from the social skills training.

The whole-school interventions, which included multiple disciplines and complementary components directed at different levels of the school organization, more often reduced victimization and bullying than the interventions that only included classroom-level curricula or social skills groups. The whole-school interventions address bullying as a systemic problem meriting a systemic solution. They seek to alter the school’s entire environment and to involve individuals, peer groups, classrooms, teachers, and administration. The success of the whole-school interventions suggests that bullying does, indeed, spring from factors external to individual children’s psychosocial problems, including a complex process of social interactions. An evaluation of whole-school approaches by Smith et al$^{58}$ in 2004 suggests that these interventions may “reflect a reasonable rate of return on the investment inherent in low-cost, nonstigmatizing primary prevention programs.” Our review offers further support for using whole-school interventions to reduce or prevent bullying.

Despite the evidence pointing toward the value of whole-school approaches, significant barriers may still limit their effectiveness. The implementation of the intervention can vary significantly, and this clearly alters the results. The original antibullying whole-school approach studied in Bergen by Olweus$^{51}$ and the evaluation of the same program in Rogaland by Roland$^{52,53}$ produced the most strikingly disparate results. The contrast may have been the result of decreased school staff participation at the Rogaland schools.$^{57}$ In addition, the Olweus program does not include detailed instructions for replicating an identical program in another school setting. Difficulty in replicating this program may contribute to the lack of success when used in other settings, such as South Carolina.$^{28}$ Although the adaptation of the interventions in different settings may create more culturally appropriate interventions, these modifications may produce some of the variance in success. Unfortunately, the specific components of a given intervention are generally not described sufficiently to enable faithful replication. The specific school environment could also significantly impact effectiveness. The small class size, excellent teacher training, and tradition of social welfare intervention in some settings could enable better effects. The suggestion that whole-school interventions may not work as well for younger children, seen in 2 of the studies,$^{25,40}$ also merits consideration. This, albeit limited, evidence may support a developmental theory, whereby bullying begins in early childhood as individuals assert themselves to gain dominance and then gradually evolves as children use less socially reprehensible ways to dominate others.$^{39}$ Schoolwide rules and changes in
the school's overall responses to bullying may not be as effective in the younger population before they follow their natural developmental progression into conformity with social norms.

There are several limitations to this systematic review that warrant consideration. We only included studies in the English language. Although we may have, therefore, overlooked some relevant studies, we located few non–English-language studies that required exclusion. Some of the included studies did not have ideal methodological strength; however, many of the studies were reasonably well done and offered important counterbalances to the findings. The study results may be overestimated because, in many cases, schools or districts were randomized to treatment conditions, but the students were evaluated as the unit of analysis. The unit of analysis problem could result in a higher type I error if intraclass correlation is not taken into account.69 Even so, many of the studies that did this still found no treatment effects. The use of variable outcome measures may further limit the ability to measure accurately the effects of these interventions. The most common outcome measures were self-reports of victimization and bullying that may not wholly correspond with information obtained from peers or teachers or from observations.60 Still, self-reports are the standard measure used in most studies evaluating behavioral interventions. Despite the diversity of the evidence reviewed, the studies were primarily performed in Europe and the United States, which may limit the generalizability of the conclusions. In addition, several interventions with positive results, including interventions using mentoring, increased social workers by 2.5 workers, and social skills groups for younger children, were only studied on a single occasion, thus limiting their generalizability. Finally, while we attempted to separate out the most effective components or intervention strategies, many of the studies involved numerous complementary components that were not evaluated individually.

In conclusion, fairly consistent evidence suggests that children's bullying behavior can be significantly reduced by well-planned interventions. The chance of success is greater if the intervention incorporates a whole-school approach involving multiple disciplines and the whole school community. The school staff’s commitment to implementing the intervention also may play a crucial role in its success. The use of curriculum or targeted social skills groups alone less often results in any decrease in bullying and sometimes worsens bullying and victimization. Caution should be exercised in supposing that antibullying interventions invariably produce the intended results. This review reveals that not all programs have proved effective. Most reductions in bullying tend to be relatively small and related more to the proportion of children being victimized rather than the proportion engaging in bullying. Additional research to evaluate bullying behaviors and antibullying interventions is clearly needed.

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Author Contributions: Dr Vreeman had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Vreeman and Carroll. Acquisition of data: Vreeman. Analysis and interpretation of data: Vreeman and Carroll. Drafting of the manuscript: Vreeman. Critical revision of the manuscript for important intellectual content: Vreeman and Carroll. Statistical analysis: Vreeman and Carroll. Administrative, technical, and material support: Vreeman and Carroll. Study supervision: Vreeman and Carroll.

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