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General Article

A Critical Review of Anti-Bullying Programs in North American Elementary Schools

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ABSTRACT

BACKGROUND: Bullying behavior is a concern among school-aged youth and anti-bullying programs have been implemented in schools throughout North America. Most anti-bullying programs are delivered to adolescent youth because antisocial-aggressive behaviors are typically associated with this developmental stage. This paper is a review of empirically evaluated school-based bullying prevention and intervention programs in North American elementary schools.

METHODS: We conducted a systematic, critical review of bullying prevention programming. Data were analyzed to determine the study method, intervention components, measurement of bullying, aggression, or peer victimization, outcomes measured, and results.

RESULTS: Our review resulted in the identification of 10 interventions aimed at youth in grades K-6 enrolled in North American elementary schools. Effective intervention strategies targeted a variety of bullying behaviors using diverse mechanisms and included a school—and community-wide approach. Direct outcomes of the reviewed evaluations were centered on bullying, aggression, and victimization. Indirect outcomes of review evaluations included strategies for bystanders, school achievement, perceived school safety, and knowledge or attitudes about bullying.

CONCLUSIONS: Recommendations for promising practices in effective bullying intervention programming are offered. The review concludes with suggestions for supporting school health staff and in-service teachers drawn from the body of research, and offers direction for future study.

Keywords: bullying; anti-bullying programs; aggression; intervention; evaluation; prevention; elementary school.

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Bullying behavior is a risk factor for many adolescent youth in North America.[1-3] According to the US Centers for Disease Control and Prevention (CDC), "... nearly 30% of American adolescents reported at least moderate bullying experiences as the bully, victim, or both."[4] Moreover, bullying has been defined as a sub-category of aggression[2] depicted as intentional, repetitive, and imposing a power imbalance[2,3,5] between students who bully and students who are victimized. The CDC also includes "... any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners."[6] Bullying behaviors can be classified as direct and overt or indirect and covert.[3,5,7-9] Direct/overt aggression includes physical and verbal aggression.[3,10] Physical aggression is defined as shoving, hitting, punching, kicking, and pushing.[2,11,12] Verbal aggression includes harmful taunting and teasing.[2] Whereas, indirect/covert forms of aggression (psychological, relational, and reputational aggression) include exclusion, ridicule, and name calling with a specific goal of manipulating social networks.[1,3,8,9] Indirect/covert forms of aggression have been documented to have more long-term harms on individuals who are targeted.[13] Indirect/covert forms of aggression are most prevalent in North American educational settings and researchers overwhelmingly agree that these are more difficult to address.[13,14] Despite the prevalence of indirect/covert forms of aggression in North American education settings, these forms of aggres-

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sion have not been as prevalent in elementary schools. Thus, direct and overt forms of aggression are more likely observed in North American elementary schools.

Long-term outcomes of bullying perpetration increase the likelihood of experiencing depression, delinquency, and criminality as adults, as well as intimate partner violence perpetration and possible unemployment.[13] These deleterious long-term effects are alarming for school health researchers, and rightly so. Theories associated with bullying intervention programs indicate that peer victimization typically begins during preadolescence, peaks during adolescence, and then diminishes through adulthood,[4] which suggests that taking preventative action prior to the advent and acceleration of peer victimization can have a significant effect in reducing bullying behaviors. Evaluations of bullying prevention programs and meta-analytic reviews of program evaluations[15-17] have contributed a wealth of knowledge about youth aggression and over the past 10 years, educational researchers have emphasized a more social-ecological approach to understanding bullying.[3,14,18,19] Although anti-bullying programs have largely been delivered to adolescent populations, a growing number of preventative interventions have been advanced for use with children in elementary schools. Yet, little is known about the effectiveness of school-based programs for elementary school children.[20] Thus, in this paper, we present a review of empirically evaluated school-based bullying prevention and intervention programs in North American elementary schools.

METHODS

This section describes elements of the critical and systematic literature review process, including the method for selecting and categorizing papers included in this review. We conducted a key word search in 8 health, psychology and educational electronic bibliographic databases: PsycINFO, EMBASE, Educational Resources Information Center, the Physical Education Index, MEDLINE (January 1, 1966-February 13, 2013), JAMA, Dissertation Abstracts, and the SAGE full-text collection. The following keyword terms were selected to capture papers for review: *bullying*, *elementary school, intervention*, *prevention*, *physical aggression*, and *verbal aggression*. After screening approximately 1000 titles and abstracts, 46 papers were identified for review on the following initial inclusion criteria:

- Intervention or prevention programs were school-based.
- Participants were elementary school aged (ie, grade levels K-6).
- Outcome variables clearly measured bullying or aggression toward peers, including physical or verbal aggression in a school setting.
- The evaluation was conducted in North America.

As the goal of our review was to identify evaluated school-based intervention programs to reduce bullying in elementary schools in North America, papers were immediately excluded if they did not include an evaluation of an intervention or prevention program intended to address bullying or the programs were not conducted in an elementary school. We chose to focus on the evaluation of intervention or prevention programs used in elementary schools to address bullying, as we identified a clear need to critically examine evaluated bullying intervention programs focused on elementary schools. Papers were also excluded if they exclusively describe the details of a program or components of program evaluation (eg, study method, intervention components, etc.) were either incomplete or not reported. In addition, we reviewed references used in the primary sources to identify papers that were not discovered during the initial search.

Nineteen papers met the initial review criteria and were analyzed to determine the study method, intervention components, measurement of bullying, aggression, or peer victimization, outcomes measured, and results. We focused on these components as they are important to critiquing the effectiveness of bullying intervention and prevention. Our review resulted in the identification of 10 intervention programs aimed at youth in grades K-6 enrolled in North American elementary schools. Direct outcomes of the reviewed evaluations were centered on bullying, aggression, and victimization. Indirect outcomes of reviewed evaluations included strategies for bystanders, school achievement, perceived school safety, and knowledge or attitudes about bullying. Duplicate publications or articles that reported identical interventions and outcomes measured over the same time period on the same population were excluded.

RESULTS

Our findings are presented in Tables 1-6 and are organized into 3 categories: (1) universal school-based only interventions; (2) universal school-based intervention with community-wide components; and (3) targeted interventions. These 3 categories emerged as a way of classifying the delivery method of the intervention program. The identified interventions are listed alphabetically, and chronologically for interventions with multiple evaluation studies. Descriptive Tables (1, 3, 5) describe the interventions identified through the review protocol.

