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PATHS WITH OLDER STUDENTS

PATHS with Older Students:
An Examination of Social Competence and Teacher Buy-In
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Abstract

Childhood social, emotional, and behavioral problems are concerning for schools, as they can impact academic achievement, social functioning, and general success. As a result, many schools are implementing social and emotional learning (SEL) programs to address these concerns. The present study evaluated the effectiveness of the Promoting Alternative Thinking Strategies (PATHS) program with eighty-four 9-12 year old students at a public Montessori elementary school. Results suggest that PATHS was associated with improvements in students’ social self-efficacy for conflict and non-conflict situations. No change was found in prosocial behaviors as a result of participation in the PATHS program, and contrary to the hypothesis, aggressive behaviors increased from pre- to post-intervention. The present study also examined the effect of teacher buy-in to the PATHS program on outcomes; no significant effects were found.
PATHS with Older Students: A Look at Social Competence and Teacher Buy-In

Childhood social, emotional, and behavioral difficulties are a growing concern for schools. In many schools, over 50% of students exhibit some type of learning, behavior, or emotional problem (Center for Mental Health in Schools at University of California, Los Angeles, 2008). Between 14 and 20% of children have at least one diagnosable mental, emotional, or behavioral disorder, and diagnosis of disruptive behavior disorders and juvenile onset bipolar disorder has increased significantly in the past couple of decades (O’Connell, Boat, & Warner, 2009). Schools are particularly concerned about the impact that these problems have on students’ academic achievement and general success at school. Studies have found that social and emotional factors have a large impact on learning. When students are unable to regulate their emotions and behavior, paying attention to instructions, completing work, and staying focused on tasks may become difficult (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2003). By promoting social and emotional competence, it may be possible to prevent some of these problems (O’Connell et al., 2009).

Social and Emotional Learning

One response to the social, emotional, and behavioral problems faced by youth has been the development of school-based social emotional learning (SEL) programs. SEL is defined as “the capacity to recognize and manage emotions, solve problems effectively, and establish positive relationships with others” (Zins & Elias, 2007, p. 1). SEL programs target behaviors, cognitions, and emotions in five main competency clusters: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2003; Zins & Elias, 2007). School-based SEL
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programs may specifically target at-risk children, but are often disseminated on a school-wide basis as universal programs, which are offered to all students to promote positive outcomes while preventing negative outcomes (Zins & Elias, 2007). Most SEL programs are curriculum-based, and consist of a series of lessons and activities that are delivered on a regular basis, throughout the school year, to entire classrooms of students. The majority of programs are developed for use in preschools and elementary schools, though some programs can be used with older children (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger 2011).

Effectiveness of SEL programs. SEL programs produce a number of positive outcomes (Bierman et al., 2010; Durlak et al., 2011; Greenberg et al., 2003). Short-term effects include enhanced social and emotional competencies, increased prosocial behaviors, decreased conduct problems, and improved academic performance (Durlak et al., 2011). Long-term effects of SEL programming include fewer mental health problems and reduced likelihood of substance abuse and antisocial behaviors (Greenberg et al., 2003). The results are best when children are exposed to multi-year programming that builds over time (Bierman et al., 2010). Research suggests that SEL programs are more effective when delivered by school staff than when delivered by non-school personnel (Durlak et al., 2011).

Promoting Alternative Thinking Strategies (PATHS)

A popular SEL program is the Promoting Alternative Thinking Strategies (PATHS) curriculum, which is designed to reduce aggression and problem behaviors while promoting social and emotional competence in elementary school-aged children (Greenberg, Kusché, & Mihalic, 1998). PATHS is based on the affective-behavioral-
cognitive-dynamic (ABCD) model of development that focuses on integrating the
development of affect, behavior, and cognitive processes to promote social and emotional
competence (Kam, Greenberg, & Kusché, 2004). There are four underlying assumptions
to the curriculum. First, development of communication and self-control are critical to
children’s understanding of emotions. Second, both socialization and development affect
children’s ability to understand and discuss emotions. Third, emotional understanding is
critical to effective problem-solving. Fourth, the school environment is a fundamental
component of change (Kam et al., 2004).

Ideally, PATHS is delivered by teachers on a regular basis, throughout the school
year. In some cases, PATHS may also be delivered by support staff or school-based
mental health clinicians (Kam et al., 2004). Lessons are 20-30 minutes long and should
be taught two to three times a week (Greenberg et al., 1998). Although implementers
should attempt to adhere to the curriculum as closely as possible, some adaptations are
inevitable and unlikely to negatively influence outcomes (Durlak & Dupree, 2008).

PATHS has different curricula for each grade level. For example, the fourth
grade curriculum contains six major units: positive classroom environment, feelings,
problem-solving, goals and identity, friendships, and responsibility. Each unit contains
several more specific lessons (Greenberg & Kusché, 2011). A final component of the
curriculum is the “PATHS Kid of the Day.” During each PATHS lesson, one student is
chosen as the PATHS Kid. That student receives compliments from the program
implementer, the teacher, other students, and him- or herself (Greenberg & Kusché,
2011). The PATHS program strongly encourages reinforcement from teachers and
parents/guardians so that children may integrate their newly acquired skills into all aspects of their lives, both in and out of school (Curtis & Norgate, 2007).

