A Controlled Study Assessing the Effects of the Impulse Control and Problem Solving Unit of the *Second Step Curriculum*

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The development of social and emotional competence is crucial for students. *Second Step* is a curriculum designed to promote prosocial development and prevent violence. The purpose of this study was to evaluate the effectiveness of implementing one unit of the Second Step curriculum (Impulse Control and Problem Solving). A controlled, repeated measures design was utilized to assess the level of change in knowledge of social-emotional skills. Results indicated that change was evident from pre- to post-test for third and fourth grade students (N=149). Third grade students receiving the intervention demonstrated significantly more knowledge growth than third grade control students. Notably, fourth grade students receiving the intervention demonstrated a similar level of knowledge growth as the fourth-grade control students. Discussion, limitations, and implications related to these findings are addressed.

Development of social competence and maintenance of friendships are critical developmental challenges for children. Adequately navigating these areas promotes and enhances success in other pivotal areas of children's lives, including academic, occupational, family, and life satisfaction outcomes (e.g., Zins, Bloodworth, Weissberg, & Walberg, 2004). However, pervasive challenges with social competence and friendships are also associated with higher rates of mental illness, incarceration, family conflict, unemployment or underemployment, and other deleterious outcomes (e.g., Greenberg et al., 2003). Given that schools have partial responsibility for the socialization and healthy development of children, they can promote the prosocial and prevent the antisocial development of students through the use of social-emotional learning (SEL) curricula at both the schoolwide (i.e., universal) and group or classwide (i.e., secondary) levels (Merrell, Gueldner, & Tran, 2008).

Payton and colleagues (2008) recently published a review of three large-scale meta-analyses evaluating over 300 studies of SEL curricula including over 324,000 students. They concluded that SEL programs were associated with improvements of students' achievement test scores, improvements of students' social and emotional skills and attitudes about self and others, increased connection to school and positive social behaviors, and decreases in conduct problems and emotional distress. In addition, results indicated that school staff implemented these interventions with fidelity and that such programming was used with a variety of students and in a variety of settings.

Second Step: A Violence Prevention Program is an SEL program that has been identified as exemplary by the U. S. Department of Education's Office of Educational Research and Improvement (OERI) panel for safe and drug-free schools. *Second Step* is a universal, school-based, prevention curriculum for children in K-5 grades designed to promote social competence, reduce social-emotional problems (Committee for Children, 2002), and prevent aggression over time, by initially focusing on increasing prosocial behaviors (Cooke et al., 2007). The complete curriculum consists of three units of interrelated content – Unit 1: Empathy Training, Unit 2: Impulse Control and Problem Solving, Unit 3: Anger Management – that are each composed of 5-9 lessons (depending on the grade level). Most lessons are administered via in-vivo instruction; however, one or two lessons per unit are prerecorded and presented via videotape (Committee for Children, 2002).

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Several studies have been conducted to evaluate the effectiveness of *Second Step*. Rigorous research designs, which obtain pre- and post-test data and use multiple assessment methods (e.g., rating scales from multiple informants, behavioral observations, and referral records) have been utilized and provide initial support for this SEL curriculum. The most recent study investigated the curriculum's effects on 741 third- through fifth-grade students in five different schools and included trainings and support for staff, parents, and community members involved with children both in and out of school (Cooke et al., 2007). Results indicated nearly two-thirds of students showed significant positive changes on at least one of the variables of interest (e.g., positive approach coping, caring-cooperative behavior, suppression of aggression).

Current Study

While *Second Step* has demonstrated effectiveness when used in its entirety, often schools and teachers do not have the time or resources to implement the entire curriculum (i.e., 15-25 sessions). Thus, the purpose of this study was to examine the effectiveness of one unit of the *Second Step* curriculum (i.e., 5-8 lessons) on students' social-emotional outcomes. Specifically, this study was guided by two research questions and associated hypotheses: 1) Will students who were provided the Impulse Control and Problem Solving Unit (Unit II) of the *Second Step* curriculum demonstrate an increase in knowledge of social-emotional skills? It was anticipated that students in the intervention groups would have significant knowledge increases from pretest to posttest. 2) Will students who were provided the Impulse Control and Problem Solving Unit (Unit II) of the *Second Step* curriculum demonstrate an increase in knowledge of social-emotional skills when compared to students not provided the intervention? It was anticipated that students in the intervention groups would have significantly higher levels of knowledge compared with control students.

METHOD

Participants

Data was collected from two elementary schools in southern California. During the 2008-2009 school year, the total enrollment of one school was 286 students, and the total enrollment of the other was 421 students. The demographic composition of both schools was comparable, with approximately 73% of students identifying as Hispanic or Latino, 18% as White, and 9% as other or multiple ethnic groups. Furthermore, approximately 68% of the students were classified as socioeconomically disadvantaged (i.e., receiving free or reduced priced lunch at school), 40% as English language learners, and 14% as students with disabilities. The demographics of the current participants (N = 149) were comparable to the schools' general demographics. Participants in the intervention group, for which both pre- and post-test data were available, included 32 third-grade and 43 fourth-grade students (n = 75). Participants in the control group included 42 third-grade and 32 fourth-grade students (n = 74).