Table 1 reports programming with a universal school-based only delivery system of the intervention. Although single or multiple levels of delivery

Table 1. **Descriptions of Universal School-Based Interventions for Bullying in Elementary Schools**

Intervention (evaluation citation)	Description	Grade(s)	Intervention length	Delivery/ components	Targeted behavior	Intervention focus	Theory/conceptual framework
I. Bully busters and bullying proofing your school[21]	20-Hour in-service staff professional development; school environment/student code of conduct: *BEE Character Program*; *Peace-Able Place Program* for conflict resolution.	First; fifth	8-9 months	In-service staff professional development; school-wide	Physical aggression; verbal aggression.	Bully; victim; bully-victim; school climate.	NR
II. Bully Proofing your School[12]	45-minutes weekly, teacher delivered lessons; handouts and homework; sexual harassment lesson was adapted for appropriateness.	fourth-fifth	11 weeks	Curriculum-based	Bullying	Bully; bystanders; victim; bully-victim; school-climate.	NR
Toner[22]	Five lessons taught sequentially with follow-up activities; handouts; classroom posters.	sixth	12 weeks	Curriculum-based; in-service staff professional development.	Bullying; verbal aggression.	Bully; victim; bully-victim; school climate.	NR
III. Dare to Care: bully proofing your school [23]	Three components: Teacher training; discipline policy; and curriculum; variety of activities: school assemblies, support groups, live theater, and workshops. No standardized set of procedures.	fourth-sixth	12 weeks	Curriculum-based; individual and group counseling; in-service staff professional development; policy development School-wide.	Physical aggression; psychological aggression; relational aggression; verbal aggression.	Bully; victim; bully-victim; school climate.	Garrity[24]
IV. Expect Respect[25]	Weekly lessons for students; 3 staff training sessions for all school administrators and teachers; develop a campus anti-bullying policy; parent education through info. Sessions and newsletters.	Fifth grade	12 weeks	Curriculum-based; parent education; policy development; in-service staff professional development; school-wide.	Bullying	Bully; victim; bully-victim; school climate.	Olweus
V. Gentle Warrior Program[26]	Nine (45 minutes) sessions during years 1 and 2 and 3 (45 minutes) sessions during year 3—martial arts training; role-play common bullying situations.	third-fifth grade	3 years	Curriculum-based; school-wide.	Bullying; physical aggression; relational aggression.	Bully; bystanders; victim; bully-victim; school climate.	Creating a Peaceful School Learning Environment (CAPSLE)
VI. Olweus Bullying Prevention Program[27]	Two day-long training sessions for all classroom teachers (continued staff meetings); classroom discussion about anti-bullying behavior; develop a campus anti-bullying policy; parent education through info. Sessions and newsletters to the community.	third-fifth grade	3 years	Community-based; curriculum-based; individual; policy development; in-service staff professional development; school-wide.	Bullying	Bully; victim; bully-victim; school climate.	Olweus

Table 1. **Continued**

Intervention (evaluation citation)	Description	Grade(s)	Intervention length	Delivery/ components	Targeted behavior	Intervention focus	Theory/conceptual framework
VII. Positive Action[28]	Classroom curriculum with over 140 (15 minutes) lessons per grade to be taught 4 days per week; initial and ongoing staff training (4 hours and 2 hours, respectively); teacher consult with intervention coordinator; family classes offered.	Third-fifth grade	3 years	Curriculum-based; in-service staff professional development; parent education; school-wide.	Physical aggression; relational aggression.	School climate	Theory of Triadic Influence; Multiple behavior Theories[29-31]
VIII. Steps to Respect[32]	Ten weeks of biweekly basic lessons and 8-10 literature based lessons; initial staff training and campus policy development; individual coaching for perpetrators and victims.	third-sixth grade	12 weeks	Curriculum-based; individual; in-service staff professional development; policy development; school-wide.	Bullying	Bully; victim; bully-victim; school climate.	Social-ecological theory
Low, Frey, and Brockman[33]	Ten weeks to develop skill and rule clarification and 2 weeks of literature based lessons (emphasized empathy); 2 days of staff development and campus policy development.	third-sixth grade	12 weeks	Curriculum-based (classroom level); in-service staff professional development; policy development; school-wide.	Bullying; relational aggression.	Bully; victim; bully-victim; school climate.	Social ecological and cognitive-behavioral theories.[32]
Low, Smith, Brown, Fernandez, Hanson, and Haggerty[34]	See Low et al.[33]			Curriculum-based (classroom level); in-service staff professional development; policy development; school-wide.	Bullying	Bully; victim; bully-victim; school climate.	Theory of change (socio-environmental-oriented).
IX. Youth Matters[35]	Ten session module during 4 semesters (English and Spanish translations available).	fourth grade	2 years	Curriculum-based; school-wide.	Relational aggression; verbal aggression.	Bully; victim; bully-victim; school climate.	Social development model[36]

Table 2. **Evaluation Design and Outcomes for Universal School-based Bullying Interventions**

Intervention (evaluation citation)	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/results
I. Bully busters and bullying proofing your school[21]	Pretest N = 541; posttest N = 510	Mean age: 7 (1st Grade); 11 (fifth Grade) 57% AA; 33% Caucasian—57% participated in F-RL; average class size = 22.	Pre-posttest (1 year) 1 School; 24 classrooms. Intervention group only.	Aggression scale.[37] $\alpha = .79$. Victimization Scale.[37] $\alpha = .72$.	ANOVA	K-2: 40% decrease in aggression; 19% decrease in victimization Grades 3-5: no significant changes in aggression; intervention effects of SR victimization: 23% decrease in victimization.	NR
II. Bully proofing your school[12]	Pretest N = 98; posttest N = 67	Age: 9-12 years old AA 86.9%, 8.2% White, 3.3% Hispanic, 1.6% NA; 66% participated in F-RL; average class size: 19.6; 38 boys.	Pre-posttest (5 month). 1 School; 5 classrooms (grades 4-5) (mid-sized, urban city). Intervention group only.	Hallford Questionnaire. $\alpha = .72$.	ANCOVA independent sample *t* tests; pairwise *t* tests	Frequency of bullying: NSD for independent sample *t* tests. ANCOVA no significant effects for the covariate, grade, sex. Attitudes toward bullying: SD by sex (girls reported higher anti-bullying attitudes than boys. SD by grade (fourth graders reported greater perceived power than fifth graders). Evaluation of Program: NSD found for sex. SD found for grade.	Overall increase in anti-bullying attitudes and perceived power. Fifth grade students rated the program less positively than fourth grader students.
Toner[22]	N = 149 (58E, 91C)	Age: 6 grade E: 50% White, 34% AA, 7% Hispanic, 9% Asian. C: 82% White, 7% AA, 2% Hispanic, 8% Asian. 50% boys and 96% attendance rate in both schools.	QED: (not randomly assigned between subject variables). Pre-posttest 2 × 2 mixed factorial design with 1 between subjects IV (E and C schools) and 1 within-subjects IV (pretest to posttest). Two suburban schools (1 E school—1 C school) in New Jersey.	Peer Interaction in Primary School (PIPS).[38] $\alpha = .90$. Colorado School Climate Survey.[39] $\alpha = .81$.	RQ: 1 2-way repeated measure mixed factorial ANOVA.	E school: decrease in victimization (NSD). C school: SD bullying between pre-posttest. E school: NSD bullying between pre-posttest.	E and C schools report increase in school climate (NSD between time and group). Absenteeism in E school at posttest was slightly higher (4%) compared to C school (2%). C school were more likely to miss school because of fear (11%) when compared with E school (4%).