**Effectiveness of the PATHS program.** The PATHS curriculum has been associated with several positive outcomes, including improved self-control, enhanced emotion understanding and recognition, increased ability to tolerate frustration, more effective conflict-resolution, enhanced thinking and planning skills, reduced anxiety and depressive symptoms, and fewer conduct problems (Greenberg et al., 1998). Unfortunately, most of these findings are based on studies with preschool (Domitrovich et al., 2007) to early elementary school-aged children (Curtis & Norgate, 2007; Kam, Greenberg, & Walls, 2003; Kam et al., 2004), with few studies examining the outcomes of PATHS for older students.

**PATHS with older students.** The few studies that have examined the effectiveness of SEL programs with older elementary school students have found results similar to those found with younger students, but have typically been less rigorously designed or more narrowly focused.

Kelly et al. (2004) conducted the only published evaluation of PATHS with older elementary school students. The authors delivered the program to a class of twenty-five 9- and 10-year-olds. At the end of the school year, teachers rated the entire class on whether they improved in their feeling vocabulary, self-awareness, emotion recognition, empathy, emotion regulation, and relationship skills. The students also completed a questionnaire regarding their experiences with the PATHS program. Additionally, teachers identified seven target students who displayed concerning emotional and
behavioral problems and these target students completed a measure of emotion identification before and after participating in PATHS (Kelly et al., 2004).

Kelly et al. (2004) found that teachers reported students as being better at handling relationships, managing emotions, recognizing emotions in others, developing empathy, and describing their own emotions as a result of the PATHS program. Additionally, students had larger emotion vocabularies and were more self-aware after participating in PATHS, according to teacher reports. Students reported that PATHS had helped them learn how to manage and change undesirable feelings and that learning about feelings had helped both at school and at home. Kelly et al. also found that PATHS was effective at increasing emotion vocabulary, emotional awareness, and emotion regulation from pre- to posttest for the seven target students. Although their findings supported PATHS as an effective intervention for this age group, the Kelly et al. (2004) study was limited by a small sample size, lack of control group, and utilizing a pre-post design with only the target pupils, rather than the whole class.

Studies examining other SEL programs with older students and have found similar, promising results. For example, Rivers, Brackett, Reyes, Elbertson, and Salovey (2013) found that teachers and observers reported an improvement in emotional climate from pre- to posttest in fifth and sixth grade classrooms that received an SEL program, but not in control classrooms. Harlacher (2010) found that third and fourth grade students who received an SEL intervention scored higher on a measure of social and emotional knowledge at posttest, compared to control students. Additionally, teachers in intervention classrooms rated their students as having significantly improved social functioning. These examples suggest promising results when SEL programs are used
with older elementary school students; however, additional evaluation of PATHS with older elementary school students should attempt to provide more solid support for the effectiveness of PATHS with older populations.

**PATHS and social competence.** While the PATHS curriculum for younger students focuses on emotion identification, awareness, and regulation more than on interpersonal functioning, the curriculum for older students focuses on relationship skills and interpersonal conflict resolution (Greenberg & Kusché, 2011). Thus, the primary focus for older students is on building social competence, defined as “a set of skills and behaviors necessary to get along with others and be well-liked” (Blumberg, Carle, O’Conner, Moore, & Lippman, 2008, p. 177).

Teacher ratings of student social competence have been a core component of several previous evaluations of the PATHS program and research suggests that the program is effective at enhancing social competence for preschool children (Domitrovich et al., 2007; Hamre, Pianta, Mashburn, & Downer, 2012). Additionally, while the Kelly et al. (2004) study of PATHS with 9- and 10-year-old students primarily focused on emotion-related outcomes, they also found that teachers reported that their students were better at handling relationships and exhibiting empathy after participation in PATHS.

One way to examine children’s social competence is to assess their social self-efficacy. Bandura (1977) defined self-efficacy as “a self-judgment of one's ability to perform a task within a specific domain” (p. 2). Children form beliefs about their abilities and carry these beliefs with them, which in turn affects their performance in different domains. Among these domains is interpersonal functioning. Interpersonal or social self-efficacy refers to one’s perceptions of his or her interpersonal skills (Kvarme
et al., 2010). SEL programs, which promote social competence, may serve to boost social self-efficacy, though no previous research appears to have examined changes in students’ social self-efficacy over the course of participating in an SEL program.

**Teacher “Buy-In” and SEL Outcomes**

Participant responsiveness, or the degree to which participants “buy-in” to and support a program, may influence the effectiveness of school-based SEL programs (Dane & Schneider, 1998; Dusenbury, Brannigan, Falco, & Hansen, 2003; O’Donnell, 2008). Assessment of participant responsiveness typically focuses on two primary indicators of responsiveness: engagement in the program and satisfaction with the program, with engagement being the more central component (Kutash, Cross, Madias, Duchnowski, & Green, 2012). