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Changing Adolescents' Attitudes About Relational and Physical Aggression: An Early Evaluation of a School-Based Intervention

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Abstract. A pilot study evaluating the Second Step, Middle School/Junior High[®] program was conducted to determine its effect on students' attitudes regarding aggression and perceived difficulty of performing social skills. Sixth-through eighth-grade students ($N = 714$) were surveyed before and after the program was implemented by teachers in intervention classrooms. Second Step students were taught curricular modules corresponding to their year in middle/junior high school. Program effects were tested using a repeated measures design. Relative to nonparticipants, Second Step students in their second year of school decreased in their overall endorsement of aggression and perceived difficulty of performing social skills. Program effects were less consistent for those in their first year of middle/junior high school. Additional research is needed to investigate program effects under varying conditions (e.g., lesson quality, pacing of lessons) and with long-term exposure.

The long-term sequelae of childhood aggressive behavior have been extensively studied. They include delinquency, substance abuse, depression, school drop out, and early parenthood (Cairns, Cairns, & Neckerman, 1989; Farrington, 1991; Lochman & Lenhart, 1994; Patterson, Reid, & Dishion, 1992; Rubin, Chen, McDougall, Bowker, & McKinnon,

1995). In most of these studies, aggression is synonymous with physical aggression, much less common among girls than boys. Recent work has also associated negative consequences with relational aggression, more typical of girls than physical aggression.

Relational aggression refers to covertly inflicted damage that compromises the victim's

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peer relationships and social standing (e.g., ostracism, malicious gossip) (Crick & Grotpeter, 1995). Like physical aggression, relational aggression is stable over time (see review by Coie & Dodge, 1998), predicts peer rejection (Crick, 1996; Rys & Bear, 1997; Tomada & Schneider, 1997), and is associated with maladaptive friendship patterns (Grotpeter & Crick, 1996).

Given the poor trajectory for aggressive children, there has been considerable interest in prevention efforts, although these have also tended to focus primarily on reducing physical aggression. Crick and Dodge's (1994) model of social interaction suggests that similar processes underlie physical and relational aggression and that promoting prosocial skill development may help reduce reliance on both types of aggression. According to the model, potential for aggression is higher when individuals have (a) deficits in social information-processing, and (b) attitudes that support the use of aggression or undermine the use of constructive alternatives.

Attitudes Associated With Aggression

Initial research in this area indicates that hostile attribution biases (the tendency to presume another's malicious intent in an ambiguous social situation) are characteristic of relationally aggressive (Crick, 1995) as well as physically aggressive children (Dodge, 1980; Slaby & Guerra, 1988). More information is particularly needed on the social cognitions of relationally aggressive children.

Attitudes characteristic of physically aggressive children appear to affect an individual's choice of goals and evaluation of possible responses in a given situation. Thus, beliefs that aggression is an effective way to avoid a bad image or that there are no real alternatives to aggression can legitimize the use of physical aggression (Crane-Ross, Tisak, & Tisak, 1998; Erdley & Asher, 1998; Guerra & Slaby, 1990; Slaby & Guerra, 1988). Aggressive youths' self-appraisal also contributes to their inappropriate behavior. They see themselves as relatively inept at managing their anger and aggression (Perry, Perry, & Rasmussen, 1986; Shure & Spivack, 1976;

Slaby & Guerra, 1988), yet more effective than their nonaggressive peers at using physical aggression to achieve goals (Crick & Dodge, 1989; Perry et al., 1986). Attitudes such as these have yet to be explored with respect to relational aggression.

Prevention Efforts

The literature documenting the effects of prevention efforts offers some promising results, particularly when social competence promotion is part of a larger systemic, multicomponent effort within the school and programming is coordinated and long-term (Consortium on the School-Based Promotion of Social Competence, 1994; Weissberg & Greenberg, 1997). The most common foci for prevention programs are broad social competencies and social interaction skills, and coping or stress management (Consortium on the School-Based Promotion of Social Competence, 1994).

Several large-scale prevention projects undertaken in recent years have demonstrated effectiveness in increasing children's social competencies and decreasing antisocial behaviors and social cognitive attitudes. One of the largest multisite studies involving some 50 elementary schools in four geographical sites across the country is being conducted by the Conduct Problems Prevention Research Group (CPPRG). The intervention model used by these researchers involves a long-term program with multiple components targeting both universal and indicated (i.e., at-risk) student populations. The Promoting Alternative Thinking Strategies Curriculum (PATHS) is used as the universal prevention program for Grades 1 through 5, and offers a comprehensive treatment of social awareness and interaction skill, inhibition of inappropriate behavior, and social problem solving. In a randomized trial, first-grade intervention students demonstrated less aggression and more compliance with rules across self, peer, and unbiased observer ratings compared to controls (CPPRG, 1999).

The Resolving Conflict Creatively Program is a longitudinal program spanning Grades K–12 with a similar focus on effective interpersonal problem solving, but less broad

than PATHS in its overall scope. Aber and his colleagues studied over 5,000 New York City students in Grades 2 through 6 and their teachers during the first year of implementation across varying levels of program implementation (Aber, Jones, Brown, Chaudry, & Samples, 1998). Students receiving a high level of program intervention (i.e., moderate degree of teacher training, the majority of curriculum lessons taught, but few peer mediators in the classroom, as defined by cluster analyses) exhibited the slowest growth of aggressive cognitions, such as hostile attribution bias and use of aggressive problem-solving strategies, compared to other intervention conditions and controls.

The Social Problem Solving (SPS) Program initiated by Weissberg and his colleagues focuses specifically on middle school students. The 45-session program is similarly classroom-based and teaches the affective, cognitive, and behavioral skills necessary for social problem solving, decision making, and stress management. Study results indicated that students receiving the program demonstrated more effective and prosocial problem-solving strategies (Weissberg & Caplan, 1994) and better coping (Caplan et al., 1992) as reported by self and teachers. Moreover, program students' self-reported delinquent behavior remained stable from pre- to posttest, whereas controls' delinquency increased (Weissberg & Caplan, 1994).

The Second Step program, the curriculum in the current study, is a classroom-based social emotional learning program that attempts to prevent aggression by fostering empathy and perspective-taking, problem solving, and anger management skills (Frey, Hirschstein, & Guzzo, 2000). (See Method section for a detailed description.) The Second Step curriculum is similar to the previously described programs (e.g., PATHS, SPS) in the competencies taught, such as emotion regulation, stress management, and problem solving. In addition, the Second Step program addresses aggression in a broad sense by devoting a significant proportion of lessons to relational aggression topics and the application of skills to reduce or inhibit such behaviors.

A review of research on the Second Step program documents a series of formative and

outcome evaluation studies demonstrating its efficacy with students across grades (Frey et al., 2000). The most convincing results of the program's effectiveness to date come from an experimental study by Grossman and his colleagues employing systematic classroom and playground observations by unbiased observers as the outcome measures (Grossman et al., 1997). Second- and third-grade participants in the Second Step program showed decreased physical and verbal aggression, and increased prosocial behavior relative to nonparticipating students.

Less information is available regarding secondary students' response to the Second Step program (Committee for Children, 1997). A preliminary program evaluation with students in their first year of secondary school (i.e., junior high or middle school) assessed social skill knowledge only. Students were found to have greater understanding of perspective-taking, problem-solving, and anger management strategies after completing participation in the program (Beland, 1989). Since then, the program was extended for students in their second or third year of secondary school. The current research was part of a pilot study of the expanded program, examining program effects on adolescents' beliefs about the legitimacy of aggression and the perceived difficulty of performing prosocial behaviors.

Although intervention research has largely been limited to physical aggression (Crick, 1996), the present study was designed to overcome this limitation by intervening in and measuring attitudes that support the use of both physical and relational aggression. The Second Step program strongly emphasizes the negative consequences of both. Thus, participants were predicted to decrease their endorsement of physical and relational aggression relative to nonparticipants. In line with previous research, boys were predicted to endorse physical aggression more than girls (Coie & Dodge, 1998). However, girls were expected to endorse relational aggression at levels equal to or higher than those of boys (Bjorkqvist, Lagerspetz, & Kaukianen, 1992; Crick & Grotpeter, 1995). Gender differences in response to the program were not predicted.

In addition to establishing norms counter to aggression, the program was designed to provide opportunities to practice positive solutions to social problems (Elias et al., 1997). It was predicted that the role-playing during lessons and skill application opportunities throughout the school day would decrease students' perceived difficulty of performing social skills. After participating, students were predicted to view prosocial alternatives as less difficult to perform, relative to nonparticipating students.

Method

Participants

Participants were 714 students in sixth ($n = 179$), seventh ($n = 382$), and eighth grade ($n = 153$), evenly divided by gender (51% girls). Students were drawn from five schools in the United States and Canada (with school sample sizes as follows). Two of the schools were a junior high ($n = 273$) and a middle school ($n = 85$) in neighboring Pacific Northwestern cities. Another middle school ($n = 268$) was in a large Southwestern city. The two remaining schools were junior high schools ($n = 54$ and 34) located in an eastern Canadian city. Schools ranged in overall ethnic diversity (4% to 89% Caucasian), and proportion of students receiving free/reduced lunch (0% to 83%).

Intervention and control classrooms were both drawn from four of the five schools, thereby ensuring equivalence in ethnicity and proportion receiving free/reduced lunch. The one exception was the Pacific Northwestern middle school from which only intervention classrooms were drawn; the two demographic indices for this school were in the mid-range compared to the other schools in the study. (See Study Design and Analysis section for discussion of randomization issues.) Classrooms were grouped according to their year in secondary school. Hence, the Year 1 group consisted of sixth and seventh grade students ($n = 387$) in their first year of middle/junior high school, and the Year 2 group were seventh and eighth grade students ($n = 327$) in their second year.

Sixteen educators (11 female) from the five schools participated in the study. All were teachers, with the exception of one principal.

Program Description

The Second Step, Middle School/Junior High program is commercially available and published by the Committee for Children.¹ The stated goals of the program are to foster student learning of prosocial skills and to reduce impulsive-aggressive behavior. Prosocial learning objectives include: identifying feelings in oneself and others, responding empathically to others, and improving social interaction skills. Specific objectives related to reducing aggression include: recognizing anger warning signs and thoughts that fuel anger, using anger management techniques, applying a problem-solving strategy to social conflicts, and practicing behavioral skills to deal with challenging social situations.

The Second Step, Middle School/Junior High program was expanded from the original 1-year curriculum to a 3-year program, designed to begin with the first year in middle school or junior high school. Classroom teachers in health, English, or social studies are the most frequent presenters of the program. However, school psychologists or counselors sometimes perform this role themselves or in collaboration with the classroom teachers. In some schools, teachers present the material to the class, and psychologists provide additional lessons for specially targeted students. A model used in some schools employs school psychologists as trainers and coaches to classroom teachers (e.g., Steineger, 1999). A 3-day training for trainers offered by the Committee for Children provides guidance for presenting the program to teachers and supporting implementation, using a variety of instructional strategies and extensive videotaped examples.

The program is composed of scripted lessons, each with clear objectives and preparatory activities that introduce the key concepts. Using the suggested lesson scripts, program implementers lead class discussions stimulated by videotaped vignettes, newspaper events, or stories. Discussion questions are designed to promote perspective-taking and, as the discussion progresses, specific strategies for dealing with the illustrated situation. Videotaped vignettes present students with opportunities to observe skills. Students practice the

Table 1
Program Description by Level

Level ^a	Curriculum Description
1	Begins with an introduction of interpersonal conflict. The <i>Empathy</i> unit addresses feeling identification, perspective taking (e.g., reducing stereotyping), and listening and effective communication. <i>Anger Management</i> lessons involve understanding the anatomy of anger, and the development of management strategies. The <i>Problem Solving</i> unit teaches a model for solving interpersonal conflicts (i.e., problem identification, solution generation and evaluation, and enactment of a solution). <i>Skill Application</i> lessons focus on applying skills to specific situations: making a complaint, and dealing with peer pressure or bullying. (15 lessons)
2	Introductory lesson focuses on the factors and effects of interpersonal conflict. <i>Empathy</i> lessons deal further with the nature of emotions, perspective taking, and communication. The <i>Anger Management</i> lesson focuses on handling stressful emotions, and the <i>Problem Solving</i> lesson reviews the problem-solving model. <i>Skill Application</i> lessons emphasize using skills in dealing with rumors or accusations. (8 lessons)
3 ^b	Introduces the issue of the bystander's role in interpersonal conflict. <i>Empathy</i> lessons focus on the reduction of prejudice and stereotypes, and active listening. The <i>Anger Management</i> lesson addresses advanced coping strategies. The <i>Problem Solving</i> unit reviews the problem-solving model, and presents the concept of goal-setting. <i>Skill Application</i> lessons demonstrate how to apply skills in dealing with putdowns and negotiating for one's wants. (8 lessons)

^a Curricular level corresponds to year of secondary school. ^b Not investigated in present study.

specific skills in small groups with role-playing and other classroom activities. Individual extension activities include tasks such as goal setting and self-monitoring of behavior and skill use. Homework assignments attempt to involve students in a larger social milieu by interviewing relatives or working with mentors. Activities for parents and teachers are intended to encourage skill use every day.

The first module in the program, Level 1, introduces basic emotional skills and problem-solving strategies, emphasizing perspective-taking and responding to the emotions and needs of oneself and others. The Level 2 module reviews the concepts and skills presented in the previous unit, and also focuses on factors related to aggression, including hostile attributions and beliefs about its use. (See Table 1 for further details of the program content.) Each lesson is designed to be taught over one to two class periods.

Teacher Training and Implementation

In the current study, teachers received a 1-day training by one of two experienced Com-

mittee for Children trainers. The training began with a rationale and conceptual framework for the program, followed by a dual focus on conducting lessons and providing environmental classroom support for student skill use. Trainers modeled effective teaching strategies as part of the workshop presentation using a variety of formats (e.g., lecture, discussion, reflection, both live modeling and videotape examples). The interactive training workshop also gave opportunities for teachers to practice teaching lessons and specific instructional strategies.

Over the course of a semester within the intervention classrooms, teachers implemented the program as part of a class (health, life skills, social studies, or English) that students completed for credit (pass/fail). Teachers in both groups (intervention and control) sent home letters with students inviting parents to allow their children to participate in the study. The consent rate by class was high ($M = 83\%$). Students whose parents withheld consent participated in regular classroom activities (including the Second Step program) but not study activities (i.e., surveys).

Table 2
Factor Loadings for Endorsement of Aggression Factors

Factor and items	Factor loading
Physical Aggression	
2. Sometimes you have only two choices—getting hit or hitting the other kid first.	.67
3. Sometimes you have to fight other kids to get respect.	.75
4. When two kids are fighting each other, it's all right for you to stand there and watch.	.40
8. It's okay to hit someone if they do something mean to you.	.73
11. There are only two kinds of kids—the kids who fight and the kids who get beaten up.	.79
13. When a friend of yours is in a fight, it's all right to cheer for them.	.57
14. It's okay to hit someone if they really make you angry.	.61
Verbal Derogation	
6. It's best to avoid repeating stories about others, if you don't know what's true.	.68
7. When one kid is picking on another, it's not right for you to join in.	.60
9. There are always other ways to solve an argument besides insulting a kid or getting put down yourself.	.58
10. It's best to avoid even listening to gossip or rumors.	.69
15. If you hear something bad about someone it's okay to pass it on.	.37
Social Exclusion	
1. If you're really angry at someone, it's okay to stop talking to them.	.85
5. If you're angry at someone, it's okay to keep them out of your group of friends.	.65

The Level 1 module was implemented with students in their first year of secondary school (Year 1 group), and Level 2 with students in their second year (Year 2 group). Thus, this pilot evaluation study examined students' responses to the second module without systematic exposure to the previous unit, although the intended practice is that the modules are taught in sequence. The study design allowed a preliminary and expeditious evaluation of the

first two modules at the grades for which they were developed.

The curriculum developer regularly consulted with teachers and observed lessons. Assistance and coaching were given to teachers as necessary to ensure implementation integrity. Teachers completed written evaluation of each lesson, enabling a determination of the rate of lesson completion. Individual exit interviews with the curriculum

Table 3
Factor Loadings for Perceived Social Difficulty Factor

Items	Factor loading
1. When you're having a problem with someone, how easy is it to understand their point of view?	.50
2. How easy is it to identify and name the emotions you feel?	.48
3. When you have a problem with other people, how easy is it to stop yourself from doing the first things that pops into your head?	.62
4. How easy is it to think of more than one way to solve a problem?	.56
5. When you try to solve a problem and your solution doesn't work, how easy is it to try something else?	.55
6. When someone says or does something mean to you, how easy is it to keep your anger under control?	.65
7. How easy is it for you to say 'no' to your friends, if they want you to do something you don't want to do?	.54
8. How easy is it for you to stand up for yourself when someone picks on you?	.44

developer also established evidence of program completion.

Measures

Endorsement of Aggression Scale.

This 15-item written survey (see Table 2) asked students to indicate their agreement (1 = *don't agree*, 2 = *agree a little*, 3 = *agree a lot*, 4 = *completely agree*) with statements that endorsed or proscribed aggressive behavior. The majority of the items originated with the Legitimacy of Aggression Scale developed by Slaby and Guerra (1988). Shown to have a 10-week, test-retest reliability of .88, the original scale was predictive of aggressive behavior recorded by observers. Erdley and Asher (1998) extended the scale to beliefs about direct verbal and physical aggression, reporting high internal consistency (Cronbach's alpha = .94). The belief that aggression is a legitimate response was associated with attributing hostile intent in ambiguous situations, corresponding to higher approval ratings of antisocial goals, and lower ratings of prosocial goals. Slight wording changes were made to ensure the language was appropriate for junior high

and middle school students. In order to assess relational aggression, five original items about gossip and social exclusion were also included, adapted from peer nomination instruments used by Crick and her colleagues (Crick & Bigbee, 1998; Crick & Grotpeter, 1995) and rewritten as belief statements.

Perceived Social Difficulty Scale. An eight-item questionnaire was created based on the work of Perry, Perry, and Rasmussen (1986) who found that the perceived difficulty of controlling anger and inhibiting aggression predicted aggressive behavior in children. Erdley and Asher (1996) found that aggressive children saw themselves as more able to perform antisocial behaviors and less able to perform prosocial skills, such as solve problems or work things out peacefully. Furthermore, the children were most likely to pursue prosocial goals such as getting along with others if they believed themselves relatively capable of performing the requisite skills.

For the current study, skills specifically targeted by the Second Step program were identified. Students rated the difficulty they would have performing skills such as manag-

ing anger, understanding another's point of view, standing up for oneself, and generating solutions to problems (see Table 3). The response format was a 4-point Likert scale (1 = *EASY!*, 2 = *easy*, 3 = *hard*, 4 = *HARD!*). Possible range of pre- and posttest scores was 8 to 32.

Procedure

The confidential surveys were given to the intervention and control students at the beginning (Time 1) and end (Time 2) of the semester. Each teacher appointed a student who would collect the surveys, place them in an envelope, and deliver to the school office for mailing. Thus, responses were never viewed by the classroom teacher.

Because teachers differed in their pacing of lessons over the semester, the interval between program completion and posttest varied between 1 and 5 weeks across classrooms.

Study Design and Analysis

Although the design of the study called for random assignment of classrooms to the experimental and control groups, only the Canadian sample met this criterion. Each of the Canadian teachers had two participating classrooms, one of which was assigned at random to the intervention and the other to the control condition. Some of the other teachers in the study were unwilling to be in one group or the other. For example, several teachers who had previously taught the program indicated they would participate in the study only if they were allowed to teach the program to their students. Intervention and control groups, therefore, may not be equivalent due to the lack of randomization of classrooms.

Because multiple constructs were measured and multiple data points were collected on the same measures, doubly multivariate repeated measures analysis of variance tests (SPSS Advanced Models 10.0, 1999) were used to analyze the Endorsement of Aggression factors (i.e., Physical Aggression, Verbal Derogation, and Social Exclusion). This procedure allowed specification of the appropriate covariate for each independent measure

(Tabachnick & Fidell, 1996). Tests were performed separately for the Year 1 and Year 2 curricula groups (as curriculum level was confounded with year in secondary school). The within-subjects variable was Time (pre- or posttest) and the between-subjects variables were Group (experimental vs. comparison) and Gender. Univariate repeated measures ANOVAs were performed only if multivariate findings were significant. Repeated measures ANOVAs were performed on Perceived Social Difficulty, analyzing Year 1 and Year 2 groups separately. The within-subjects variable was Time, and the between-subjects variables, Group and Gender.

Validation of our primary hypotheses (i.e., the effect of program participation on student attitudes) would be indicated by significant Time x Group interactions in the initial multi- or univariate tests. The effect size index reported is Cohen's *d*, converted from partial eta-squared (h^2) for analyses involving ANOVA models (Friedman, 1968).

Results

Program Implementation

Teachers completed the entire curriculum, with the exception of one teacher who completed all but one lesson. Thus, the overall rate of program completion across teachers was 99%. Teachers reported teaching between one and five lessons per week. *T*-tests indicated that those teaching the Year 2 curriculum reported teaching significantly ($p < .05$) more lessons per week ($M = 3.00$) than Year 1 teachers ($M = 2.33$).

Preliminary Analyses

Scale scores were obtained by summing the items. Positively worded items were reverse-coded. A factor analysis with oblique rotation (i.e., Oblimin) was performed on the Aggression Endorsement Scale items at pretest.² Three factors were extracted: Physical Aggression (7 items), Verbal Derogation (5 items), and Social Exclusion (2 items), with eigenvalues of 4.58, 1.28, and 1.08, respectively. (See Table 2 for items and factor loadings.) All had factor loadings of .40 or above with one exception. Item 15 loaded .37 on both

Table 4
Endorsement of Aggression by Student Year of Secondary School and Group

Measure	Program		Comparison	
	Pretest	Posttest	Pretest	Posttest
Year 1 students				
Physical Aggression ^a	11.19 (3.98)	11.02 (4.85)	10.83 (3.84)	10.89 (4.19)
Verbal Derogation ^b	9.55 (3.01)	8.35 (2.79)	9.51 (2.80)	8.99 (2.65)
Social Exclusion ^c	3.94 (1.30)	3.78 (1.55)	3.71 (1.34)	4.15 (1.73)
Perceived Social Difficulty ^d	19.48 (3.97)	18.59 (4.43)	18.64 (3.62)	18.39 (4.51)
Year 2 students				
Physical Aggression	13.55 (5.10)	10.72 (5.24)	13.00 (5.37)	13.83 (5.51)
Verbal Derogation	10.39 (3.49)	7.64 (3.47)	10.18 (3.24)	9.80 (3.62)
Social Exclusion	4.07 (1.46)	3.32 (1.52)	4.29 (1.61)	4.58 (1.60)
Perceived Social Difficulty	19.49 (3.84)	17.92 (5.00)	20.20 (4.42)	20.08 (4.86)

^a Possible range of pre- and posttest scores = 7 to 28. ^b Possible range of pre- and posttest scores = 5 to 20. ^c Possible range of pre- and posttest scores = 2 to 8. ^d Possible range of pre- and posttest scores = 8 to 32.

the Verbal Derogation and Physical Aggression factors, but was kept on the Verbal Derogation factor because the item was most consistent with its underlying construct. Item 12 was omitted as it loaded on both the Physical Aggression and Social Exclusion factors, despite dealing with Verbal Derogation in its content (“It’s okay to say something mean to someone if they say something mean to you”). Internal consistency analyses revealed Cronbach’s alpha coefficients of .87 for Physical Aggression, .70 for Verbal Derogation, .65 for Social Exclusion, and .89 for the overall Endorsement of Aggression scale.

A factor analysis was also performed on the Perceived Social Difficulty items.² Based on inspection of the scree plot, a single factor was retained explaining 29.8% of the variance (eigenvalues > 1.2). (See Table 3 for factor loadings.) Cronbach’s alpha for the Perceived Social Difficulty Scale was .76. Correlations between the pre- and posttest scores for control students were .673 for the Endorsement of Aggression Scale and .603 for the Perceived Social Difficulty Scale.

Analysis of Year 1 Curriculum

Endorsement of Aggression. As predicted, the omnibus multivariate test on the three Endorsement of Aggression factors revealed a significant Time x Group interaction, $F(3,227) = 3.57, p < .05, es = .43$. Univariate tests revealed a significant Time x Group interaction for Social Exclusion only, $F(1,229) = 7.87, p < .01, es = .37$. Although intervention group means appeared to decrease over time for Physical Aggression and Verbal Derogation, the univariate tests were not significant for Group. *T*-tests were conducted to follow up the significant univariate tests. An independent samples *t*-test showed that at pretest, Year 1 program students endorsed social exclusion significantly more than controls, $t(323) = 2.11, p < .05$ (see Table 4). Paired-samples *t*-tests revealed that Year 1 controls significantly increased their endorsement of social exclusion from pre- to posttest, $t(72) = -2.50, p < .05$, whereas Year 1 program students stayed relatively constant over time. Thus, the prediction that Second Step students receiving the Level 1 unit would show decreased endorsement of

Table 5
Perceived Difficulty of Performing Social Skills, by Student Year

	Program		Comparison	
	Pretest	Posttest	Pretest	Posttest
Year 1 students	19.48 (3.97)	18.59 (4.43)	18.64 (3.62)	18.39 (4.51)
Year 2 students	19.49 (3.84)	17.92 (5.00)	20.20 (4.42)	20.08 (4.86)

Note. Possible range = 8 to 32.

aggression relative to controls was supported with respect to social exclusion.

The omnibus multivariate test on the three factors also revealed a significant effect for Gender, $F(3,227) = 10.92, p < .001$, indicating that girls endorsed aggression less than boys. A Time x Gender interaction was also significant, $F(3,227) = 2.83, p < .05$. Univariate tests evidenced a significant Time x Gender interaction for Physical Aggression only, $F(1,229) = 4.83, p < .05$. As predicted, independent samples *t*-tests showed that boys' endorsement of physical aggression ($M = 11.95, 12.56$ at pre- and posttest, respectively) was higher than girls' ($M = 9.99, 9.72$, at pre- and posttest, respectively) at both pretest, $t(233) = 4.05, p < .01$, and posttest, $t(206) = 5.26, p < .01$. Moreover, paired samples *t*-tests indicated that boys' endorsement of physical aggression did not change significantly from pre- to posttest ($t < 1.5$), whereas girls' endorsement decreased over time, $t(111) = 3.04, p < .01$. A gender difference was not found for endorsement of Verbal Derogation or Social Exclusion at either pre- or posttest.

Perceived difficulty of performing social skills. The repeated measure ANOVA on Perceived Social Difficulty for Year 1 students revealed significant effects for Time, $F(1,226) = 4.70, p < .05$, and Time x Gender, $F(1,226) = 6.95, p < .01$, but no Group effects. Paired-samples *t*-tests indicated significant reductions in perceived difficulty of performing social skills for Year 1 girls from pre- to posttest ($M = 19.92, 18.53$, respectively), $t(111) = 3.91, p < .001$, but not for Year 1 boys ($M = 18.55, 18.53$, respectively), $t < 1$ (see Table 5).

Analysis of the Year 2 Curriculum

Endorsement of Aggression. The omnibus multivariate test indicated between-subjects main effects for Group, $F(3,250) = 7.20, p < .001$, and Gender, $F(3,250) = 13.65, p < .001$. Moreover, a significant Time x Group interaction was found as predicted, $F(3,250) = 15.86, p < .001, ES = .87$. Univariate tests indicated significant Time x Group interactions for Physical Aggression, $F(1,252) = 37.03, p < .001, ES = .77$, Verbal Derogation, $F(1,252) = 26.42, p < .001, ES = .65$, and Social Exclusion, $F(1,252) = 23.36, p < .001, ES = .61$.

Paired-samples *t*-tests revealed significant reductions in Endorsement of Physical Aggression, Verbal Derogation, and Social Exclusion for Year 2 program students over time, $t(146)s = 6.23, 8.12, 5.03$, respectively, all $ps < .001$ (see Table 4). In contrast, controls actually increased in their Endorsement of Social Exclusion, $t(120) = -2.02, p < .05$, marginally increased in Endorsement of Physical Aggression, $t(116) = -1.96, p = .05$, and remained constant in Endorsement of Verbal Derogation. Moreover, independent sample *t*-tests demonstrated that although groups did not differ significantly at pretest ($ts < 1.6$), Year 2 program students' endorsement of aggression was significantly lower than controls' at posttest for Physical Aggression ($ES = .50$), Verbal Derogation ($ES = .60$), and Social Exclusion ($ES = .73$), $t(291,289,292)s = -4.29, -5.07, -6.29$, respectively, all $ps < .001$. Hence, the prediction that program students receiving the Level 2 unit would be less likely to endorse

aggression relative to controls was supported across aggression type.

A multivariate Time x Group x Gender interaction, $F(3,250) = 4.45, p < .01$, was followed up with univariate tests, yielding Time x Group x Gender interactions for Physical Aggression, $F(1,252) = 4.73, p < .05, ES = .27$, and Verbal Derogation, $F(1,252) = 7.11, p < .01, ES = .33$. Paired- and independent-samples t -tests were then conducted. Results indicated that Second Step boys' and girls' reductions in endorsement of physical and verbal aggression over time followed similar patterns showing significant reductions at posttest. Comparison girls, however, significantly increased their endorsement of social exclusion from pre- to posttest ($M = 4.34, 4.75$, at pre- and posttest, respectively), $t(66) = -2.31, p < .05$, and comparison boys marginally increased their endorsement of physical aggression, $t(52) = -1.96, p = .06$.

