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 JOURNAL OF
 ADOLESCENT
 HEALTH

www.jahonline.org

Original article

The Impact of a Middle School Program to Reduce Aggression, Victimization, and Sexual Violence

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Article history: Received August 16, 2012; Accepted February 20, 2013

Keywords: Aggression; Randomized clinical trial; Social-emotional learning; Middle schools

 A B S T R A C T

Purpose: To evaluate the impact of the Second Step: Student Success Through Prevention (SS-SSTP) Middle School Program on reducing youth violence including peer aggression, peer victimization, homophobic name calling, and sexual violence perpetration and victimization among middle school sixth-grade students.

Methods: The study design was a nested cohort (sixth graders) longitudinal study. We randomly assigned 18 matched pairs of 36 middle schools to the SS-SSTP or control condition. Teachers implemented 15 weekly lessons of the sixth-grade curriculum that focused on social emotional learning skills, including empathy, communication, bully prevention, and problem-solving skills. All sixth graders ($n = 3,616$) in intervention and control conditions completed self-report measures assessing verbal/relational bullying, physical aggression, homophobic name calling, and sexual violence victimization and perpetration before and after the implementation of the sixth-grade curriculum.

Results: Multilevel analyses revealed significant intervention effects with regard to physical aggression. The adjusted odds ratio indicated that the intervention effect was substantial; individuals in intervention schools were 42% less likely to self-report physical aggression than students in control schools. We found no significant intervention effects for verbal/relational bully perpetration, peer victimization, homophobic teasing, and sexual violence.

Conclusions: Within a 1-year period, we noted significant reductions in self-reported physical aggression in the intervention schools. Results suggest that SS-SSTP holds promise as an efficacious prevention program to reduce physical aggression in adolescent youth.

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 IMPLICATIONS AND
 CONTRIBUTION

Middle school students in intervention schools receiving a social-emotional learning program reported 42% less physical aggression than students in control schools after 15 weeks of classroom lessons (50 minutes each). Lessons covered empathy, anger management, impulse control, listening skills, problem-solving instruction, bully prevention, and alcohol and drug prevention content.

School violence is a subset of youth violence and a broad public health problem [1]. Youth violence occurs between the ages of 10 and 24 years and is defined as the intentional use of physical force or power against another person or group, with the behavior likely to cause physical or psychological harm [1].

Youth violence can include verbal and physical aggression, threatening, and intimidating behaviors that are associated with short- and long-term adverse academic and psychological outcomes for perpetrators and victims [1,2]. Bullying is a subtype of aggressive behavior among students that is repetitive and occurs among students of unequal power [2]. Verbal aggression and/or bullying during early adolescence can involve homophobic name calling and sexual commentary or sexual touching, and when these are unwanted they are referred to as sexual

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harassment or sexual violence [3]. Thus, it is clear that aggression, bullying, homophobic name calling, and sexual harassment co-occur during early adolescence, which suggests the need for programs that could reduce these phenomena [3].

Indeed, school-based violence prevention programs that facilitate social and emotional learning skills, address interpersonal conflict, and teach emotion management have reduced youth violence and disruptive behaviors in classrooms [4]. In contrast, the impact of bullying prevention programs in the United States (US) has been disappointing, especially in middle schools [5–7]. Two recent meta-analyses found that prevention effects were nonexistent or too small to be of practical significance [5,6]. A more promising meta-analysis found that one third of programs reduced bullying in non-US countries by 23%, but effects for US studies were significantly lower [7].

A public health prevention approach to youth violence involves universal primary prevention efforts that teach youth social-development strategies to handle challenging social situations [8]. School-based social-emotional learning (SEL) programs (i.e., programs addressing a core set of social and emotional skills, such as empathy and communication) fit this prevention approach and are reducing bullying and aggression and improving academics in US elementary schools [9–11]. Less is known about the effectiveness of SEL programs on bullying behavior in middle schools. No studies include measures related to homophobic teasing or sexual harassment. This current study addressed this research gap by examining the impact of an SEL curriculum during the first year of middle school, a time when physical aggression and bullying tend to persist, and in some instances escalate to involve homophobic name calling and sexual harassment [3,12].

The current study presents first-year results from a 3-year school-randomized controlled trial of a middle school social-emotional learning program (Second Step: Student Success Through Prevention) in 36 Midwestern schools [13]. The seven outcome measures identified in the protocol and evaluated included verbal/relational bullying perpetration, peer victimization, physical aggression, homophobic name calling (victimization and perpetration), and sexual violence (victimization and perpetration). We hypothesized that the strongest intervention effect would be seen for overt physical aggression, followed by more subtle effects for bullying and peer victimization outcomes.

Methods

Design

This study is a longitudinal nested-cohort design with randomization at the school level. All sixth graders at 36 Midwestern schools were recruited. Before data collection, we matched schools into pairs within each state using National Center for Educational Statistics data [14] on the characteristics of the school environment (e.g., student enrollment, change in student enrollment from 2008 to 2009), and characteristics of the student population (e.g., percentage eligible for free/reduced lunch, ethnic/racial percentages, and percentage of students for whom English was not their primary language). We assigned randomly one school from within each matched pair to either intervention or wait-listed control condition using a random number table.

Participants

Students (N = 3,616) within 36 schools across both Illinois and Kansas answered at least one item from pretest or post-test surveys (Figure 1). The average age (intervention [IN] = 11.25 years; control [CO] = 11.24 years), proportion of females (IN = 48.0%; CO = 48.2%), and proportion of students who were eligible for free or reduced-price lunch (IN = 72.7%; CO = 75.6%) did not differ significantly ($p > .05$) between conditions. A greater proportion of Hispanic students, relative to white students, were in the control condition; however, the effect size was small: $\chi^2 = 30.58$, degrees of freedom [df] = 3, $p < .001$, $\phi_C = .09$ (Table 1 for demographics).

Second Step curriculum

Students in the intervention schools participated in the sixth-grade curriculum (15 weeks) of Second Step: Student Success Through Prevention program (grades 6–8), a universal curricular classroom intervention [13]. Six-grade lessons were delivered by trained teachers in one 50-minute or two 25-minute classroom sessions, taught weekly or semiweekly throughout the school year. Students participated in the program from September 2010 to May 2011. The sixth-grade curriculum includes content related to bullying, problem-solving skills, emotion management, and empathy. Lessons are highly interactive, incorporating small-group discussions and activities, dyadic exercises, whole-class instruction, and individual work.

Lessons are structured and supported through an accompanying DVD that contains rich media content including topic-focused interviews with students and video demonstrations of skills. A 4-hour training before implementation covers program curriculum, its delivery, and an introduction to child developmental stages related to the skills taught. Lessons are skills-based and students receive cueing and coaching on their performance. Teachers completed online implementation logs after completing each lesson, which assessed the teacher's perceptions of student engagement and what components of the lesson they completed.

Outcome measures

Seven primary outcomes for this study included verbal/relational bullying perpetration, peer victimization, physical aggression, homophobic name calling perpetration and victimization, and sexual harassment/violence perpetration and victimization. We collected other measures that will be used to examine mediating effects and moderating effects of outcomes, but are not included here. A full description of this study's protocol may be found by searching <http://www.clinicaltrials.gov>.

Verbal/relational bullying perpetration. The nine-item University of Illinois Bully Scale [14] assesses the frequency of teasing, name calling, social exclusion, and rumor spreading. Students were asked how often in the past 30 days they teased other students, upset other students for the fun of it, excluded others from their group of friends, helped harass other students, and so forth. Response options were *Never, 1 or 2 times, 3 or 4 times, 5 or 6 times, or ≥ 7 times*. Scale scores have correlated strongly with

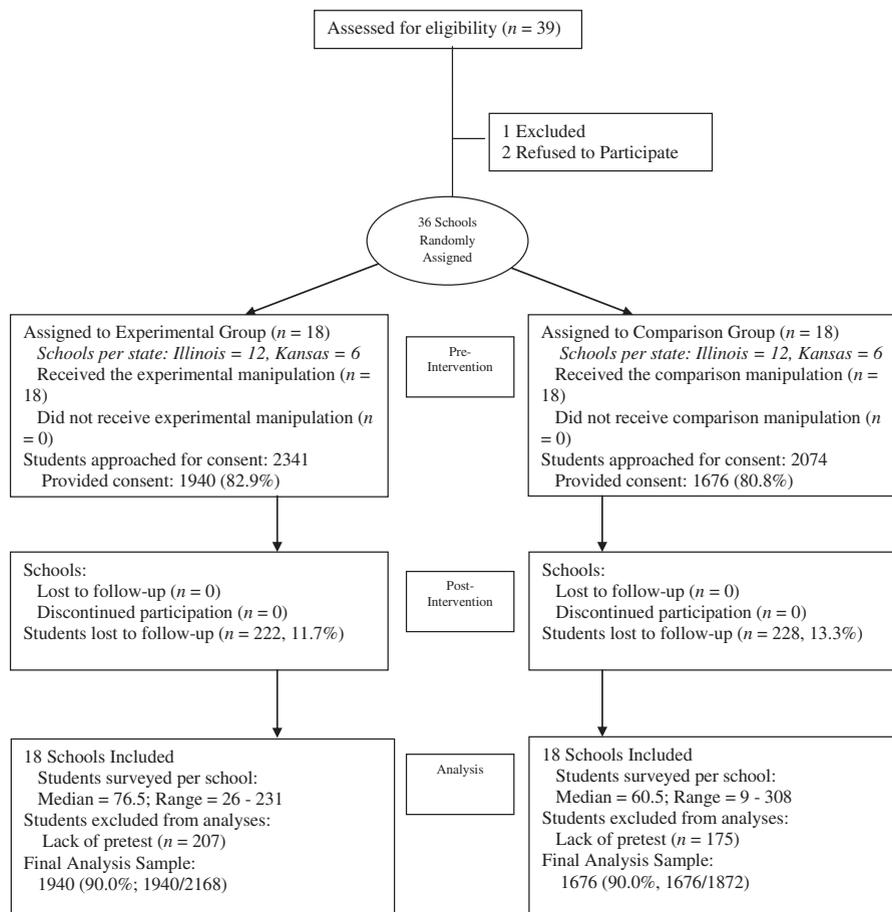


Figure 1. Consolidated Standards of Reporting Trials (CONSORT) flow diagram.

peer nominations of bullying [14]. Cronbach α coefficients of .80 were calculated for the current study (pre and post).

Peer victimization. We assessed victimization from peers using the three-item University of Illinois Victimization Scale [15]. Students were asked how often the following events had happened to them in the past 30 days: *Other students called me names, Other students picked on me, and I got hit and pushed by other students.* Response options were *Never, 1 or 2 times, 3 or 4*

times, 5 or 6 times, and ≥ 7 times. Cronbach α coefficients of .86 were calculated for the current study (pre and post).

Physical aggression. We assessed fighting using the four-item University of Illinois Fighting Scale [15]. This scale assessed physical fighting behavior (e.g., *I got in a physical fight, I fought students I could easily beat*), where response options included *Never, 1 or 2 times, 3 or 4 times, 5 or 6 times, and ≥ 7 times.* The University of Illinois Fighting Scale also maintained a low correlation with the University of Illinois Victimization Scale ($r = .21$) and was correlated modestly with the University of Illinois Bully Scale ($r = .58$), which provided evidence of discriminant validity [14]. Cronbach α coefficient was .80 for the current study (pre and post).

Table 1

Student and school-level sample characteristics

	Total (n = 3,616)	Intervention (n = 1,940)	Control (n = 1,676)
Female	48.1	49.0	49.2
African-American	26.4	25.0	28.1
Hispanic	34.2	32.0	36.6
White/Caucasian	24.7	28.2	20.6
Biracial/all other	14.7	14.8	14.6
Age, years	11.24 (.46)	11.25 (.45)	11.23 (.47)
Female	47.2 (10.0)	49.1 (6.2)	49.5 (12.9)
African-American	35.2 (27.4)	30.1 (23.6)	40.4 (30.4)
Hispanic	26.1 (26.3)	28.4 (25.9)	23.7 (27.2)
White/Caucasian	24.0 (20.2)	26.4 (21.2)	21.6 (19.4)
Biracial/all other	14.8 (7.2)	15.2 (7.2)	14.3 (7.4)
Free or reduced lunch	74.1 (21.6)	72.7 (21.8)	75.6 (22.0)

Italicized values represent level 2 characteristics. Numbers in parentheses represent the proportion standard deviation.

Homophobic name calling perpetration and victimization. The 10-item Homophobic Content Agent Target Scale [16] assessed homophobic teasing perpetration and victimization epithets during the previous 30 days. Students read the following sentence: *Some kids call each other names homo, gay, lesbo, fag, or dyke. How many times in the last 30 days did YOU say these words to ...* and then were asked how often they said these words to: *a friend, someone you did not like, someone you did not know well, someone you thought was gay, and someone you did not think was gay.* Then they were asked how many times each individual called them these names. Response options were

Never, 1 or 2 times, 3 or 4 times, 5 or 6 times, or ≥ 7 times. Construct validity of this scale has been published previously [14]. Cronbach α coefficient was .80 for the current study (pre and post).

Sexual harassment/violence perpetration and victimization. We used a modified version of the American Association of University Women Sexual Harassment Survey to measure the frequency of sexual violence behaviors within the past year [3]. Each scale (perpetration and victimization) included 10 items measuring verbal sexual violence and groping (e.g., sexual comments, sexual rumor spreading, and pulling at clothing in a sexual way) and forced sexual contact (e.g., forced kissing). Response options were *Never, 1–3 times, 4–9 times, ≥ 10 times*. Cronbach α coefficient was .80 (pretest) and .83 (posttest) for this study.

Data collection

We secured university institutional review board and school district approvals before data collection and program implementation. A total of 27 schools used a waiver of active consent (passive) procedure and nine schools used an active consent procedure. Consent rates averaged 86.0% for schools using passive consent and consent rates averaged 62.2% for schools using active consent. The proportions of students with consent did not differ between intervention and control conditions (IN = 82.9%; CO = 80.8%; $p > .05$). Only students with active parental consent or those who did not have their parents withdraw them from the study were eligible to complete the survey. Students were read an assent script and given the option to opt out of the survey. A trained research assistant read each survey item aloud and students received a highlighter at the completion of each survey. Research assistants returned to schools to conduct survey makeups when kids were absent on the day of the survey administration.

Data analysis

Baseline equivalency. We used Conditional Hierarchical Generalized Linear Models (HGLM) with students nested within schools, controlling for student and school demographic characteristics to examine the equivalency in pretest levels in the seven outcome measures. Results indicated that none of the examined measures demonstrated significant differences between intervention and control schools at baseline (all $p > .05$), which indicated the success of the randomization process used to assign schools to intervention condition.

Missing data analysis. To avoid biases resulting from missing data, we used multiple imputation [17]. Following the recommendation of Enders [18], we used NORM version 2.03 [19] to create 10 complete (i.e., no missing data) data sets. The data sets included auxiliary variables such as age, gender, and race, to increase the accuracy of the imputations [20]. Scales were imputed at the scale level unless $> 20\%$ of the participants had missing data for that scale, in which imputations were conducted at the item level. To assess the validity of the imputation procedure, we calculated a standardized mean difference effect size comparing the imputed and original scales for each data set. Only one of the 140 effect sizes (7 outcomes \times 10 imputed data sets \times 2 time points) had a standardized mean difference $> .05$. As such, we used the imputed data sets for the final analysis.

Statistical analysis. Following Rubin [21], we executed an intent-to-treat analysis. This model assumes that student dropout and condition saturation occurs. Intent-to-treat analyses maintain the condition assignment for each student, regardless of whether the participant remains in the original condition. Students within schools assigned to the intervention condition were assumed to receive the intervention.

All outcome variables had a positive skew. Thus, we converted all outcome measures to binary responses and used an HGLM with logit link to analyze participants' responses [22]. We based cut points for student outcomes on theory rather than the sample distribution. Physical aggression, verbal/relational bullying, peer victimization, and homophobic perpetration and victimization were dichotomized using the cut point of 1.5 (out of 5). This cut point indicated that the participant self-reported experiencing or engaging in > 2 items (i.e., answered beyond the lowest possible response). Given the low incidence of sexual violence among sixth graders [3], sexual violence perpetration and victimization were dichotomized above and below 1.01. Any participant experiencing or engaging in at least one item was considered in the "above average" group. Table 2 delineates the distribution of unadjusted outcome endorsements for pretest and post-test waves. Homophobic name calling and sexual violence increased across pretest to post-test.

