

The Effects of City-Wide Implementation of “Second Step” on Elementary School Students’ Prosocial and Aggressive Behaviors

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This study examined the impact of implementing Second Step, a violence prevention program, using a comprehensive, city-wide approach. The evaluation included 741 3rd–5th graders in six schools. Student surveys, behavioral observations, and discipline referrals were used to assess aggressive-antisocial and prosocial behaviors. We found significant improvements in positive approach-coping, caring-cooperative behavior, suppression of aggression, and consideration of others, but no changes in aggressive-antisocial behaviors. Behavioral observations and disciplinary referrals showed no significant changes. The program was implemented with high fidelity and engaged a wide range of participants from the community.

Editors’ Strategic Implications: *Key implementation issues are presented for a cross-site, city-wide evaluation on “Second Step.” School and community officials will benefit from these lessons, as well as the authors’ recommendations for further longitudinal study with appropriate comparison groups.*

KEY WORDS: second step; violence prevention; program evaluation; elementary school students; implementation.

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Youth violence is widely recognized as a serious and complex public health problem (Mercy & O'Carroll, 1988; U.S. Department of Health and Human Services, 2001). Several longitudinal studies have demonstrated a link between early aggressive and antisocial behavior in youth and later violence in adolescence and young adulthood (Farrington, 1991; Huesmann, Eron, Lefkowitz, & Walder, 1984; Olweus, 1979; Tremblay et al., 1992). These studies show the presence of a predictable and stable developmental pathway to violence that begins in early childhood (Reid & Eddy, 1997). Therefore, prevention programs must begin early, ideally at the elementary school level or even earlier, in order to break this continuum of violence (Rivara & Farrington, 1995). Schools have been identified as ideal environments for implementing prevention programs (Mayer, 1995; Walker et al., 1996), and a multitude of programs are available to address violence prevention in this setting.

One such program, *Second Step* addresses the socioemotional skills of children and youth in grades pre-kindergarten through middle school and seeks to enhance their social environment by providing students with social cognitive skills (Bandura, 1986) that enable them to negotiate situations of interpersonal conflict in a non-violent manner (Thornton, Craft, Dahlberg, Lynch, & Baer, 2000). *Second Step* is already widely used in the United States and Canada, has been adapted for use in other countries (Frey, Hirschstein, & Guzzo, 2000), and offers developmentally-appropriate curricula for children in grades pre-Kindergarten through middle school. The program is recommended as a best practice or "model" program by several organizations—Safe, Disciplined, and Drug-Free Schools Expert Panel (U.S. Department of Education, 2001); Hamilton Fish Institute (1999); U.S. Department of Health and Human Services (2001); Communities that Care (Developmental Research and Programs, Inc., 2000)—because of its modest proven effectiveness combined with its ease of implementation and accessible cost.

Second Step's effectiveness has been tested in several open trial evaluations and one randomized controlled trial, with promising, but somewhat inconsistent, results. A randomized, controlled study of *Second Step* with 790 second and third grade students in Washington State revealed that the curriculum reduced physically violent behavior in participants and increased the use of prosocial behavior, with effects on physical aggression in the classroom lasting up to six months (Grossman et al., 1997). During the same period, students in the study who did not receive the *Second Step* curriculum showed increases in physical and verbal aggression at school and no appreciable changes in neutral or prosocial behavior. However, a separate evaluation of *Second Step* with sixth graders showed less promising effects, which were attributed to a low level of teacher's commitment to the program at some sites, as well as other problems related to program implementation (Orpinas, Parcel, McAlister, & Frankowski, 1995). Other studies of *Second Step* have reported no change in violent behavior (Botzer, 2003) or in antisocial

behavior (McCabe, 2000; Taub, 2002), except with initially highly aggressive children.

Although studies have been inconsistent in their abilities to demonstrate positive effects on violent and aggressive behaviors, they have been consistent in the demonstration of significant improvements in prosocial behaviors that have been shown to precede and predict reductions in student aggression in other studies (Frey et al., 2000; McMahon & Washburn, 2003), including: empathy (McMahon & Washburn, 2003; Ryan, Aten, Auinger, & Miller, 2004; Washburn, 2002), problem solving and understanding of anger management skills (Ryan et al., 2004), social competence and peer engagement (Grossman et al., 1997; Taub, 2002), and awareness of others, classroom climate, and self control (Lillenstein, 2002). Researchers have offered several possible reasons for *Second Step*'s inability to demonstrate a consistent impact on violent and aggressive behaviors, including failures to achieve high and consistent implementation fidelity in the research setting (McMahon & Washburn, 2003; Orpinas et al., 1995), strong teacher buy-in (Orpinas et al., 1995), community involvement (McMahon & Washburn, 2003), and adequate follow-up (Taub, 2002)—all characteristics linked to prevention program effectiveness. Other characteristics associated with program effectiveness include addressing multiple risk and protective factors (Nation et al., 2003); intensive training and technical support (Domitrovich & Greenberg, 2000; Durlak & Ferrari, 1998; Nation et al., 2003); strong staff and administrative support (August, Lee, Bloomquist, Realmuto, & Hektner, 2003; Kam, Greenbert, & Walls, 2003; Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). We sought to determine if the effectiveness of *Second Step* could be enhanced by incorporating these characteristics into its design and implementation. Improving the effectiveness of such a widely-used and accessible curriculum could have broad and important implications for the prevention of school violence.

For the current study, we specifically focused on achieving the following four goals: (1) high implementation fidelity; (2) strong teacher and administrator buy-in and support; (3) high levels of community involvement and support; and (4) the provision of intensive, ongoing training and technical support. This is the first reported implementation of *Second Step* as a school-community, city-wide intervention. Using a multi-component evaluation methodology, we examined the effectiveness of *Second Step* in this setting, with the hypothesis that this implementation approach would enhance the effectiveness of *Second Step* by broadening the scope of the program and addressing some of the potential reasons for lack of success in the past. Our evaluation included three major components: student self-report questionnaires, independent behavioral observations and review of disciplinary referrals. For the current study, we report the effects of *Second Step* on 3rd and 4th grade students' outcomes in terms of changes in risk and protective factors.

METHOD

Setting and Participants

All eight elementary schools in Meriden, Connecticut, participated in the city-wide implementation of *Second Step*. Meriden is a small city with approximately 58,000 residents, 20% of whom are members of racial/minority ethnic groups (Connecticut Department of Economic and Community Development, 1999). Meriden's public school students are ethnoculturally diverse (37% Hispanic and 12% African American), and 13% live in households in which English is not the primary language (Connecticut Department of Education, 2004). Almost half (46%) of the students in Meriden live in low-income households (i.e., are eligible for free or reduced-price meals at school), compared with 29% of students statewide.

Of 986 potential participants, 758 (77%) consented to take part in the evaluation. Seventeen students with parental consent did not complete the study measures, resulting in a final N of 741 (364 third graders and 377 fourth graders). This sample was representative of the student population in the Meriden school district (Table I): 50.2% female and 49.8% male, 13.5% African American/Black, 47.0% White, 39.0% Hispanic, and 0.7% other races/ethnicities. Racial and ethnic distributions differed between schools, consistent with the varying neighborhood ethnic compositions for each school.

All third and fourth graders from five of the eight elementary schools (due to resource limitations) in Meriden were eligible to participate in the evaluation. The five schools were selected to be representative of the overall elementary school student body and climate. Students in grades 1 and 2 were not eligible to participate because the self-report survey was not believed to be appropriate for this age group, while those in grade 5 were not eligible due to potential confounding by another

Table I. 2002–2003 Demographics: Study Population vs. District

Demographic characteristic	Study population	Meriden school district
Race/ethnicity		
White	47.1%	49.3%
Black	13.5%	12.0%
Hispanic	38.7%	36.7%
Other	0.7%	2.1%
Grade		
3	49.1%	NA
4	50.9%	NA
Gender		
Female	50.2%	NA
Male	49.8%	NA

Note. NA: not applicable.

violence prevention curriculum that was simultaneously being implemented at this grade level.

Of the five schools in the evaluation, two utilized active informed consent and three utilized passive informed consent, following a protocol that was approved by the Institutional Review Board of Connecticut Children's Medical Center and by the Meriden School District Superintendent.

Curriculum, Training, and Implementation

Second Step is a school-based social-emotional curriculum for children in grades pre-kindergarten through middle school. At the elementary school level, lessons are divided into three units teaching skills in Anger and Emotional Management, Empathy, and Impulse Control. The teaching methods employed in the *Second Step* curriculum include adult and peer modeling, role-playing, and coaching and cueing.

In Meriden, *Second Step* was implemented for the first time as a city-wide intervention to promote consistent behavioral expectations for children and promote widespread use of modeling and verbal coaching/cueing by teachers, school staff, parents, and community workers who have regular contact with children. Program implementation included all eight elementary schools in the district, as well as its two public middle schools. All training sessions were conducted by certified *Second Step* trainers, except where indicated. Implementation took place during the 2002–2003 school year and included the following components:

- Full-day training of all elementary school teachers and staff, including non-classroom teachers (e.g., Music, Physical Education, Special Education) and school administrators using the one-day training module described in the *Second Step Trainer's Manual* (Committee for Children, 2002);
- A series of three, 1-h training sessions on each of the three curriculum components (Anger/Emotional Management, Empathy, and Impulse Control) adapted for non-certified school staff (e.g., Custodial staff, Teacher's Aides, Cafeteria Staff) and offered at each school;
- A series of four, 1-h workshops for parents offered at each school and one secondary location (public library) and conducted by a Parent Education Consultant supervised by a certified *Second Step* trainer using an adaptation of the *Second Step Family Guide*;
- Ongoing technical support provided to each school by certified *Second Step* trainers including weekly school visits, a *Supporting Second Step* bulletin board identifying the skills and concepts being taught at each grade level, and periodic *Second Step* newsletters highlighting teachers using creative approaches to reinforcing *Second Step* and describing implementation tips for classroom and non-classroom teachers;

- A series of four flyers released through local newspapers in both English and Spanish to describe *Second Step* and identify ways in which parents and community members could model and reinforce the specific skills being taught in elementary schools;
- A 3.5-day Training of Trainers adapted to the needs of those working with children and families in the community attended by members of community agencies and organizations, parents, and select members of the school system.
- A school and community partnership team formed to aid in the consistent application of *Second Step* language and principles throughout the school district and the community as a whole.

In addition, during and for the year prior to implementation, program staff met regularly with principals, teachers, and other staff at each of the schools, as well as with parent-teacher organizations. These meetings were designed to build support for *Second Step*, answer questions and concerns, and assist schools in developing site-based implementation plans based on their individual lesson schedules. Focus groups were conducted with students, parents, and teachers to help tailor the *Second Step* training programs to meet school-specific needs. Brief evaluation surveys were used to assess the efficacy and acceptability of training sessions and a year-end follow-up teacher survey was performed to examine measures of support for and implementation of the *Second Step* program.

Assessment

Assessments were conducted immediately prior to and following implementation of the curriculum. Assessment measures included a student self-report questionnaire that was completed by 3rd and 4th grade students and administered by trained research assistants; a student behavior observation checklist that was conducted by two trained research assistants during two, two-week periods at the start and end of the school year; and a disciplinary referral checklist that was used by a single research assistant to code disciplinary referral records for the 2001–02 and 2002–03 school years. All assessment measures tracked students using an ID number to protect confidentiality and allow for cross-comparisons between assessment measures.

Self-Report Questionnaire

In September 2002 and May 2003, research assistants administered self-report questionnaires to 3rd and 4th grade participants in classroom groups. A total of 639 students (87% of the baseline sample; 67% of all eligible students) completed both the baseline and follow-up questionnaires. Of students who completed

the baseline survey, Black students were more likely than White students to not complete the post-test (17% vs. 7%, respectively). The pre-test and post-test samples were similar in all other respects. The 67 item self-report survey was presented to each of the classrooms in a 45-minute session, with a maximum of 25 students per session. The survey items were read orally to the students and administered in a standard order to each group. Students were encouraged to answer each item but were told that they could “pass” (leave blank) any item they did not want to or could not answer. The assessors encouraged students to complete the items but did not in any way influence their specific response choices. Items that were left blank were coded as missing data.

The self-report questionnaire included nine outcome measures taken from four surveys validated for use with school-aged children: *Kidcope* (La Greca, Silverman, Vernberg, & Prinstein, 1996), the United States Centers for Disease Control and Prevention *Youth Risk Behavior Survey* (see <http://www.cdc.gov/HealthyYouth/yrbs>), the *Modified Aggression Scale* (Bosworth, Espelage, & Simon, 1999), and the *Weinberger Adjustment Inventory* (Weinberger & Schwartz, 1990). Psychometrics for each measure based on the present sample are presented in the Results section.

The 12-item *Kidcope* assesses sub-scales for positive (4 items; problem focused or self-management) and negative (8 items; avoidant/blame/wishful thinking) coping with daily stressors. The positive coping sub-scale has been shown to be internally consistent ($\text{Alpha} = .77$), and both sub-scales have been shown to be temporally reliable and to have convergent validity in relationship to multimodal coping measures (Prinstein, La Greca, Vernberg, & Silverman, 1996).

Three items from the *Youth Risk Behavior Survey* were summed to provide a score for the frequency of fighting. The items were cumulated in a single score in order to reduce temporal instability (*Kappas* for individual items over a 10–22 day retest period ranged from .47–.64; Brener et al., 2003) and to provide a measure that could be evaluated for internal consistency. Although no evidence of validity has been reported, the items are the most widely used self-report assessment of youth fighting behavior, having been selected by the Centers for Disease Control and Prevention for its national Youth Risk Behavior Surveillance system.

The *Modified Aggression Scale* (Bosworth et al., 1999) includes four factor-analytically derived subscales that assess fighting-related beliefs (6 items, $\text{Alpha} = .71$), bullying (4 items, $\text{Alpha} = .83$), anger (4 items; $\text{Alpha} = .70$), and intention to use non-violent behavior (8 items; $\text{Alpha} = .63$). Initial evidence of convergent validity was established with middle school students based on demonstrating predicted inter-correlations of the subscales (Bosworth et al., 1999).

The 30-item *Weinberger Adjustment Inventory Self-Restraint Scale* includes four factor analytically-derived internally consistent subscales for suppression of aggression (7 items), consideration of others (7 items), impulse control

(8 items), and responsibility (8 items). The scale has been shown to be internally consistent (Alpha = .91), temporally reliable (7-month re-test $r = .76$) and to have convergent validity in relationship to the Aggression and Delinquency sub-scales of the Child Behavior Checklist ($r = -.71, -.63$, respectively) (Weinberger, 1996). Self-restraint was assessed in order to describe youths' abilities to inhibit impulses/aggression and to interact with others in a prosocial manner consistent with the goals of *Second Step*.

Behavioral Observations

Behavioral observations were conducted within two weeks of the baseline testing ($N = 545$; 72% of the baseline sample, 58% of all eligible students) and within two weeks of the follow-up testing ($N = 558$; 87% of the post-test sample, 60% of all eligible students). Reasons for not observing students included: insufficient time to observe all children in a classroom group within the 2-week time frame, student absent or could not be located on observation day, or student moved.

Observations were conducted in classroom, playground, and cafeteria settings, each focusing for 5 min on one randomly selected student. The only exception to random selection was that students of any ethnicity that represented less than 12% of the class were selected as the first children to be observed from that class, in order to ensure adequate representation of all ethnicities in each class, and to distribute observations equally across classrooms in the time that was allocated to conduct observations. All eligible students to be observed were listed alphabetically by classroom. A random numbers table was then used to generate the order in which students were observed.

Observations were conducted according to the procedures described by Grossman et al. (1997) using categories from the Social Interaction Observation System, 4th edition (SIOS) for child behavior (neutral/positive, pro-social, borderline, negative, aggressive, physical or verbal distress) and teacher behavior (requests, commands, questions). Specific examples of each category were adapted from the SIOS Manual. The neutral category consisted of non-negative behavior and positive behaviors, such as playing catch, pushing a peer on a swing, or neutral verbal conversation. Prosocial behavior covered acts of kindness, such as comforting a peer, offering to share or expressing sympathy or remorse. Borderline behavior consisted of the students joking around, being playful with no negative intent, or horseplay. The negative behavior category included acts of minor violence or hostility, such as a peer being bossy or irritable, tattling, or verbal defiance directed toward the teacher. Aggressive behaviors included harming another student, name calling, teasing, or insulting. Each category was coded as present or absent every 30 s. Data from individual participants were aggregated for analyses and converted into a single present or absent score for each category for each 5-minute

session. Two trained observers conducted independent simultaneous observations for 81 5-minute sessions scheduled to sample the entire observation period at baseline and post-test in order to evaluate inter-rater agreement. Inter-rater reliability was unacceptable (<75% for only one category (neutral/positive verbal, no target) and was >85% for the remaining 29 coding categories. The observation category with unacceptable reliability (neutral/positive verbal, no target) was difficult to code due to infrequent occurrence and was dropped from analysis. There was no evidence of rater drift during the course of the study.

Disciplinary Referrals

Research assistants collected disciplinary referrals for the 2002–03 school year and suspension records for 2001–02 and 2002–03 school years in June 2003. School administrative staff provided copies of forms documenting each disciplinary referral. The text of the referral was categorized using a standard coding system (see below) and the student's name was re-coded with an ID number in order to ensure confidentiality.

Discipline referral data were coded for categories derived from an initial inspection by the evaluators (JF, JL) of a random sample of six referrals, including three forms of minor delinquency—non-violent behavior (e.g., rude, disrespectful, or disruptive behavior), minor violence (e.g., pushing, tripping, snowball throwing), or destroying or throwing objects (e.g., making marks on the floor with shoes, breaking crayons, throwing pencil, throwing down chair)—and two forms of violence—threatening violence (e.g., taunting other students, bullying, threatening to hit another student) or violent/physical assault (e.g., fighting, kicking, punching, stabbing). Interrater reliability for the referrals was checked by having two raters independently review 45 referral forms, distributed across the five schools. One school was able to retrieve only two referral forms from the index year and was dropped from the referral analysis. Overall interrater agreement for the disciplinary referral data was $Kappa = .87$, with consistent agreement across categories. A frequency score was calculated as a count of the number of referrals for minor delinquency and for violence that occurred in the first three months of the school year (September–November) and in the final three months of the school year (March–May).

RESULTS

Self-Report Questionnaire

The internal consistency of each variable was assessed using Cronbach's Alpha for baseline and post-test administrations (Table II). All but one subscale

Table II. Internal Reliability of Student Self-report Subscales at Baseline and Follow-up

Subscale	Source	Number of Items	Baseline alpha	Follow-up alpha
Positive/approach coping	<i>Kidcope</i>	4	.47	.60
Negative coping	<i>Kidcope</i>	8	.56	.50
Fighting behavior	<i>Modified Aggression Scale</i>	5	.56	.63
Bullying behavior	<i>Modified Aggression Scale</i>	4	.79	.85
Angry behavior	<i>Modified Aggression Scale</i>	5	.81	.63
Caring/cooperative behavior	<i>Modified Aggression Scale</i>	8	.80	.77
Suppression of aggression	<i>Weinberger Adjustment Inventory</i>	7	.83	.87
Impulse control	<i>Weinberger Adjustment Inventory</i>	8	.66	.73
Consideration of others	<i>Weinberger Adjustment Inventory</i>	7	.76	.80
Responsibility	<i>Weinberger Adjustment Inventory</i>	8	.73	.78

from the Modified Aggression Scale and Weinberger Adjustment Inventory were above 0.63 or higher at baseline or post-test or both, with a median of 0.79, indicating that the items within each subscale are likely measures of a single attribute. Internal consistency for the two Kidcope subscales were lower (0.47–0.60), suggesting that results based on these measures may not be reliable. Although the Kidcope has shown evidence of reliability and validity in prior samples of children of similar ages and demographic backgrounds, further investigation of that measure or alternative measures of children’s coping is needed before more than preliminary conclusions can be drawn about the impact that *Second Step* or other school-based programs have on children’s coping with stress.

Based on the three primary focus areas of *Second Step*—empathy, anger/emotion management, and impulse control—it was hypothesized that participants would demonstrate significant increases in scores on positive/prosocial factors and decreases in scores on negative/antisocial factors from baseline to follow-up. Mean scores on each measure included in the baseline and follow-up self-report questionnaire are included in Table III. As expected, students showed significant improvements in positive approach/coping, caring/cooperative behavior, suppression of aggression, and consideration of others. Contrary to expectations, students demonstrated no change in responsibility and a significant decrease in impulse control over the course of the school year. Also unexpected, students showed small but significant increases in angry and aggressive behaviors during the school year, including: negative coping, avoidant/wishful thinking coping, bullying behavior, and angry behavior. There was no significant change in fighting behavior during the study.

Additional analyses were conducted examining change on variables that reflected either prosocial (e.g., higher levels of cooperation or active coping) or negative (e.g., higher levels of aggression or impulsivity) functioning. Positive

Table III. Student Self-report Baseline and Follow-up Results: Means, Standard Deviations, *F*-values, and *p*-values

Measure	Baseline (<i>N</i> = 670)		Follow-up (<i>N</i> = 639)		<i>F</i> -value	<i>p</i> -value
	Mean	SD	Mean	SD		
Positive/approach coping	2.55	.60	2.68	.63	16.60	.000
Negative coping	1.78	.55	1.84	.52	5.50	.019
Fighting behavior	1.68	.59	1.71	.66	1.59	.208
Bullying behavior	1.29	.55	1.45	.72	30.70	.000
Angry behavior	1.79	.80	2.03	.90	39.07	.000
Caring/cooperative behavior	2.92	.73	3.14	.66	51.10	.000
Suppression of aggression	3.66	.81	3.84	1.04	25.70	.000
Impulse control	3.76	.75	3.60	.78	22.57	.000
Consideration of others	3.52	.99	3.65	.94	11.23	.001
Responsibility	4.43	.63	4.44	.64	.02	.897

or negative change on these factor scores was related to consistent positive or negative change on the variables that loaded on them. Fewer than half (41%; $n = 376$) of students reported changes in the negative direction (-1 point or more) on one or more survey variables. Fewer than one in five students (19%, $n = 110$) reported a change for the worse on one or more measures of negative functioning (e.g., anger, avoidant/aggressive coping, bullying), but about one in three students (33%, $n = 194$) reported a lower score at follow-up than at baseline on at least one measure of positive functioning (e.g., positive coping, cooperation, anger suppression). However, 62% ($n = 357$) of students showed specific positive changes ($+1$ point or more) on one or more of the survey measures, with almost half (46%, $n = 265$) reporting positive change on a measure of negative functioning and one third (33%, $n = 189$) reporting positive change on a measure of positive functioning. Most students showed relatively little change, scoring fairly high on the positive measures and low on negative measures at both baseline and follow-up.

Importantly, students who showed specific positive changes on survey measures were significantly more likely than other students to also show a significant decline on a negative survey variable (OR = 2.16, 95% Confidence Interval [CI] = 1.55–3.00), such as bullying or aggression. Thus, specific improvements in prosocial variables were correlated with declines in negative variables. Students who showed specific positive changes were also significantly less likely than other students to show an increase in a negative survey variable (OR = 0.53, 95% CI = .32–.88). Thus, there appears to be a sub-group of students who, by their own report, are improving both in positive domains (e.g., cooperation, positive coping) and in negative domains. Student outcomes were not significantly associated with student race, gender or age, with school or class, or with the type of consent used (passive or active).

Table IV. Frequencies of Observed Behaviors at Baseline and Follow-up for Five Main Behavioral Categories

Category	Baseline (<i>N</i> = 545)	%	Follow-up (<i>N</i> = 558)	%
Neutral behavior	472	73.0	484	87.0
Prosocial behavior	38	5.5	12	2.5
Borderline behavior	114	17.5	57	10.0
Negative behavior	21	3.5	4	1.0
Aggressive behavior	1	0.0	0	0.0

Note: Frequency is expressed as actual number of observances over 546 and 557 observations in the pre-implementation and post-implementation periods, respectively.

All behavior definitions were derived from the Social Interaction Observation System (SIOS) Observer Training Manual (Asher, Neckerman, & Pavlidis, 1994). The neutral category included behaviors coded as child to child physical/non-verbal, child to child verbal/vocal, child to teacher verbal/vocal, child to teacher physical/non-verbal, physical no target, and verbal no target.

Behavioral Observations

There were 545 five-minute behavior observations conducted at baseline and 558 observations at post-test. Behavior frequencies at baseline and follow-up are reported for five main categories in Table IV. Overall, violence and aggression were rarely observed in any of the schools. Few instances of these behaviors were observed during either the baseline or follow-up assessments. Therefore, we were unable to detect any changes in violent or aggressive behavior using student observation data. The frequency of youths observed engaging in neutral behavior did not change from pre-implementation to post-implementation. The frequencies of positive, borderline, and negative behaviors observed at the post-implementation period were lower than those at the pre-implementation observation period. Overall, the reduction in the percentage of observed prosocial behaviors from 5.5% at baseline to 2.5% at post-test was not statistically significant, and was accompanied by comparable or larger reductions in the percentages of borderline, negative, and aggressive behavior—and a corresponding increase in neutral behavior. Thus, the overall change in observed behavior appeared to be from disruptive to neutral on-task behavior. Many behaviors coded as neutral reflected prosocial characteristics tapped by the survey measures (e.g., cooperation, consideration of others; suppression of aggression), and thus the increase in observed neutral behavior appears to parallel the increased levels of those prosocial behaviors identified at post-test on the student survey measures.

Disciplinary Referrals

The frequencies of disciplinary referrals at baseline and follow-up are reported by category in Table V. Of the students who were referred for discipline

Table V. Frequencies of Disciplinary Referrals by Category at Baseline and Follow-up

Referral time period	# Referrals	# Students
September–November 2001	24	5
December–March 2001–02	32	11
March–June 2002	19	7
September–November 2002	39	22
December–March 2002–03	38	26
March–June 2003	80	40

Note: The study Pre-implementation (baseline) period (September–November 2002) and Post-implementation period (March–June 2003) are reported in bold.

during the first three-month period (September through November, $n = 22$), about one in four (23%, $n = 5$) was referred for behaviors coded as threatening violence or destroying/throwing objects. No referrals were made for violent or physical assaults. We compared the baseline and post-test survey scores for these students using a multivariate repeated measures analysis of variance, but neither the overall F nor any univariate F showed evidence of a statistically significant change on any survey measure for this referred sub-group. Almost half (41%, $n = 9$) of the students who received a disciplinary referral at baseline also received a referral at the follow-up assessment. Forty students had disciplinary referrals for any reason during the follow-up assessment period, almost twice as many as during the baseline assessment period.

Students who received a referral during the follow-up assessment period were compared to all other students on baseline survey variables in order to determine if these students were showing evidence of difficulties with coping, anger, or interpersonal behavior at the beginning of the school year. The students who received disciplinary referrals at follow-up scored significantly higher than other students at baseline on: negative coping, $t(632) = -3.27, p = .003$ ($M = 2.14, SD = 0.94$ versus $M = 1.59, SD = 0.62$ for non-referred students); fighting behavior, $t(634) = -4.94, p < .001$ ($M = 2.41, SD = 0.89$ versus $M = 1.65, SD = 0.53$ for non-referred students); and angry behavior: $t(659) = -5.27, p < .001$ ($M = 2.52, SD = 0.83$ versus $M = 1.78, SD = 0.80$ for non-referred students). Students who received disciplinary referrals at follow-up scored significantly lower than other students at baseline on: suppression of aggression, $t(634) = 4.48, p < .001$ ($M = 2.86, SD = 1.04$ versus $M = 3.68, SD = 0.78$ for non-referred students); impulse control, $t(654) = 3.29, p = .001$, ($M = 3.33, SD = 0.90$ versus ($M = 3.77, SD = 0.74$ for non-referred students); and responsibility, $t(659) = 6.01, p < .001$ ($M = 3.81, SD = 0.83$ versus $M = 4.46, SD = 0.60$ for non-referred students). Therefore, students with disciplinary referrals during the follow-up period showed significantly more difficulties with anger, aggression, and impulse control than other students at the start of the study.

At follow-up the students who received a referral during the follow-up period scored significantly higher than other students on: negative coping, $t(619) = -4.19, p < .001$ ($M = 2.15, SD = 0.77$ versus $M = 1.67, SD = 0.63$ for non-referred students); fighting behaviors, $t(36) = -3.99, < .001$ ($M = 2.16, SD = 0.97$ versus $M = 1.49, SD = 0.66$ for non-referred students); bullying behaviors, $t(637) = -6.14, p < .001$ ($M = 2.17, SD = 0.95$ versus $M = 1.14, SD = 0.69$ for non-referred students); and angry behavior, $t(637) = -4.23, < .001$ ($M = 2.64, SD = 0.92$ versus $M = 1.99, SD = .88$ for non-referred participants). Students who received disciplinary referrals at follow-up scored significantly lower than other students at follow-up on: suppression of aggression, $t(638) = 5.86, p < .001$ ($M = 2.86, SD = 0.99$ versus $M = 3.89, SD = 1.01$ for non-referred students); impulse control, $t(638) = 4.21, < .001$ ($M = 3.05, SD = 0.77$ versus $M = 3.62, SD = 0.78$ for non-referred students); consideration of others $t(638) = 4.01, p < .001$ ($M = 3.05, SD = 0.83$ versus $M = 3.69, SD = 0.93$ for non-referred students); and responsibility, $t(638) = 3.27, p = .001$ ($M = 4.10, SD = 0.73$ versus $M = 4.46, SD = 0.62$ for non-referred participants). Thus, students with disciplinary referrals at follow-up continued to demonstrate significantly more difficulties with anger, aggression and impulse control than other students at the end of the school year, as well as lower scores on positive survey variables.

School and Community Participation

In the eight elementary schools in the district, a total of 383 teachers and other certified school staff (97% of those eligible) attended an all-day *Second Step* training. The average satisfaction score for the one-day training was 3.73 on a 5-point scale. A total of 171 teachers (61.3%) from the eight elementary schools implementing *Second Step* completed the year-end survey (Table VI). Overall, teachers said that administrators expressed moderate-to-high support ($M = 3.22, SD = 0.93$) for implementing *Second Step*, while other teachers provided moderate support ($M = 2.98, SD = 0.85$) and parents offered some support ($M = 1.99, SD = 0.98$). Nearly three-quarters (71.7%) of teachers believed that *Second Step* helped their students during the implementation year, and 91.7% said that *Second Step* would help their students in the future. Nine out of ten teachers (89.4%) reported that every teacher at their school was using *Second Step*. The vast majority of teachers (80.7%) reported delivering every *Second Step* lesson for their grade level during the school year, and more than two-thirds (68.3%) reported implementing extension activities in addition to the required lessons. Nearly 90% of teachers said that they integrated *Second Step* into other classroom activities and lessons and 80% used *Second Step* as part of their routine classroom management strategy.

An average of 225 non-certified school staff attended each of three 1-h training sessions on *Second Step* delivered at individual schools. Participation

Table VI. Year-End Teacher Survey: Self-report Results (171 Respondents of 279 Classroom Teachers)

Level of support received for implementing Second Step: District Average (1 = little/no support, 2 = some support, 3 = moderate support, 4 = high support)	
My school's administrators	3.14
District Administrators	2.66
Other teachers	2.97
Other staff	2.37
Parents	1.99
Program staff	2.89
Community	1.43
Committee for Children	1.82
Percent of teachers responding "Yes" (valid percents)	
Second Step helped my students this year	71.7%
Second Step will help my students in the future	91.7%
All teachers at my school are using Second Step	89.4%
My students use Second Step skills effectively <i>on their own</i>	29.6%
My students use Second Step skills effectively <i>when prompted</i>	92.1%
Second Step is a positive addition to my classroom	86.5%
I delivered all the Second Step lessons for my grade	80.7%
I implemented Second Step extension activities	68.3%
I integrated Second Step into other classroom activities and lessons	89.8%
I used Second Step as part of my regular classroom management strategy	80.0%

rates were similar in the five evaluation schools and the three schools not included in the evaluation. An additional 21 teachers took part in a voluntary, multi-day Training of Trainers on *Second Step* to allow them to train new teachers and substitutes to deliver the *Second Step* Program. More than 250 parents attended *Second Step Family Guide* workshops offered at each school and the public library, and 19 parents participated in a Parent Leadership initiative that included training in the delivery of the *Second Step Family Guide*. Overall, parents rated high their understanding of the skills presented in the training sessions (Table VII). With the exception of developing neutral problem statements (2.6), parents rated their skill acquisition as a 2.9 or 3.0 on a 3-point scale. Parents rated their likelihood of using the skills taught as a 3.8–3.9 on a 4-point scale. Parent attendance at the workshops was not associated with disciplinary referrals, behavior observations, or pre-test to post-test changes in student survey measures. At the community level, 34 school and community leaders were involved in a cooperative team that helped plan, build support for, and implement *Second Step* throughout the city. This team helped to secure additional funding for this study from the Meriden School district and to institutionalize the *Second Step* program in elementary and middle schools in the district through the implementation of district-wide character education requirements. Finally, 29 individuals took part in a *Second Step* Training-of-Trainers designed for those working with children and families in the community, and more than 108,000 flyers on *Second Step* (series of four printed in both English and Spanish) were distributed to community members through local newspapers, neighborhood organizations, and schools.

Table VII. Parent Workshop Evaluations: Self-report Results (172 Respondents of 251 Participants)

Level of understanding of skills taught: average response (1 = do not understand, 2 = somewhat understand, 3 = understand)	
Empathy	3.0
Behavior modeling	2.9
Natural reinforcement	2.9
Praise	2.9
Active listening	3.0
"I feel" messages	2.9
"If...then" statements	2.9
Neutral problem statements	2.6
Brainstorming solutions	2.9
Choosing solutions	2.9
Problem-solving steps	2.9
Anger management	2.9
Calming down techniques	3.0

DISCUSSION

Study results suggest that while many students' attitudes, self-perceptions, and behaviors did not change from Fall to Spring, a sub-group of students showed evidence of change across several self-report measures consistent with the goals of *Second Step*. Nearly two-thirds of students showed significant positive changes on one or more of the survey variables during the study. These findings are consistent with other evaluations of *Second Step*, which have shown increases in prosocial beliefs and behaviors in samples of students who were both younger and older than the students in the present study (Frey et al., 2000; Lillenstein, 2002; McMahon & Washburn, 2003; Ryan et al., 2004; Washburn, 2002).

This study failed to demonstrate a statistically significant change in aggression and violent behavior as measured by student self-report. These findings may be the result of a natural increase in levels of aggression among students over the course of the school year, as has been observed in prior studies (Grossman et al., 1997; Reid & Eddy, 1997; Taub, 2002). For instance, while Grossman and colleagues (1997) show a significant improvement in scores on aggressive behaviors in schools implementing *Second Step* versus control schools, students in the intervention groups demonstrated only small or modest absolute improvements in these behaviors, while those in control groups demonstrated overall increases in aggression. Other researchers have also noted an increase in aggressive and anti-social behaviors over the school year among elementary school students, perhaps reflective of a normal behavior pattern in this population (Reid & Eddy, 1997; Taub, 2002). Thus, it is possible that the implementation of *Second Step* attenuated a rise in angry and aggressive behaviors among Meriden elementary school students over the course of the school year, but this impact cannot be quantified in the absence of a control group. In addition, follow-up focus groups with students

and teachers (data not reported) suggested that the increase in angry behavior may be due, at least in part, to a greater awareness by students of their angry feelings as a result of the *Second Step* program.

These findings are also consistent with the premises of *Second Step*, which is designed to prevent aggressive behavior over time by first increasing prosocial behavior. This hypothesis is supported by the correlations between positive changes in prosocial and negative survey measures in our study. Students who showed improvement in positive survey measures of one point or more were significantly more likely than other students to also show improvements in negative survey measures, such as aggression or bullying. Likewise, these students were significantly less likely than others to show a worsening of self-reported negative behavior from pretest to posttest. These findings indirectly add support to the *Second Step* conceptual model—that increasing students' prosocial behaviors will result in declines in antisocial and negative behavior. In order to show significant changes in aggressive and antisocial behaviors, a longer term follow-up may be necessary.

The study utilized a multicomponent evaluation, including student self-reports, independent behavior observations and review of disciplinary referral forms. The rationale for this design was to provide independent data on outcomes, as well as to replicate the design of prior studies (Grossman et al., 1997) of *Second Step*. We did not find evidence of improvement in observed positive and negative behaviors or disciplinary referrals due to the unexpectedly low frequencies of these events at both baseline and posttest. Based on the prior randomized, controlled trial by Grossman and colleagues (1997), we expected to observe higher levels of violent and aggressive behaviors, as well as to measure significant changes in these behaviors during the course of our study. It is possible that the school system in the current study had a lower base-rate of the specific behaviors measured than the urban and suburban Washington schools examined by Grossman et al. (1997), despite the school administration's and community's concern about behavior problems in this setting. Alternatively, it may be that the addition of a control group, as in Grossman et al.'s (1997) study, would have allowed us to see significant changes in behavior between treatment and control groups during the study period, despite measuring only small or moderate absolute changes in behavior scores. We did find that students who received a disciplinary referral in the post-test assessment period showed evidence of problems on a variety of self-report measures at baseline as well as at post-test. Many, but not all, of these students received referrals during the baseline assessment period as well. These referrals tended to be relatively infrequent and for impulsive or inattentive behavior. Thus, there appears to be a sub-group of students who are experiencing behavior problems at the beginning of the school year for whom *Second Step* alone does not appear to be sufficient. These students, who also tended to report more extreme problems with self-control and peer relationships, likely need more

individualized interventions. Thus, a primary prevention program like *Second Step* may need to be combined with additional secondary prevention programs in order to address every student's needs in a given school system.

The large sample size and diverse student population are important strengths of this study. This evaluation included 741 (639 completed both baseline and follow-up assessments) third and fourth grade students, of whom more than half (50.2%) were members of racial and ethnic minority groups. The somewhat higher rate of post-test non-participation by black than white students may have reduced our ability to detect racial differences in change on the survey measures. However the 83% rate of post-test participation by black students and the absence of any racial differences that approached statistical significance in any analysis suggest that non-participation did not obscure potential racial differences in response to the *Second Step* program. In addition, while the evaluation was limited in its ability to directly quantify the fidelity of program implementation, we did examine characteristics of support and implementation through a year-end teacher survey. Of the 171 teachers who responded, 80.7% reported delivering all the *Second Step* lessons for their grade and 68.3% reported delivering additional, non-required "extension" activities. Most teachers also reported integrating *Second Step* skills into other classroom lessons and activities, and 80.0% said that the program became part of their routine classroom management strategy. However, it is important to note that teachers who fully implemented the program may have been more likely than others to respond to the year-end survey, thus introducing a bias into the results.

A district-wide initiative passed by the city's school board mandated the implementation of *Second Step* in every elementary school classroom in the district. Program staff met with administrators at each school prior to the implementation year in order to design individual implementation plans and designate appropriate times for teaching *Second Step* lessons in each school's set curriculum, as well as to develop a district-wide schedule for implementing *Second Step* lessons. A program coordinator visited each school on a weekly basis to post the lessons to be taught that week and provide ongoing support and feedback to teachers and administrators. Based on these factors, we believe that *Second Step* was likely implemented with high fidelity at every school in this study.

Perhaps the greatest strength of this project was its success in engaging parents, community members, and all members of each school's staff. Nearly 97% of teachers and other certified staff members from all eight elementary schools in the district attended an all-day *Second Step* training. Attendants gave the training an average rating of 3.73 on a 5-point scale. Overall, classroom teachers rated the training more highly than non-classroom teachers, who generally felt the training could have been accomplished in a half-day session. Attendance was also high at a series of three 1-h training sessions offered at each school for non-certified staff. Teachers from almost every school in the district became

certified *Second Step* trainers, allowing them to train new staff and long-term substitutes to deliver the program effectively. While parents were difficult to engage in the program at schools with less-active parent-teacher groups, more than 250 elementary school parents attended each of the four *Second Step Family Guide* workshops—a successful first-year effort. The training sessions were well-received by parents, who, with only one exception (developing neutral problem statements), rated their skill acquisition at a 2.9–3.0 on a 3-point scale. Parents also felt confident that they would use the *Second Step* skills at home (3.8–3.9 on a 4-point scale). It is hoped that the school system will build on this success and that more parents will become involved in the program each year it is offered. *Second Step* was supported by more than 30 community agencies and organizations, many of which sent representatives to a training specially designed to help community workers implement the program in their own settings.

An important limitation of this study is its lack of a control group. Because we chose to implement *Second Step* in every school in the district, a suitable control group for this study was not available, while comparison to another school district was not feasible. In the absence of a control group, it was difficult to assess the impact of the intervention on aggressive and antisocial behaviors, which naturally increase in frequency during the course of the school year (Grossman et al., 1997; Reid & Eddy, 1997; Taub, 2002). In addition, comparison to control conditions would be necessary in order to determine with certainty that *Second Step*, and not other influences (e.g., seasonal changes, maturation, other elements of the school curriculum and activities), is the source of the positive changes in student behavior demonstrated in this study.

Another limitation of this study was the inability to demonstrate any significant behavioral changes through the use of independent behavior observations. Based on findings reported by Grossman and colleagues (1997), we expected to show significant declines in aggressive/antisocial behavior and significant increases in neutral and prosocial behaviors using this approach. However, although we used the measure and procedure developed by Grossman and colleagues (1997), in this sample observations of violent and aggressive behaviors were uncommon at both the baseline and follow-up evaluations. Although prosocial behaviors, as hypothesized, were observed more often at follow-up than baseline, they remained uncommon at both time points (only 6% of all observations) as well. The observational procedure of assigning only a single dichotomous score for each behavior category in each 5-minute observation period was adopted from Grossman and colleagues' (1997) protocol in order to maximize the likelihood of achieving reliable ratings, but this may have reduced data variability and diminished our ability to measure the actual extent of both negative and positive behaviors. Further research is needed in order to develop behavior observation protocols that are able to capture the full extent of student behaviors in populations such as this in which behavioral variability is restricted.

The overall increase in disciplinary referrals at the follow-up period stands in contrast to the relatively stable frequency of referrals (or even a slight decline) in the year prior to implementing *Second Step*. Anecdotally, teachers and school staff described the *Second Step* implementation and evaluation as leading them to be more aware of both the need to make referrals in order to address disruptive behavior and the importance of documenting referrals (which previously tended often to occur without documentation). Thus, an unanticipated consequence of *Second Step* may have been an increase in the use of referrals, which may reflect better behavior management and better monitoring of disciplinary issues.

CONCLUSIONS AND RECOMMENDATIONS

This study produced several encouraging results. First, we were able to demonstrate that more than one in four students receiving *Second Step* showed specific positive changes on self-report measures of prosocial behaviors and attitudes theoretically related to *Second Step*. It is possible that this evaluation would have demonstrated even more positive results if the study design had included a suitable control group and long-term follow-up, and thus these are important next steps in replicating and extending our findings in this and other communities. We hope to see replications of this study that include a control community and follow-up for at least one year to confirm or revise our promising results.

Second, we were successful in implementing *Second Step* using a broad-based approach that engaged parents, community providers, and all members of the schools' staff, from teachers to principals to food service workers. Feedback from each of these groups, as well as students, indicated that *Second Step* was implemented with a high degree of fidelity, was well received by teachers and students, and has become an institutionalized part of the district's elementary school curriculum. These findings are consistent with recommendations that prevention interventions such as *Second Step* will have the greatest feasibility and impact if implemented not just in specific sites such as schools but on a community-wide basis, as well (Durlak & Ferrari, 1998; Gottfredson et al., 2000; Sherman et al., 1997; Thornton et al., 2000).

On a cautionary note, while many students reported improved or unchanged behavior, a small percentage (1 in 20) of students reported increases in anger and conflict and received disciplinary referrals either throughout the school year or in the final months of the school year. Targeted prevention interventions, rather than the universal prevention approach represented by *Second Step*, may be necessary to address these students' more serious and persistent behavioral and attitudinal problems (Reid & Eddy, 1997; Tremblay et al., 1992; Walker et al., 1996). Studies are needed to determine if this small but significant number of students can be identified through screening in universal prevention interventions and if more intensive targeted interventions than those in *Second Step* are effective in

preventing deterioration of prosocial behavior and escalation of delinquent or criminal attitudes and behavior among these troubled youths.

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