As predicted, independent samples t -tests showed that Year 2 boys' endorsement of physical aggression ($M = 15.08, 13.67$ at pre- and posttest, respectively) was higher than girls' ($M = 11.79, 10.90$, at pre- and posttest, respectively) at both pretest, $t(257) = 5.32, p < .01$, and posttest, $t(285) = 4.26, p < .01$. A gender difference was not found for endorsement of Social Exclusion at either pre- or posttest, or for Verbal Derogation at posttest. Year 2 boys ($M = 10.95$) indicated greater endorsement of Verbal Derogation than did Year 2 girls ($M = 9.77$) at pretest, $t(258) = 2.84, p < .01$.

Perceived Social Difficulty. The repeated measures ANOVA on Perceived Social Difficulty for Year 2 students revealed significant effects for Time, $F(1,250) = 10.57, p < .01$, and Time x Group, $F(1,250) = 7.29, p < .01, ES = .34$ (see Table 5). Paired-samples t -tests showed that Year 2 program students perceived social skills as less difficult to perform at posttest ($M = 18.04$) than at pretest ($M = 19.55$), $t(141) = 4.63, p < .01$, whereas Year 2 controls remained relatively constant in their perceptions ($M = 20.20, 20.09$ at pre- and posttest, respectively), $t < 1$.

Lesson Concentration and Attitude Change

Because Year 2 teachers reported teaching significantly more lessons per week than Year 1 teachers, repeated measures ANOVAs were performed to determine the effect of lesson concentration on program students' attitude change. For Year 1 students, an effect of lesson concentration was found for endorsement of physical aggression, $F(1,153) = 9.52, p < .01$ but not for the other attitude measures. Follow-up paired-samples t -tests indicated that Year 1 students receiving at least 2.5 lessons per week made significant reductions in their endorsement of physical aggression ($M = 12.62, 11.11$, at pre- and posttest, respectively), $t(83) = 3.81, p < .01$, whereas those receiving fewer lessons did *not* make similar reductions ($M = 10.70, 11.04$, at pre- and posttest, respectively), $t < 1$. Year 2 classrooms showed little variance in the average number of lessons per week (range = 2.5 to 3.5).

Discussion

The current study is the first to suggest that a school-based intervention can change attitudes about relational, as well as physical aggression. By the end of the school term, students in their second year of middle/junior high school who participated in Level 2 of the Second Step program were less likely to endorse the use of aggression compared to control students. The Level 2 participants were less tolerant of physical aggression, verbal aggression, and social exclusion than were controls, and were also less likely to view prosocial skills as difficult to perform. Effects of the Level 1 module on students in their first year of middle/junior high school were less consistent. Level 1 participants significantly differed from controls only in their lower endorsement of social exclusion. However, a higher concentration of lessons (i.e., more than two lessons per week) was related to reductions in endorsement of physical aggression for Level 1 participants.

It cannot be determined whether differences in response to the Year 1 and Year 2 programs are due to differences in the samples, variations in program content, or in lesson con-

centration, because the three factors are confounded in the current design. Whereas the Year 1 program concentrates on acquiring basic social skills, the Year 2 lessons were specifically designed to increase motivation to perform the skills (Beland & Sylvester, 1997). An alternative explanation of the outcome differences by year is the greater emphasis on physical and relational aggression in Year 2 lessons. For example, the Year 2 program included a lesson on blocking the spread of rumors, a technique that elicited the most appreciative comments on student evaluation forms (Beland & Sylvester, 1997).

Another possible explanation is that the more robust findings for the Year 2 curriculum were due to the more concentrated implementation in those classrooms. Year 1 students who were taught the lessons more frequently during the week showed significant declines in the endorsement of physical aggression, relative to those receiving less frequent lessons. This finding lends support to informal educator assessments that the program has more impact if concentrated (Steiniger, 1999). The current results must be viewed cautiously, however, because the number of lessons taught per week was not a controlled variable.

Gender Differences

Male and female program participants exhibited few differences in the degree of attitude change. Gender differences, when present, generally appeared in the pretest scores. As predicted, girls in this study showed less initial tolerance of physical aggression than boys. Girls in their second year of middle/junior high school were also less tolerant of verbal aggression and rumor-spreading than their male counterparts. However, social exclusion of peers was endorsed equally at pretest by boys and girls.

Most studies of elementary students find girls exhibiting higher levels of relational aggression than boys (Bjorkqvist, Lagerspetz, & Kaukianen, 1992; Cairns, Cairns, Neckerman, Ferguson, & Garipey, 1989; Crick & Grotpeter, 1995). Some research suggests that the frequency of this type of aggression is related to density of the individual's social network

(Green, Richardson, & Lago, 1996; Lagerspetz, Bjoerkqvist, & Peltonen, 1988). The findings of the current study may thus reflect a shift towards greater social density among adolescent boys and an increasing appreciation that relational aggression can inflict harm, a developmental trend found by Bjorkqvist et al. (1992).

Differentiation of Physical and Relational Aggression

Consistent with research by Crick and Grotpeter (1995), adolescents' beliefs about physical aggression were differentiated from beliefs about social exclusion. It was anticipated that items related to social exclusion and rumor-spreading would group together on a "relational aggression" factor. The rumor items, however, formed a factor with more direct forms of verbal aggression. (In contrast, Crick and Grotpeter's single item relating to face-to-face insults grouped with the two items on physical aggression.) The current students were older than those studied by Crick and colleagues, which may account for the differences. The relatively small number of items in the two studies may also have contributed to unreliability in the factor structure.

Reliability is a particular issue for the social exclusion factor, which consisted of only two items. Future research should expand the number of items related to direct and indirect physical, verbal, and exclusionary aggression for a more accurate view of the factor structure. Differentiating more precisely between subtypes of aggression endorsement would also enable further investigation of apparent gender differences.

Future Directions

A limitation of the present study was our inability to randomly assign intervention condition and thus infer causality. Some of the teachers' reluctance to be in the control group is most likely indicative of the importance they placed on teaching social-emotional skills. Thus, the differences found between the Second Step and control groups may be due to dissimilarities in general teaching practices or teacher attitudes rather than to program

implementation. An experimental design that counterbalances grade, program content, and secondary school entry would help disentangle developmental, curriculum, and contextual effects.

Further research is particularly needed to look at the impact of program participation under varying conditions of implementation. The present results suggest that concentration of lessons may be influential in program success. However, this study was limited in its measurement of other aspects of implementation, such as lesson quality and extra-lesson support of students' skill use. Indeed, the importance of examining the implementation process has been increasingly recognized by prevention researchers (see special issues on the implementation of prevention programs: e.g., Zins, Elias, Greenberg, & Pruetz, 2000a, 2000b).

Long-term, sequential exposure would also be expected to strengthen program effects. The curriculum investigated here is designed to be implemented over the first 2 years of secondary school. Although students receiving the Level 2 module in this study did not receive the preceding Level 1 unit, these students evinced more extensive social-cognitive changes compared to controls than did students receiving the Level 1 unit. A more comprehensive and sequenced program implemented school-wide would likely have been more effective, a design recommended for social emotional learning programs (Elias et al., 1997). The Level 3 module in conjunction with Levels 1 and 2 allows for such an implementation throughout 3 years of secondary school, but has yet to be empirically tested.

The current study used only self-report data, which can suffer from significant biases including the desire to present oneself in a socially desirable manner. It is possible that a program-related change in what behavior students consider socially desirable may itself have positive implications for behavior. Nevertheless, it is unknown whether the social-cognitive changes noted in the Second Step group were accompanied by parallel behavioral changes.

A more extensive battery of outcome measures should be used in future research,

including behavioral ratings (e.g., self, peer, or teacher reports) and/or direct observation of behavior (Achenbach, McConaughy, & Howell, 1987). A multimethod, multi-informant approach is particularly important when assessing aggression, for several reasons. First, informant information will be limited by the respondents' direct experience and awareness of the behavior. Adult informants, for example, are likely to be most accurate when they assess aggression that is associated with visibly disruptive behavior. In contrast, adults appear to have a quite limited awareness of bullying, which tends to be more covert in nature (Atlas & Pepler, 1998). Peers may therefore be more accurate informants than teachers in such cases. Peer reports have been used extensively in studies of relational and physical aggression and have demonstrated both concurrent (Crick, 1997) and predictive validity (Crick, 1996).

Another strong argument for employing multiple methods is to increase the probability of detecting program-induced change. Direct observation may be the most sensitive indicator of change, as blind observers are not likely to be affected by children's prior status among peers. Moreover, observers will utilize the same criteria for coding behaviors during both pre- and posttest periods, avoiding the problem of shifting definitions that can occur with teacher, peer, or self-reports as a result of an intervention. In sum, given the limitations of each method, a multimethod, multi-informant approach is preferable, with some degree of inconsistency across methods expected.

The social-cognitive self-report measures utilized here need to be cross-validated with behavioral measures to determine their concurrent and predictive validity. Although many measures relating to physical aggression are available, relational aggression measures are few. Development of basic measurement capabilities is needed to assist with evaluation research in the area of relational aggression and its intervention.

Perhaps the greatest need is for additional information about effective ways to reduce relational aggression. To our knowledge, this is the first attempt to assess the impact of

a school-based intervention on attitudes about social exclusion and gossip. The current findings offer some encouragement that an approach shown to be effective at reducing physical aggression (Grossman et al., 1997) might also influence student use of relational aggression.

Footnotes

¹Complete copies of the curriculum may be obtained by contacting the lending library at Committee for Children, 800-634-4449.

²Factor analytic results reported for both scales include the addition of survey data from 73 eighth-grade students who were part of a larger study. The factor structure did not change when the smaller sample was used.

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