Measures

Knowledge Assessment for Second Step (KASS; Committee for Children, 2004). The *KASS* is a self-report measure developed by the authors of the *Second Step* curriculum to assess knowledge in social-emotional skills. The *KASS* consists of several problem situations and related social-emotional skills knowledge questions presented to students that they respond to in writing. It is designed to be utilized in a pre- and post-test format. Administration, scoring, and interpretation are standardized with directions provided in the *KASS* manual. Instructions, problem situations, and questions are provided both orally and in writing for students, who are allowed as much time as needed to complete the assessment. The authors indicate that a pilot test and a field test were conducted in 2002-2003, followed by revisions and further field testing in 2003-2004; however, no data is available (Committee for Children, 2004).

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Procedures

The participating schools were part of a comprehensive collaboration with a local university-based school psychology program. School administration at the two participating elementary schools identified a target grade to receive the intervention unit from the *Second Step* curriculum. The appropriate grade level version of *Second Step: Unit II: Impulse Control and Problem Solving* (Committee for Children, 2002) was implemented at each site. The goals of Unit II include decreasing children's impulsive and aggressive behavior through three strategies: (a) calming down, (b) problem solving, and (c) behavioral-skills training. The number of sessions varied from five (for third grade) to eight (for fourth grade), and sessions typically lasted from 30-45 minutes. The goals of this unit are similar across grades; however, the content is more developmentally advanced for fourth grade students (e.g., taking responsibility for actions by acknowledging mistakes, apologizing, and/or offering to make amends, versus resisting the impulse to steal). Intervention sessions were conducted once per week, at the same times and on the same days. Typically, two co-facilitators were present to ensure fidelity and provide support. In addition, the teacher was usually present and occasionally participated in the sessions. *Second Step* materials were utilized in each session, with adherence to the standardized procedures of the curriculum.

Prior to implementation of the intervention, the *KASS* pre-test data was gathered from each class. Doctoral students co-facilitating the intervention conducted the assessment. The *KASS* was read aloud to the students while they read along and ample time was given for written responses. For several students, one-on-one assistance was provided, and additional time for any student was allowed if necessary. As each school identified different grades, intervention data was obtained from fourth grade at one site, while control data was obtained for third grade and vice versa.

The week following the final session, the post-test *KASS* data was collected in the same manner as pre-test data, with the exception of the fourth-grade control data, which was collected approximately one month after the intervention post-test data was collected. After completion of the intervention, a feedback session occurred with the teachers of the intervention groups. To avoid confounds, the same rater scored both pre- and post-test assessments.

Analyses

As the intervention units and resulting pre- and post-test assessment were slightly different for each grade in order to reflect appropriate developmental considerations, all analyses were conducted separately by grade. To evaluate knowledge change among the intervention groups (research question 1), two paired-samples *t*-tests were conducted. To examine the effect of the intervention unit on post-test knowledge scores within each grade (research question 2), two analyses of covariance (ANCOVA), with pre-test scores as the covariate, were conducted (Stevens, 2002). The assumptions for using ANCOVA and *t*-tests were both evaluated and met.

RESULTS

Third Grade

Descriptive statistics are presented in Table 1. Table 2 displays the results from the paired-samples *t*-test. This analysis indicated significant differences between pre- and post-test *KASS* scores for the third-grade intervention group, $t\,(31) = 16.12$, $p < 0.00$, thus supporting the hypothesis. The test for parallelism conducted on the third-grade data was nonsignificant ($F = 0.55$; $df = 1, 70$; $p = 0.46$), which indicates this assumption has not been violated, and thus ANCOVA was determined to be an appropriate analysis. The resulting test for equality of adjusted means (Table 3) demonstrated significance ($F = 81.43$; $df = 1, 71$; $p < 0.01$), indicating a significant difference on social skills knowledge between the control and intervention groups while controlling for the initial scores on the pretest measure, thus supporting the second hypothesis.

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TABLE 1. *Descriptive Statistics.*

Group	N	Mean (pre)	Std. Dev. (pre)	Mean (post)	Std. Dev (post)
3rd grade control	42	10.38	4.03	10.79	4.08
3rd grade intervention	32	6.44	2.80	13.72	3.03
4th grade control	32	8.56	2.33	9.75	2.77
4th grade intervention	43	7.26	3.61	9.47	3.26

Note. Std. Dev. = standard deviation. Mean (post) = unadjusted posttest score.

TABLE 2. *Paired-samples t-tests (pre and post for the intervention group).*

Group	*t*	df
3rd grade intervention	16.12**	31
4th grade intervention	5.681**	42

Note. t = t statistic. df = degrees of freedom. ** $p < .000$

TABLE 3. *ANCOVA results for third grade examining differences between students in the intervention and control group.*

	Sum of Squares	degrees of freedom	Mean Square	*F*
Contrast	493.05	1	493.05	81.43**
Error	429.92	71	6.06	

** $p < .001$. Dependent variable = *KASS* post-test. Covariate = *KASS* pre-test.

TABLE 4. *ANCOVA results for fourth grade examining differences between students in the intervention and control group.*

	Sum of Squares	degrees of freedom	Mean Square	*F*
Contrast	4.97	1	4.97	.883
Error	405.65	72	5.63	

** $p < .001$. Dependent variable = *KASS* post-test. Covariate = *KASS* pre-test.

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Fourth Grade

Descriptive statistics are presented in Table 1. Results from the paired-samples *t*-test indicated significant differences between pre- and post-test *KASS* scores for the fourth-grade intervention group, $t(42) = 5.68$, $p < 0.00$ (Table 2), thus supporting the hypothesis. The test for parallelism conducted on the fourth-grade data was not significant ($F = 0.47$;$df = 1,71$; $p = 0.50$). The resulting test for equality of adjusted means (Table 4) did not demonstrate significance ($F = 0.88$; $df = 1,72$; $p = 0.35$), indicating there was not a significant difference between the intervention and control groups after controlling for the pre-test *KASS* scores; thus, the hypothesis of the second research question was not supported.

DISCUSSION

Prosocial and emotional learning has been indicated as an important aspect of healthy child development. *Second Step: A Violence Prevention Program* is a school-based curriculum designed to enhance social competence and reduce social-emotional problems (Committee for Children, 2002). The current study evaluated the effectiveness of implementing one unit (Impulse Control and Problem Solving; unit II) of this curriculum on students' knowledge of social-emotional skills.

Consistent with expectations, results indicated significant increases in knowledge for students in the intervention groups. Moreover, when compared to the third-grade control students, the third-grade students exposed to the intervention unit of *Second Step*, demonstrated significantly more increases in social-emotional skills knowledge. However, this was not the case for the fourth-grade students. While these students also showed significant growth in knowledge scores from pre- to post-test, the cohort of same-grade, control students showed a similar level of growth.

Potential explanations for this difference may be partially attributed to the measurement used. For example, perhaps for fourth-grade students the *KASS* may also measure their writing skills; or perhaps the measurement tool is not particularly sensitive to change when only one unit of the curriculum is used. The *KASS* was intended to be administered after the entire *Second Step* curriculum has been provided, and it is possible there may be elements that are reinforced or covered more explicitly in the additional units. Explanations may also be related to the nature of the study. For example, *Second Step* may not be as effective at measuring change when implemented with only one unit or may be more effective when implemented by an individual naturally present in the classroom or school (e.g., teacher) so that elements may be reinforced throughout the day. Finally, it is unclear whether the assessment being administered to the control fourth grade students one month after it was administered to the intervention students impacted the results (i.e., whether natural growth in social-emotional skills knowledge occurred during this time).

Strengths and Limitations

Strengths of the current study include the controlled design, allowing for comparisons between students provided the intervention and control students. Typically, the control pre- and post-tests were administered at approximately the same time and within the same timeline (e.g., fourth grade pre- and post-tests administered approximately eight weeks apart). Co-facilitators were used in order to ensure integrity of implementation. Finally, to avoid confounds, the same rater scored the assessment measures.

However, several limitations were also present in the current study. Most importantly, the current study relied exclusively on the *KASS* for pre- and post-test data, lacking additional measures to evaluate the effectiveness of the curriculum. While this study was specifically evaluating the increase in social-emotional skills knowledge, results of the study may have been more robust if several different types of measurement (e.g., knowledge assessment, behavioral observations) had been obtained from different raters (e.g., students, teachers). Additionally, data related to the psychometric properties of the *KASS* are not available. A further limitation is the implementation of the *Second Step* unit by co-facilitators not naturally present in the classroom. In order to generalize and reinforce the skills, it may be optimal for the classroom teacher to implement the intervention, or for the facilitator to be present throughout the day.

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Implications

In spite of these limitations, the intervention groups did demonstrate knowledge growth related to social-emotional skills. This study was conducted as part of a collaborative effort and was designed to be a feasible intervention for school psychologists. It is important for future research to continue to pursue data collection and evaluation in such feasible ways. The importance of including control group data is also highlighted, because without such data it would have been impossible to fully evaluate the differential effects of the intervention. Finally, the importance of the development of measures sensitive to behavioral change is emphasized. It appears there is a lack of optimal tools designed for this purpose. Thus, as a Response to Intervention (RtI) framework emerges for both academic and behavioral assessment and interventions, it will be crucial to develop tools that are sensitive enough to measure student change.

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