Table 2. **Continued**

Intervention (evaluation citation)	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/results
III. Dare to care: bully proofing your school[23]	N = 197	Age: Grades 4-6 Schools selected to match student characteristics (majority were Caucasian and middle class) 77 boys. School policies prohibit student demographic data collection.	Pre-posttest. Four schools (Catholic—comparison school and 2-year program school; public school—3-month and 1-year program school) in Calgary, Canada. Pretest (Time 1—March). Posttest (Time 2—3 months—June). Posttest (Time 3—1-year—June). Posttest (Time 4—2-years from Time 2—June).	Colorado School Climate Survey[40]. $\alpha = .81$. Provictim scale-short version.[41] $\alpha = .78$.	ANOVA with Bonferonni procedure paired sample *t* tests. MANOVA. Tukey's post hoc test.	ANOVA: 3-month students reported witnessing less bullying and did not change their attitudes toward victims. MANOVA: NSD among 3 program school on 4/5 variables.	Students in the 2-year program reported significantly more positive attitudes toward victims than students in the 30-month program school (Tukey's test).
IV. Expect Respect[25]	N = 740 (student) N = 671 (staff-fall) N = 451 (staff-spring)	Student: Age: Grade 5 16% AA, 25% Hispanic, 59% White/AI/Asian; 31.5% participated in F-RL. Staff: 90% women (pre-posttest); 72% teachers (pretest), 83% (posttest) 11% AA, 21% Hispanic, 65% White, 3.3% Other.	Pre-posttest. RCT: school-matched pair. Twelve schools (6E, 6C)—geographic region unknown.	Researcher-designed. No alpha reported	Chi-square student to staff responses.	Incidence of bullying at school: SD between student E (45% every day) and C schools (14% everyday). SD between staff E (58%) and C (31%) schools. NSD in identifying bullying behaviors.	Students and staff report most frequent bullying occurs outside of the classroom. NSD with increased knowledge about bullying.
V. Gentle Warrior Program[26]	N = 254	Age: Grades 3-5 (third N = 98, fourth N = 78, fifth N = 78). 59.8% White, 22.4% AA, 6.5% Hispanic, 1.2% NA 147 boys 61% identified as low-income.	RCT: 3-year cluster. Three schools in a large Midwest city (pop. 250 000).	Victimization of others (VO) scale of the bully-victim questionnaire.[42] $\alpha = .94$. Victimization of self (VS) scale of the Bully-Victim Questionnaire.[42] $\alpha = .92$. Agression is Legitimate (AL).[42] $\alpha = .88$.	ANOVA hierarchical multiple regression.	Boys in the treatment group reported lower frequency of aggression and greater frequency of helpful bystanding over time. NSD were found for girls.	AA reported greater aggression compared to other. Post-hoc Sheffé tests ($p < .05$) indicated that helpful bystander behavior was greatest among third graders and least among fifth graders.

Table 2. **Continued**

Intervention (evaluation citation)	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/results
VI. Olweus Bullying Prevention Program[27]	N = 821 (E1—208; E2—229; C1—225; C2—158)	Age: Grade 3-5 78.6% White, 6.3% Hispanic, 3.3% AA, 11.7% AI, Alaskan, Asian or Pacific Islander. 3.4% participated in F-RL. 1-year follow-up N = 801 (E1—208; E2—234; C1—209; C2—150).	Pre-post. Four suburban schools (2E, 2C) in the Hudson Valley Region (NY).	Olweus Bully/Victim Questionnaire. Bergen Questionnaire. Individual, $\alpha = .80$. School-wide, $\alpha = .90$.	ANOVA MANOVA	Girls reported victimization reduced significantly. Girls were more likely to exclude than engage in physical aggression. Post-hoc pairwise comparison revealed that boys were also more like to exclude than engage in physical aggression. Post-hoc pairwise comparison revealed that girls were more likely to spread rumors than engage in physical aggression.	Positive correlation (r = .30) perceiving adults as putting a stop toward bullying with perceiving students as putting a stop toward bullying.
VII. Positive Action[28]	N = 510 new students were added and followed.	Age: Grades 3-5 46% AA, 27% Hispanic, 7% White; 3% Asian, 17% mixed, 49% girls.	RCT: matched school. Fourteen schools (7E, 7C-split) in Chicago public schools.	Aggression scale.[37] $\alpha = .81$. Frequency of Delinquent Behavior Scale[43]. $\alpha = .76$.	Multilevel regression multilevel Poisson models.	Program schools report a 41% reduction in bullying.	NSD in reported rates problem behaviors between E and C schools.
VIII. Steps to Respect[32]	N = 399 (176E, 196 C)	Age: Grades 3-5 8.6% AA, 14.5% Asian American, 5.5% Hispanic, 1.4% NA, 70% European American 49.4% girls ESL 11.5%.	Longitudinal Pre-posttest. School matched within district. Students randomly selected at pretest for observation. Six schools from 2 districts in the Pacific Northwest.	Peer-preferred social behavior subscale of Walker McConnell Scale of Social Competence and School Adjustment elementary version[44] $\alpha = .85$-$.89$. School experience survey.[45] $\alpha = .86$-$.88$.	Three-level mixed hierarchical models nested time point (fixed effect, Level 1) within individual student (random effect, Level 2).	Consistent reductions in problem behavior were reported Reductions strengthened with a second year of implementation	Changes observed in destructive bystander behavior were so substantial that the behavior almost disappeared.

Table 2. **Continued**

Intervention (evaluation citation)	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/results
Low, Frey, and Brockman[33]		N = 1126 (610E, 516C) Age: Grades 3-6. 9% AA, 12.7% Asian, 7% Hispanic, 1.3% NA, 70% European American 50.7% boys NSD in ESL. 6 month follow-up N = 544 N = 12 Grade 3-4/N = 10 Grade 5-6 randomly selected to be observed on playground. N = 73 (36E, 36C) teachers 84.9% female.	Pre-post. RCT: individual and school. Six suburban schools from 2 districts.	School Experience Survey.[45] α = .76-.80. Beliefs endorsing retaliation α = .86-.88.	Hierarchical mixed models: Individual students (level 1) nested within classrooms (level 2). Standardized mean differences. Retention analyses.	Variations between classrooms are more closely linked to victimization than variations between schools. Retention rates (92.4%) did not differ by group. E students show SD (declines) to C students. Approximately 234 fewer instances of gossip after 1-year of implementation.	Over the school year, girls were more likely than boys to be involved as gossips and as targets of gossip. Gossip varied by classroom, targeting did not vary by classroom. Where a peer group might discourage direct aggression it might invite covert aggression.
Low, Smith, Brown, Fernandez, Hanson, and Haggerty[34]	N = 2, 940 (student) N = 128 (teachers) N = 1920 (staff)	Age: Grades 3-5 46% White, 39% Hispanic, 6% AA 51% boys Average school size: 479 (range = 77-749). Substantial variation in F-RL between schools (mean = 39.7%). 1-year follow-up.	Pre-posttest. RCT: school matched pair (matched within county by ordinally ranked school size, number of FT teachers, change in enrollment, % of students eligible for F-RL, students race and ethnicity, ESL). Thirty-three schools throughout 4 counties in central-northern California (25% rural, 10% small towns, 50% suburban, 15% mid-sized cities).	Bullying Prevention Initiative Student Survey.[46] α = .61-.86. School Environment Survey.[46] α = .80-.95.	Mixed-model analysis of covariance (ANCOVA).	Significant covariate effects were found across all student outcomes. School-level variation remained statistically significant for all outcomes. Boys are more likely to exhibit bullying behaviors and less social competency compared to girls.	Teachers reported that older students were significantly more likely to exhibit bullying behaviors and display less social competency, academic competency, and academic achievement compared to younger students.