We hypothesized in the level 1 (Student) model that students' age, gender, and race and the individual's pretest score related significantly to the outcome variable of interest:

$$\eta_{ij} = \beta_{0j} + \beta_{1j}(\text{Age})_{ij} + \beta_{2j}(\text{Female})_{ij} + \beta_{3j}(\text{Black})_{ij} \\ + \beta_{4j}(\text{Hispanic})_{ij} + \beta_{5j}(\text{Other})_{ij} + \beta_{6j}(\text{Pretest})_{ij}$$

where η_{ij} represents the log odds of the outcome; β_{0j} is the intercept; β_{1j} was the group mean-centered age coefficient; β_{2j} represents gender differences in which girls are coded 1 and boys are coded 0; β_{3j} , β_{4j} , and β_{5j} , represent the race/ethnicity comparison in which White students are the reference group; and β_{6j} is the pretest variable. In addition, we hypothesized that the level 1 intercept varied significantly across schools at level 2.

The level 2 (School) model for schools was represented by: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{intervention})_j + \gamma_{02}(\text{state})_j + \gamma_{03}(\text{free or reduced lunch [FRL]})_j + \gamma_{04}(\text{sample size})_j + u_{0j}$ where γ_{00} is the grand mean of the outcome; γ_{01} is the intervention effect; γ_{02} is the state effect where Illinois is coded 1 and Kansas is coded 0; γ_{03} represents the relationship between free or reduced lunch and the outcome; and γ_{04} represents the relationship between the total number of students surveyed per school and the grand mean. Level 1 and 2 continuous variables were grand mean-centered; all other variables were dichotomous and remained uncentered. To evaluate the magnitude of level 2 predictors, we calculated the percentage change in variance explained between schools [23].

Results

Verbal/relational bullying perpetration and peer victimization

The results of the HGLM analyses of bullying perpetration and peer victimization outcomes indicated no significant intervention effects (Table 3). The geographic location (Kansas versus Illinois) of the intervention was related to post-test bullying perpetration ($\gamma_{02} = -.30$, standard error [SE] = .14, $df = 31$, $p < .05$, adjusted odds ratio [AOR] = .74) and peer victimization

Table 2
Proportions, sample standard deviations (SDs), and odds ratios of outcomes

	Fall Pretest				Spring Post-test				Unadjusted odds ratio (95% confidence interval)
	Intervention		Control		Intervention		Control		
	%	SD	%	SD	%	SD	%	SD	
Physical aggression	.35	.47	.41	.49	.37	.49	.46	.50	.69 (.60–.79)
Verbal/relational Bully perpetration	.22	.42	.25	.44	.29	.45	.31	.46	.91 (.79–1.05)
Peer victimization	.49	.50	.49	.50	.51	.50	.52	.50	.96 (.84–1.10)
Homophobic Perpetration	.17	.37	.16	.36	.28	.45	.28	.47	1.00 (.86–1.15)
Homophobic Victimization	.14	.34	.13	.34	.19	.40	.19	.40	1.00 (.86–1.15)
Sexual violence Perpetration	.08	.28	.09	.28	.22	.41	.23	.42	.94 (.81–1.11)
Sexual violence Victimization	.18	.38	.17	.38	.38	.49	.39	.49	.96 (.84–1.10)

Proportions and SDs are averaged across 10 imputed data sets.

($\gamma_{02} = -.35$, $SE = .12$, $df = 31$, $p < .05$, $AOR = .71$), with lower rates of both bullying perpetration and peer victimization in Illinois compared with Kansas. Neither the percentage of students eligible for free or reduced-price lunch or school sample size was related significantly to these outcomes. African-American students indicated significantly greater bullying perpetration ($\beta_3 = .36$, $SE = .11$, $df = 190$, $p < .05$, $AOR = 1.44$) compared with white students. However, African-American students indicated significantly less peer victimization compared with white students ($\beta_3 = -.28$, $SE = .14$, $df = 179$, $p < .05$, $AOR = .76$).

Physical aggression

The HGLM analyses revealed that relative to students in control schools, students from intervention schools had a significantly decreased probability of physical aggression ($\gamma_{01} = -.36$, $SE = .16$, $df = 31$, $p < .05$, $AOR = .70$). The AOR indicated that the intervention effect was substantial; individuals in intervention schools were 42% less likely to self-report physical aggression perpetration. The proportion of FRL students in the school also was related significantly and positively to physical aggression ($\gamma_{03} = .02$, $p < .05$, $AOR = 1.02$). Schools at 1 standard deviation above the mean in FRL could expect as much as 10% more physical aggression relative to schools at the mean.

Female students reported significantly less physical aggression compared with male students ($\beta_2 = -.44$, $SE = .11$, $df = 467$,

$p < .05$, $AOR = .64$). African-American students, ($\beta_3 = 1.17$, $SE = .12$, $df = 471$, $p < .05$, $AOR = 3.25$), Hispanic students ($\beta_4 = .28$, $SE = .12$, $df = 518$, $p < .05$, $AOR = 1.32$), and students in the “other” race/ethnic group ($\beta_5 = .38$, $SE = .14$, $df = 400$, $p < .05$, $AOR = 1.47$) all indicated significantly higher probability of physical aggression relative to white students.

Homophobic perpetration and victimization

Analyses revealed no significant intervention effects for homophobic perpetration and victimization outcomes. Results also indicated no significant differences by geographic location. The level 1 results indicated that girls were less likely to self-report homophobic perpetration ($\beta_2 = -.50$, $SE = .11$, $df = 314$, $p < .05$, $AOR = .61$) and homophobic victimization ($\beta_2 = -.65$, $SE = .12$, $df = 194$, $p < .05$, $AOR = .52$). Relative to white students, each race/ethnicity category was significantly more likely to self-report homophobic perpetration. However, the race/ethnicity contrasts did not differ for homophobic victimization.

Sexual harassment/violence perpetration and victimization

Analyses indicated no significant intervention effects on sexual violence perpetration ($\gamma_{01} = .04$, $SE = .12$, $df = 31$, $p > .05$, $AOR = 1.04$) or victimization ($\gamma_{01} = .01$, $SE = .13$, $df = 31$, $p > .05$, $AOR = 1.01$). Differences between states were not found for

Table 3
Hierarchical Generalized Linear Modeling analysis of outcomes

	Physical Aggression			Verbal/Relational Bully Perpetration			Peer Victimization			Homophobic Perpetration			Homophobic Victimization			Sexual Violence Perpetration			Sexual Violence Victimization		
	β	SE	AOR	β	SE	AOR	β	SE	AOR	β	SE	AOR	β	SE	AOR	β	SE	AOR	β	SE	AOR
Intercept	-.56*	.13	.42	-1.01*	.12	.37	.43*	.12	1.54	-1.11*	.13	.33	-1.18*	.13	.31	-1.25*	.14	.28	-.67*	.11	.51
Fixed effects																					
Age	.18 ⁺	.10	1.20	.12	.07	.11	-.08	.09	.92	.04	.11	1.04	-.05	.11	.95	.15	.12	1.16	.12	.09	1.12
Gender	-.44*	.09	.64	-.12	.09	.88	-.05	.07	.95	-.50*	.10	.61	-.65*	.12	.52	-.47*	.10	.62	.24*	.09	1.27
Black	1.17*	.12	3.25	.36*	.11	1.44	-.28*	.14	.76	.68*	.14	1.97	.07	.15	1.07	.37*	.15	1.45	.31*	.12	1.36
Hispanic	.28*	.12	1.32	.04	.11	1.04	-.48	.12	.61	.20*	.13	1.22	-.23	.14	.73	.04	.16	1.04	-.12	.10	.89
Other	.38*	.15	1.47	.18	.13	1.20	-.28	.14	.75	.22*	.15	1.24	-.08	.16	.92	.10	.17	1.10	.18	.13	1.19
Pretest	1.62*	.10	5.07	1.62*	.10	5.04	1.66*	.09	5.27	1.65*	.11	5.21	1.66*	.13	5.24	1.50*	.12	4.49	1.38*	.11	3.97
Random effects																					
Intervention	-.36*	.16	.70	-.02	.13	.98	.01	.10	1.01	.03	.12	1.04	.01	.14	1.00	.04	.12	1.04	.01	.13	1.01
State	-.26	.16	.77	-.30*	.14	.74	-.35*	.12	.71	-.01	.14	.99	-.01	.18	.98	.23	.13	1.25	.17	.12	1.18
% Free or reduced lunch	.02*	.01	1.02	.01	.01	1.01	.01	.01	1.01	-.01	.01	.99	-.01	.01	.99	.01*	.01	1.01	.01*	.01	1.01
Sample size	-.01	.01	1.00	-.01	.01	1.00	.01	.01	1.00	.01	.01	1.00	-.01	.01	.99	-.01	.01	1.00	-.01	.01	1.00
Variance % Δ	55.2			46.3			19.2			8.9			0			36.1			12.5		

For gender, 1 = female and 0 = male. For race, reference group = “Other”; state; 1 = Illinois and 0 = Kansas. Variance % Δ compares final with unconditional model. AOR = odds ratio; SE = standard error.

* $p < .05$.

sexual violence perpetration ($\gamma_{02} = .23$, $SE = .13$, $df = 31$, $p < .10$, $AOR = 1.25$) or victimization ($\gamma_{02} = .17$, $SE = .13$, $df = 31$, $p > .05$, $AOR = 1.18$). However, the results indicated that FRL was related significantly and positively to increased sexual violence perpetration ($\gamma_{03} = .009$, $SE = .003$, $df = 31$, $p < .05$, $AOR = 1.01$) and victimization ($\gamma_{03} = .006$, $SE = .003$, $df = 31$, $p < .05$, $AOR = 1.01$). A higher percentage of FRL students within schools, controlling for condition, resulted in higher self-reported sexual violence perpetration and victimization.

Female students perpetrated sexual violence less often relative to male students ($\beta_2 = -.47$, $SE = .10$, $df = 197$, $p < .05$, $AOR = .62$) and were more likely to be victimized ($\beta_2 = .24$, $SE = .09$, $df = 541$, $p < .05$, $AOR = 1.27$). African-American students self-reported perpetration ($\beta_3 = .37$, $SE = .15$, $df = 129$, $p < .05$, $AOR = 1.45$) and victimization ($\beta_3 = .31$, $SE = .13$, $df = 493$, $p < .05$, $AOR = 1.36$) more often relative to white students. No additional race/ethnicity comparisons were significant.

Discussion

Despite the promise of SEL programs in reducing peer aggression and bullying among elementary students, relatively little is known about the impact of such approaches on these and other diverse forms of aggression among middle school populations [9]. The current study assessed the 1-year impact of a middle school classroom-based SEL program on verbal/relational bullying perpetration, peer victimization, physical aggression, homophobic name calling perpetration and victimization, and sexual harassment/violence perpetration and victimization.

Results suggested that youth participating in the intervention were significantly less likely to self-report physical aggression perpetration, a finding consistent with previous SEL focused clinical trials with younger youth [11]. Specifically, participants in the intervention schools in this study were 42% less likely to self-report physical aggression at post-test, even when controlling for the significant, negative influence of free or reduced lunch rates on physical aggression. The magnitude of this finding should not be minimized. In 2009, 31.5% of US students in grades 9–12 reported that they engaged in physical fighting in the previous 12 months [1]. As a result, the US Department of Health and Human Services in its Healthy People 2020 initiative established an objective to reduce physical fighting perpetration from 31.5% to 28.4% by 2020, which translates to a 10% improvement in physical fighting [24]. Thus, our finding of a 42% reduction in physical fighting after 1 year of an SEL intervention appears to exceed the US Department of Health and Human Services 2020 objective by far.

We found no significant intervention effects for perpetration or victimization of bullying, homophobic teasing, and sexual violence. Importantly, findings on short-term effects highlight the distinction between more overt (i.e., disruptive) and covert or subtle forms of peer aggression (e.g., name calling, bullying). Students were not exposed to specific content on sexual harassment, but experiences with sexual violence and homophobic teasing harassment were reported infrequently. These data suggest that such a distinction has important implications for determining the temporal unfolding of program effects in schools. Perhaps schools are better able to reduce more overt forms of disruptive and aggressive behavior, as opposed to more insidious or complex forms of aggression, that require shifts in norms and attitudes across various social ecologies in schools.

Of course, no study is without limitations. Although this study represented the largest sample to date to investigate the effects of an SEL program on middle school students, the total number of schools was small compared with more recent randomized controlled trials. We dichotomized outcome measures because of skewed distribution, which restricted our ability to detect small effects that might have occurred if we had examined these constructs as continuous behaviors. Unfortunately, the cost of this study prevented the collection of observational data; therefore, we relied on self-report measures, which increased mono-informant bias.

Despite these limitations, this randomized clinical trial used a rigorous design and analytic approach that enhance the likelihood of attributing program effects to the specified intervention. The lack of selection bias, differential attrition, or maturation effects presents a strong argument for the findings' validity. Because Second Step is being implemented in many schools across the US, it is encouraging to see a significant reduction in physical aggression after 15 weeks of SEL content.

Acknowledgments

This research was supported by Centers for Disease Control and Prevention (grant 1U01/CE001677) to Dorothy Espelage (PI) and Sabina Low (Co-PI).

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