Table 2. **Continued**

Intervention (evaluation citation)	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/results
IX. Youth Matters[35]	N = 1164 (702E, 462C)	Age: Grade 4 E—65% Latino, 13% AA, 14% AI/Asian/Mixed, 8% Caucasian 49% female. C—51% Latino, 17% AA, 21% AI/Asian/Mixed, 11% Caucasian 53% female. 2-year follow-up N = 1126 in 132 classrooms within 28 schools.	RCT: school (stratified by geographic region in the city and risk criteria and then randomly assigned to either the control or experimental condition). Twenty-eight urban schools (14E, 14C) in Denver, CO. N = 39 E classrooms/N = 27 C classrooms.	Revised Olweus B/V Questionnaire.[47] $\alpha = .81$. Bullying of other students.[48] $\alpha = .80$.	Multilevel linear growth model.	Limited evidence of positive impact. Small improvements were observed among students in the experimental condition on a measure of bully victimization in a continuous outcome growth model. Self-reported bully victimization among students in the E condition decreased at a higher rate compared to C condition (significantly lower by the end of the study).	NR

Abbreviations: AA, African American; AI, American Indian; C, control; E, experimental; ED, quasi-experimental research design; ESL, English [as a] secondary language; F-RL, free-reduced lunch; NA, Native American; NR, not reported; NSD, no statistical difference; RCT, randomized control trial; SD, statistical difference; SR, self-reported.

†Direct outcomes refers to targeted behaviors to include bully behaviors, aggression, or peer victimization.

‡Indirect outcomes refers to suggested strategies for bystanders, changes in school achievement, perceived school safety, and/or knowledge or attitudes about bullying.

Table 3. **Descriptions of Universal School-Based Intervention with Community-Wide Components for Bullying in Elementary Schools**

Intervention (evaluation citation)	Description	Grade(s)	Intervention length	Delivery/ components	Targeted behavior	Intervention focus	Theory/ conceptual framework
I. WITS[49]	Literacy focused curriculum for grades K-3 through early childhood storybooks; activities include role-playing; drawing and creative writing; 2 hours staff training for program implementation; police liaison visit to classrooms and deputizing ceremony.	First-second	Two years	Curriculum-based; community-wide; school-wide.	Physical aggression; relational aggression.	Bully; victim; bully-victim; school climate.	NR
Wood, Coyle, Hoglund, and Leadbeater[50]	See Leadbeater et al[49]	First-second	Two years	Curriculum-based; community-wide; school-wide.	Physical aggression; relational aggression.	Bully; victim; bully-victim.	NR
Leadbeater and Sukhawathanakul[51]	See Leadbeater et al.[49]; Additionally a training video is made available for teachers and community visitors; teachers sent newsletters implementation fidelity measured and reported.	First-third	18 months	Curriculum-based; community-wide; parent education; school-wide.	Physical aggression; relational aggression.	Bully; victim; bully-victim; school climate; peer victimization.	NR
Giesbrecht, Leadbeater, and MacDonald[11]	See Leadbeater et al.[51]	See Leadbeater et al.[51]	See Leadbeater et al.[51]	Curriculum-based; community-wide; parent education; school-wide.	Physical aggression; relational aggression.	Bully; victim; bully-victim; school climate; peer victimization.	NR
Hoglund, Hosan, and Leadbeater[52]	See Leadbeater et al.[51]	First-sixth	See Leadbeater et al.[51]	Curriculum-based; community-wide; school-wide.	Physical aggression; relational aggression.	Peer Victimization	NR

Table 4. **Evaluation Design and Outcomes for Universal School-Based Bullying Interventions with Community-Wide Components**

Intervention: evaluation citation	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/ results
I. WITS [49]	N = 432 9 month follow-up N = 423 2-year follow-up N = 397.	Age: mean 6 years and 3 months. 73% Canadian and European, 9% East Asian, 7% Aboriginal, 4% East Indian, 5% Other, 2% unreported; 51% boys; 47% mothers completed some college/28% bachelors or graduate degree. 32% of children's households less than $30 000/65% 2-parent household. 31% reported no lifetime moves/28% 3 or more lifetime moves.	RCT: 17 urban schools (12E, 5C) from Western Canada. Forty-four total classrooms.	Social experiences questionnaire[7] α = .72-.76 Early School Behavior Rating Scale[53] α = .84-.90.	Aggression types were assessed separately in repeated measures general linear models.	There are individual, classroom, school-level factors that predict increases in relational and physical victimization and that these can be effected by a prevention program. Girls showed greater increases in relational victimization compared with boys. Classroom levels of relational aggression decreased significantly in the program schools compared with the control schools. Physical victimization decreased more in the low poverty program schools.	NR
Wood, Coyle, Hoglund, and Leadbeater[50]	N = 409 (209E, 119C) 9 month follow-up N = 400 2-year follow-up N = 374.	Age: mean 6 years and 3 months 73% Canadian and European, 9% East Asian, 7% Aboriginal, 4% East Indian, 5% Other, 2% unreported; 49% girls; 47% mothers completed some college/28% bachelors or graduate degree. NSD between program and control school demographics.	Pre-posttest. Eleven schools (5E, 6C) in Canada. Forty-one total classrooms.	See Leadbeater et al.[49]	Hierarchical multiple regression.	Increase in classroom levels of social competence show a decrease in relational and physical victimization in program schools. Higher level of school poverty predicted increases in physical victimization over time. Peer victimization can be reduced in high-poverty schools through universal, multi-setting programs.	NR

Table 4. **Continued**

Intervention: evaluation citation	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/results	Indirect outcomes‡/ results
Leadbeater and Sukhawathanakul[51]	N = 830 9 month follow-up *N* = 737 (422E, 315C) 2-year follow-up N = 732 (418E, 315C).	Age: 6 years and 9 months. 48% mothers and 44% fathers education past HS; 21% mothers and 15% fathers bachelor's degree. 49.8% boys 13% lived in less than $30 000.	QED: Eleven schools (6E, 5C) in Western Canada. Sixty-seven classrooms.	Performance standards: social responsibility framework.[54] $\alpha = .93$.	Multi-level models. Level 1: within child change over time. Level 2: between-child differences in sex and family income. Level 3: between-school differences in program participation.	Program participation was associated with rapid decline in physical and relational victimization compared with control schools. Rates of physical and relational victimization declined 20% (T1), 18% (T2), and a further 11% (T3)—longer duration is important for reducing victimization.	NR
Giesbrecht, Leadbeater, and MacDonald[11]		See Leadbeater et al.[49]	See Leadbeater et al.[49]	See Leadbeater et al.[49]	Multi-level equations (Levels 1-3) to characterize the longitudinal trajectories of victimization.	Average decline of 11% in physical and 7% in relational victimization for each additional year from baseline. Average child exhibited a 24% decline in physical and 46% decline in relational victimization by end of Gr. 3.	Higher levels of emotional dysregulation on any occasion are associated with higher levels of victimization.
Hoglund, Hosan, and Leadbeater, [52]	N = 432 9 month follow-up N = 423 2-year follow-up N = 397 3-year follow-up N = 385 5-year follow-up N = 203 6-year follow-up N = 238.	Age: mean 6 years and 3 months. 73% Canadian and European, 9% East Asian, 7% Aboriginal, 4% East Indian, 5% Other, 2% unreported; 51% boys; Mother's education ranged from eight grade to University graduate degree.	QED Longitudinal, Eleven schools (5E, 6C) in Western Canada.	See Leadbeater et al.[49]	Attrition analyses. Psychometric and descriptive data. Multi-level growth models. Cohen's *d*.	Children lost to follow-up showed significantly more relational victimization and aggression, but less social competence than children retained. Internal consistencies were moderate to high for all constructs across waves. Average rates of peer victimization and help seeking decreased linearly and then accelerated significantly over time. When children endorsed more help-seeking strategies, they tended to report fewer episodes of both physical and relational victimization.	Minimal attrition across Waves 1-4, but was significant over Waves 5 and 6 (45-60%).

Abbreviations: AA, African American; AI, American Indian; C, control; E, experimental; ED, quasi-experimental research design; ESL, English [as a] secondary language; F-RL, free-reduced lunch; NA, Native American; NR, not reported; NSD, no statistical difference; QED, quasi-experimental research design; RCT, randomized control trial; SD, statistical difference; SR, self-reported.

†Direct outcomes refers to targeted behaviors to include bully behaviors, aggression, or peer victimization.

‡Indirect outcomes refers to suggested strategies for bystanders, changes in school achievement, perceived school safety, and/or knowledge or attitudes about bullying.

Table 5. **Descriptions of Targeted Interventions for Bullying in Elementary Schools**

Intervention (evaluation citation)	Description	Grade(s)	Intervention length	Delivery/ components	Targeted behavior	Intervention focus	Theory/ conceptual framework
I. Bully Busters[54]	Eight learning modules (4-6 activities per module)—weekly segments (20-30 minutes); 3 options for implementation: single teacher in a classroom; school's curriculum; teacher/faculty approach; modules delivered in 3 sessions.	K-fifth	Three days	School-wide; teacher targeted,	Emotional aggression; physical aggression; psychological aggression; relational aggression.	Bully; victim; bully/victim.	NR
II. PEGS [55]	Teacher referral system to identify children for intervention; program based on 6 psychosocial education components: (1) improving social skills; (2) building and increasing self-esteem; (3) developing problem-solving skills; (4) assertiveness training; (5) enhancing stress/coping skills; (6) prevention of mental health problems/problem behaviors. Students divided into 3 groups based on pre-assessment scores; session co-facilitated by graduate students. Six (30 min) sessions over 6 weeks.	Third-fifth	Two weeks	Individual and group counseling.	Bullying	Bully; victim; bully/victim.	NR

within the school setting maybe included in a program, these programs are intended for delivery within the school building, only. Table 3 reports programming that pair a universal school-based program with a community-wide intervention component. Additionally, a call for community involvement makes these programs unique compared the programs listed in Table 1. Table 5 displays programming that targets specific individuals or groups for delivery of the intervention.

Program evaluation tables (Tables 2,4,6) describe the evaluations and outcomes of the intervention programs including sample description, study design, analytic method, and outcomes of the evaluation. We do not report statistical results and effect sizes, rather we designate whether there were no significant difference (NSD) or significant difference (SD) for each program condition (E = experimental; C = control). Outcomes are described as reported by the intervention evaluation researcher(s).

Our review resulted in the overall identification of 10 programs aimed at youth in grades K-6 enrolled in North American elementary schools. Effective intervention strategies targeted a variety of bullying behaviors using diverse mechanisms and included a school—and community-wide approach. The programs also varied in the age/ages at which the intervention took place with the most common being reported at targeting students in grade 3. Across some programs, results were demonstrated in both the short and long term.

Universal School-Based Interventions

As Tables 1 and 2 show, 12 evaluations were found to address bullying behavior within a school-based delivery.

Bully proofing your school. The *Bully Proofing Your School* (BPYS) was designed as an 11-week, teacher-delivered, fourth and fifth grade intervention.[12] Lessons were delivered weekly and included handouts with short homework assignments for students with a focus on preventing bullying behaviors, increasing assertiveness of victims, and broadening a sense of responsibility to include bystanders. Participants (N = 98) completed pre- and post-intervention assessments which included self- and peer-nominations of bullying behavior, frequency of physical, verbal, and relational aggression, attitudes toward bullying behaviors and student program evaluation. The researchers reported that not having an immediate posttest along with little ethnic diversity of the sample were limitations of the study.

Whereas *BPYS* alone has been used to target specific grades within an elementary school, variations of this program have been used in a school-wide

Table 6. **Evaluation Design and Outcomes for Targeted Bullying Interventions**

Intervention: evaluation citation	Sample size	Sample description	Study design and method of group assignment	Measures	Analyses	Direct outcomes†/ results	Indirect outcomes‡/ results
I. Bully Busters[54]	N = 36 (18E, 18C).	Age: range = 24-59 99% White, 1% AA.	Pre- posttest/ delayed posttest; RCT (teacher SS #). One rural school in East Tennessee, KY.	TISK-E.[56] α = .79-.92.	ANCOVA	NR	Program effectively trains educators to acknowledge bullying, respond to it, and intervenes to provide more hopeful outcomes for victims.
II. PEGS (Newgent, Behrand, Lounsbery, Higgins, and Lo, 2010)[55]	N = 23 students.	Age: 35% in third grade, 22.6% in fourth grade; 41.9% in fifth grade; 74.2% white, 22.6% AA, 3.2% Hispanic; 61.3% boys; 19.4% identified having a disability (learning, behavioral, emotional). Clinical sampling into 3 groups.	Pre-posttest/ follow-up test. One school *geographic region was unknown*.	Social Skills Rating Scale—Teacher form.[57] α = .78-.94.† Peer relationship measure—teacher report.[58] α = .80-.86. Peer relationship measure-self report.[58] α = .66-.87. Modified Rosenberg's Self-Esteem Inventory.[59] α = .47-.70.	Assessed 3 times; one-way ANOVA. *t* tests pairwise difference.	Group 1: SD in self-control from pretest to posttest and pretest to follow-up test. Improved performance in social situations and greater sense of belonging. Group 2: SD in social skills from pretest to posttest and pretest to follow-up test (teacher reported, not pairwise comparisons). Group 3: SD in improvement of assertion from posttest to follow-up. Students without clinically significant problems benefitted from the PEGS program.	NR

Abbreviations: AA, African American; AI, American Indian; C, control; E, experimental; ED, quasi-experimental research design; ESL, English [as a] secondary language; F-RL, free-reduced lunch; NA, Native American; NR, not reported; NSD, no statistical difference; QED, quasi-experimental research design; RCT, randomized control trial; SD, statistical difference; SR, self-reported.

†Direct outcomes refers to targeted behaviors to include bully behaviors, aggression, or peer victimization.

‡Indirect outcomes refers to suggested strategies for bystanders, changes in school achievement, perceived school safety, and/or knowledge or attitudes about bullying.

approach.[22] This program was expanded to develop a school climate intervention as part of a larger research-based comprehensive approach with a cultural focus to address school bullying behavior from a positive, pro-social perspective. This curricular approach was utilized; however, additional in-service staff professional development was included within the design of the experiment. Using a quasi-experimental design, sixth grade participants (N = 149) from 2 schools (one experimental and one control) were selected for this study. Pre-post intervention assessments (*Peer Interaction in Primary School*; *Colorado School Climate Survey)* revealed a noticeable drop in reported victimization in the experimental group, however the decline was not statistically significant. Additionally, bullying behaviors decreased significantly from pre to posttest in the control group, but it did not significantly differ from pretest to posttest in the experimental group. Additional findings are reported in Table 2. Although each school had similar population according to demographics and attendance rates; critical review of the demographic data revealed that ethnicity varied between the experimental and control schools which could have impacted their results. This intervention was unique as it used multiple delivery points of the intervention, a staff development component, and a prepared curriculum for students. Outcomes suggested this program to be effective in increasing a positive school climate and increasing anti-bullying attitudes.[12,22]

Expect respect and Olweus bullying prevention program. The *Expect Respect* and *Olweus Bullying Prevention Program (OBPP)* are based on the Olweus conceptual framework designed to improve peer relationships and make schools safer, more positive places for students to learn and develop.[25,27] The Olweus intervention program is a school-based curriculum that also includes school-wide and community activities. Using a randomized control design,[27] third-fifth grade youth (N = 821; 78.6% white) from 4 elementary schools (2 intervention schools, 2 control schools) revealed no significant reductions in rates of reported bullying behavior in the intervention group. Moreover, the investigator found significant sex differences between types of bullying behaviors (excluding physical aggression) with girls more likely to report engaging in social aggression and boys are more likely to report perpetrating physical aggression.

Aligning with Olweus' research,[25] *Expect Respect* is a multi-level intervention program to educate students, parents, and school staff about bullying perpetration and sexual harassment behaviors. Moreover, this program establishes expectations for respectful and health behaviors in student relationships by emphasizing effective strategies for responding to inappropriate behaviors. Using a randomized control design, fifth grade students (N = 740; 59% white) from 12 schools (6 experimental/6 control; randomized by school matched pair, matched on sex, socioeconomic, ethnicity, and school population) were assessed on their knowledge and attitude of bullying. Staff members also completed a similar questionnaire. The investigators report that 15% of control students and 19% of intervention students knew what bullying behaviors were at posttest and what constitutes inappropriate behaviors among students. A statistically significant difference was detected with the identification of bullying behavior between the intervention and control groups at posttest (χ^2 (2) = 7.00, $p < .05$, N = 723). Moreover, 45% of intervention students reporting seeing bullying almost every day and 14% of control reported seeing bullying almost every day. There were also significant differences between staff in the intervention and control schools at posttest (χ^2 (2) = −2.174, $p < .05$, N = 1094); 58% of intervention staff identified bullying behavior while only 31% of control staff identified bullying. This revealed a phenomenon of increased reporting of bullying behaviors; however, increased reporting may illuminate misperceptions of prevalence. While students and staff expressed differing attitudes about how adults should respond to inappropriate behaviors, the multi-level intervention program did improve student participants' abilities to identify bully behaviors. *Olweus* and *Expect Respect* share similar delivery strategies including staff development training, prepared curriculum, school-wide approach, and a policy development component. Additionally, the *Expect Respect* program offers a parent education component as a delivery strategy. Yet, neither program was effective in reducing bullying behaviors in these evaluations.

Gentle warrior. The *Gentle Warrior* (GW) program takes a unique angle on reducing bullying behaviors (including physical and relational aggression) by using a martial arts approach for creating a positive school climate.[26] Utilizing the *Creating a Peaceful School Learning Environment* educational theory, this program was designed to modify the social dynamic surrounding bully-victim interactions by cultivating a mutual respect for others and building a sense of responsibility among students and adults to stop bullying behaviors. A sample of diverse youth (N = 254; 59.8% white, 22.4% African-American, 6.5% Hispanic, 1.2% Native American; 50% female) in grades 3-5 from 3 elementary schools were randomly selected from a city (250,000 population). This program was dosed over 3 years as a part of longitudinal, cluster-randomized control trial. *Gentle Warrior* was effective in lowering the frequency of physical aggression for boys over the 3-year timeframe; however, helpful bystander behavior diminished as the sample aged.[26] Their results offer preliminary support for the use of martial arts-based interventions to address bullying prevention in schools for boys, by

teaching empathy, self-control, and peaceful strategies to resolve conflicts may be a useful component in future intervention programs.[26]

Positive action. *Positive Action* is grounded in 2 theoretical frameworks.[28] This intervention requires stringent curricular delivery with 4 lessons per week. This intervention program is the only program to address school climate as the primary goal of the intervention with the goal to reduce physical and relational aggression. This evaluation included a diverse sample of students (N = 510) in grades 3-5 from 14 elementary schools (7 intervention/7 control) and a 3-year, quasi-experimental pre- posttest design. The researchers concluded *PA* is an effective intervention, as it reduced physical bullying perpetration by 41% in program schools.

Steps to respect. Our review includes 3 evaluations for *Steps to Respect*.[32-34] This program was designed to decrease school bullying by increasing adult monitoring and intervention in bullying events; improve systematic supports for socially responsible behavior; change student normative beliefs that support bullying; and address student social-emotional skills that counter bullying and support social competence. In addition to the multi-level program, which coordinates curriculum-based lessons, staff training, and campus policy development, the program staff provided individual coaching for perpetrators and victims of bullying identified during playground observation.[32] Participants (N = 624) in grades 3-5 from 6 elementary schools (3 intervention/3 control) participated in the study. Schools were matched for size, ethnic breakdown, and percentage of students receiving free and reduced lunch. The evaluation included multiple posttests at 6-, 12-, and 18-month intervals. Additionally, a subset of students (164 intervention/196 control) were randomly selected at pretest for playground observation. The evaluation revealed significant changes in observed destructive bystander behavior. Over the 2-year period, bystander support for bullying behavior was reduced. Moreover, reductions in problem behaviors were strengthened with a second year of implementation of the intervention program.[32]

The *Steps to Respect* program has been studied as a means of reducing relational aggression on school playgrounds.[33] Participants (N = 544) in grades 3-6 from 6 elementary schools in 2 suburban districts were matched for district size, ethnic breakdown, and percent of students receiving free or reduced-price lunch. These researchers chose a data subset (N = 12 grade 3-4; N = 10 grade 5-6), which were randomly selected for observation on the playground. Pretest observations for 610 students in the intervention schools were collected; however, only 544 students completed the posttest observation. Teachers (36 intervention/36 control) were selected to participate and had no prior experience with *Steps to Respect*. Previous studies found no difference in sex; however, these data revealed over the school year, girls were more likely than boys to be involved as gossips and as targets of gossip. The researchers reported that rates of relational aggression increased with chronological age and playground victimization declined when intervention students received individual support from teachers. Peer connectedness was not a protective factor with reducing victimization in the control group. Lastly, where a peer group might discourage direct aggression it might invite covert aggression.

Steps to Respect has also been evaluated using a randomized trial with a focus on students' attitudes toward positive/negative behaviors related to bullying and how teachers intervene.[34] Participants (N = 2940) in grades 3-5 from 33 elementary schools in 4 counties participated in the evaluation (17 intervention/16 control). Schools were matched based on school size, number of full-time teachers, change in student enrollment from 2006 to 2007, percentage of students eligible for free and reduced lunch, students' race and ethnicity. Students were assessed prior to the intervention at the start of the 2008-2009 school year and again post-intervention at end of the school year. In addition, school staff completed a questionnaire focused on assessing their knowledge of bullying behaviors (N = 920). After completion of the intervention, the researchers found that girls reported more ''appropriate'' reactions to bullying behaviors, while boys reported more bullying behaviors and less indicators of social competency. Teachers reported that older students were significantly more likely to exhibit bullying behaviors and display less social competency, academic competency, and academic achievement compared to younger students. Grounded in social-ecological theory, *StR* was found to be effective in reducing bullying behaviors.[32-34]

Youth matters. *Youth Matters* promotes healthy development of young people by encouraging positive relationships and safe norms throughout the school community with the goal of reducing verbal and relational aggression.[35] The program consists of 4 10-session curricular modules and the development of classroom or school-wide projects that demonstrate the adverse consequences of bullying behaviors and aggression to students. Participants (N = 1126) in fourth and fifth grade 66 classrooms (39 intervention classrooms/27 control classrooms) from 28 elementary schools were randomly selected to participate in the evaluation. The intervention classrooms received one 10-session curricular module during each of the 4 semesters over 2 academic years. Students were assessed for verbal and relational aggression in the fall and spring semesters during both academic years. Self-reported bully victimization among students attending intervention schools decreased at a higher rate

compared to students in control group schools, and by the end of the study, found that bully victimization was significantly lower among the intervention students relative to the control. This outcome is encouraging because the curriculum modules tested in the study focus of teaching students social and emotional skills needed to cope with bullying incidents. Despite this intervention program being grounded in a social development model, the evaluation of *Youth Matters* provided limited evidence of positive long-term impact.[35]

Universal School-Based Interventions with Community-Wide Components

Tables 3 and 4 show 5 evaluations of the *Walk away, Ignore, Talk it out, Seek help* (WITS) program, which include delivery points at the school and in the community.[11,49,51,52,61] The program actions are not intended as social skills children should try in isolation, but are intended to create a common language that connects victimized children with adults who can help them. WITS program evaluators chose to implement common delivery strategies including a parent education delivery strategy.[11,51] Specific details about each evaluation may be found in Table 4. Students were assessed during the fall and spring semesters and 1 year post-intervention. Across all 5 trials, the researchers report a decline in physical and relational aggression among elementary school students.[11,49] Outcomes of this prevention program included individual-, classroom-, and school-level factors that contribute to relational and physical victimization. These researchers also found that significant decreases in classroom levels of relational and physical aggression for the program schools compared with the control schools. In a later evaluation of this program, an average decline of 11% in physical and 7% in relational victimization for each additional year of program implementation in the intervention schools.[11] Additionally, school-wide and family use of program-specific language opened lines of communication about victimization, which may help to enhance both child skills and school and family norms with respect to peer victimization and bullying behaviors.[51] Based on the evaluations of WITS, programs using a school-wide approach to enhance social competence may be an effective strategy for reducing bullying behaviors.

Targeted Interventions

As Tables 5 and 6 show, 2 programs have been evaluated as targeted interventions.

Bully busters. The *Bully Busters* program posits to increase awareness of problem solving skills that result in more prosocial behaviors and building emotional intelligence as a mechanism to reduce/prevent bullying behaviors.[55,56] The program trains teachers on the following components: (1) increasing the awareness of bullying; (2) preventing bullying in your classroom; (3) building personal power; (4) recognizing the bully; (5) recognizing the victim; (6) recommendations and interventions for bullying behaviors; (7) recommendations and interventions for helping victims; and (8) relaxation and coping skills. After this professional development intervention, teachers were to incorporate the above components into their classroom culture. Elementary school teachers (N = 36; 18 intervention/18 control) in the intervention groups received training on the 8 program modules through 3 half-day sessions.[54] Teachers were assessed pre- and immediately post training and again at 6 weeks post-training. Twelve of the 18 teachers who received the intervention reported increasing their use of intervention strategies from ''less than once of month'' to ''weekly.'' After a 2-month follow-up posttest, *Bully Busters* was effective in training educators to acknowledge and report bullying behaviors.[54]

Psychosocial educational groups for students. The *Psychosocial Educational Groups for Students* (*PEGS*) program is designed to help elementary school students with social skills, problem behaviors, bullying, and self-esteem. The program utilizes a teacher referral system to identify students already demonstrating aggression and requiring an individual or group intervention strategy[55] and consists of 6, half-hour group sessions over the course of 6 weeks. This program was evaluated on a clinical sample of students (N = 31) in grades 3 through 5. The researchers found an improvement in assertiveness from posttest to follow-up t (9) = −3.37, p = .01 among student subjects. *PEGS* was reported as effective with regards to increasing performance in social situations and social skills.[55] Additionally, students without prior bullying behavior benefitted from this program.

DISCUSSION

This review of literature identified 19 evaluations of 10 intervention programs being implemented in North American elementary schools to reduce bullying behaviors. These programs represent great diversity in terms of their delivery strategies, targeted behaviors, and conceptual frameworks. While such range makes it difficult to draw specific conclusions about the methods and components most likely to produce significant reductions in bullying behavior, the results are consistent with developing views regarding bullying behavior and peer victimization. Theories associated with bullying intervention programs indicate that peer victimization typically peaks during adolescence, taking preventative action prior to the beginning of adolescence can have a significant effect in reducing bullying behaviors.[4]

Theories and Conceptual Frameworks

Our review highlighted inconsistencies in reporting theoretical and conceptual frameworks in bullying intervention programs. Ten of the 19 papers did not report a theoretical or conceptual framework. If a theoretical framework is not in place, choosing a scale for measuring bullying behavior, selecting intervention strategies, and evaluating for change in bullying behavior becomes problematic.[34] A theoretical grounding aids in advising program development and evaluation.[14] As reported in the Program Evaluation tables, the intervention programs which had the most effect on elementary school students were grounded in a social-ecological theoretical framework. All levels of the ecological system interact and influence each other over time. Most effective intervention programs with elementary schools account for these influences and address each influence with a strategy for intervention. For stakeholders in school health, this conclusion should inform the design of future prevention investigations. Future empirical research examining anti-bullying programming would benefit from consistent reporting of treatment fidelity for program implementation. Specifically, information about intervention program delivery and alignment to the prescribed program dosing frequency and magnitude should be reported.

Methodological Challenges

Inconsistencies in systematic program evaluation challenges the field of school health, especially with anti-bullying programming.[14,34] As a field, developing a common definition of bullying between researchers is a challenge, and is linked to issues in measuring bullying behavior. As evidenced in the descriptive tables, several curriculum-based, school-wide delivery strategies have been reported as effective. Yet, differences in the measurement of bullying challenges our ability to compare program effectiveness across prevention and intervention programs. Moreover, bullying awareness has developed misperceptions about its definition. Clear classifications of antisocial-aggressive behaviors have been established by past research and rather than listing bullying as the targeted behavior to be addressed by the intervention, we would recommend a specific listing of aggressive behaviors the intervention intends to modify. By reporting specific types of aggression in program evaluations, the results are focused on measurable behaviors. Future school health researchers will then be able to execute an investigation that builds on previous science to assist in constructing national, longitudinal trends of physical and verbal aggression in elementary schools.

Two types of indirect/covert aggression mentioned in the bullying literature are reputational aggression and psychological or social aggression.[3,9] Relational aggression is the only documented form of bullying/victimization that may be classified as either direct/overt or indirect/covert depending on the perpetrator's intent and involves manipulating relationships.[7,9] Although indirect/covert forms of aggression are rare in elementary schools, program evaluations in our review have attempted to measure relational aggression. It is unclear how researchers were operationalizing the definition of relational aggression; however, it is clear that relational aggression was considered by the researchers to be a form of direct/overt aggression. Acknowledging that relational aggression can be considered either a direct or an indirect form of aggression, future school health researchers will need to define how the term is being operationalized for the purposes of each investigation. Additionally, since indirect/covert forms of relational aggression are difficult to measure as they can go unseen by adults, uniform training for observers should be implemented and paired with student self-reports.

Empirical evaluations of anti-bullying programming need to include a long-term implementation and delivery system for effectiveness. A common component of bullying prevention programs is to increase participants' awareness of bullying and recognize bullying behaviors.[5,14] Evaluations including an immediate posttest appeared to be less effective at reducing bullying behaviors as compared to evaluations with a single follow-up posttests. This may initially be reported as an increase in rates of bullying at an initial posttest resulting in evaluations suggesting a program to be less effective. Programs utilizing a longitudinal design, allowing for multiple follow-up posttests, have shown significant decreases in targeted behaviors including physical and relational aggression.[11,49,51,52,61] Multiple follow-up posttests to evaluate program effectiveness are recommended.

A randomized control trial (RCT) design is considered the gold standard for evaluating program effectiveness, and is ideal for school health researchers.[34] Yet, there are many challenges with attempting to conduct a RCT evaluate an anti-bullying program's effectiveness in a school setting. Specifically, evaluation of school-based interventions present "... unique analytic and design considerations compared to clinical trials that randomize individuals to condition."[28] (p. 279) Two concerns with the randomized control trials in this review include: (1) vague discussion of analytic model; and (2) insufficient power to detect intervention effects.[54] Studies that do not address the clustered nature of the data encounter problems with statistical inference, incorrect degrees of freedom, and biased standard errors. Program effectiveness research designs, which account for clustering the population, provide results that are most generalizable and may

help guide future researchers corroborate past findings. A way to counteract the challenges with designing an RCT within a school building would be to focus on strict guidelines for dosing (total amount of intervention received) and high treatment fidelity with implementing anti-bullying programming.

Self-report surveys are a common method of data-collection.[12,27,34] Whereas this is a common and important method of collecting information on student bullying behaviors, there has been insufficient attention to the reliability and validity of these self-report measures.[61] Student self-report surveys are dependent on the student's memory for events and ability to understand survey questions. Yet, with elementary school children, student and teacher reports sometimes do not capture observed bullying behavior.[32] We would recommend involving 3 mechanisms for measurement: (1) student self-reports; (2) teacher reports; and (3) direct observation. The *PEGS* program shows much promise in reducing bullying behaviors as it was a targeted program and did not rely on self-reports alone from children to identify chronic bullies.[55]

Standardized Reporting Procedures

Deficiencies in specification of intervention components, evaluation design (eg, statistical power, unit of randomization), statistical analyses (eg, multi-level vs. single level), program implementation monitoring, choice and measurement of outcomes (eg, bullying behaviors, attitudes, and school climate) or selection of informants have contributed to limitations in rigorous evaluation within the field of bullying research. Throughout the review, there are inconsistencies with reporting information collected from the evaluations. Understanding that submission guidelines may be a limitation, procedures for reporting sample description, study design, and analytic method need to be standardized by editorial review committees. Unit of randomization,[26] geographic region,[25,56] targeted behavior,[55] or demographic information should be noted as part of the study description. The United States is not a homogeneous society and details in sample description should be rigorous. Historically, cultures change in time. As time goes on and researchers begin to more accurately capture their sample, stakeholders in school health and bullying prevention will be able to connect the historical findings of evaluations to their current population in need of an anti-bullying intervention.

Conclusions

Little is still known about bullying/victimization in schools. Although other continents have shown progress with isolating and eradicating bullying behaviors,[2] transferring those same intervention programs to North America has not shown as promising of outcomes. Additionally, there has been a lack of systematically reviewed evaluation programs, which has provided stakeholders with limited resources for making decisions.

Virtually all of the evaluations of interventions dosed to elementary schools in this review were universal programs. One purpose of universal programs is to deliver an intervention school-wide, throughout the same grade, or classroom-level. Typically, our review revealed that school climate is a centering tenet of universal programs. The *PEGS* program, which was the only [student] targeted program in the review, showed much promise with the effectiveness of the intervention.[55] The purpose of this program was not to change school climate, rather to target those individuals demonstrating varied levels of bullying behavior. Yet, the long-term effects of the *PEGS* program have not been reported. Universal programs are effective at creating a culture of allies to victims of bullying and we believe should be combined with a targeted program, such as the *PEGS* program to maximize effectiveness. We encourage school health administrators and researchers to consider targeted intervention programs for use within schools.

Much research has been focused on bullying behaviors in secondary school and most studies agree that bullying behavior reaches the apex in grades 7 and 8.[62] Although little is still known about bullying in elementary schools, there is a strong body of research to support that intervening at this stage of development will diffuse the advent of bully behavior, types of aggression, and/or peer victimization. In the past 20 years, researchers have made progress in the area of school bullying research. A way to advance future bullying research in elementary schools is supporting program evaluations.

IMPLICATIONS FOR SCHOOL HEALTH

Bullying behavior is a public health concern for youth and by extension, a concern for school health researchers. Our review showed evidence that effective bullying prevention programs include intervention components that target individual, peer, family, school, and community. Corroborating our review[25,27,32] empirical evidence identifies a need to include individual, peer, family, school, and community efforts in anti-bullying initiatives to influence reductions in bullying behavior.[14] After examining these evaluations, the intervention and prevention of bullying in elementary schools may be best achieved by delivering the program to one or more of these influences (ie individual, peer, family, school, and community).

School officials and health researchers must collaborate to design and curate programming to address

multiple ecological influences. Although the realities of schools' social, political, and economic status vary greatly between schools, we recommend that school health researchers continue to research anti-bullying programming. Specifically, researchers should identify and evaluate programs that pair a universal school-wide program with an individual component for chronic perpetrators and/or victims. If programs are not readily available, one option is to combine 2 programs through a randomized clinical trial to see the impact of schools with only a universal school-wide program when compared to schools with both the universal program and individual component. Incorporating a peer nomination instrument when dosing a questionnaire to the school population, which identifies chronic perpetrators and victims, will be able to determine youth who need additional education and support.

The programs identified within our review seem to be the most effective at decreasing bullying behavior, physical, verbal, or relational aggression, and/or peer victimization. Programming modules that appear within these empirical evaluations include: teacher professional development and support for high fidelity program implementation; school-wide anti-bullying policy writing; curriculum-based lessons for classroom or school-wide delivery; and individual intervention strategies partnered with family and community education components. Thus, school health researchers designing prevention science should incorporate multiple targeted delivery points for dosing an anti-bullying program. We suggest including curriculum-based lessons for classroom or school-wide delivery and individual intervention strategies partnered with family and community education components and theorize this combination will result in a significant reduction in bullying behavior.

We encourage building- and district-level school health personnel to structure intervention programs for successful implementation. The importance of building support for teachers and staff implementing anti-bullying program has proven to be a promising practice of intervention program implementation. This support comprises: additional time for teacher preparation of curriculum-based lessons; dedicated meetings on improving school climate; policy development; and creating a space for teachers and staff to consult an intervention specialist when needed. Strategies for creating support structures that may to implementation fidelity include:

- large and small group teacher training for ensuring accurate dosing of curriculum-based lessons;
- release time for teachers to meet and prepare lessons;
- collaborative meetings between education and school health stakeholders to develop a vision for a school's education climate;
- focus group interviews with school and community stakeholders in developing school policies related to bullying prevention; and
- hiring a school health researcher to consult during the school personnel training and implementation stage of the empirical evaluation.

In conclusion, we also recommend similar training of building support staff members for effective intervention programming. Staff members interact with youth and may benefit from training explicating the expectations for identifying and reporting bullying behaviors.

Human Subjects Approval Statement

Study procedures for this investigation were approved by the Institutional Review Board from the University of Michigan.

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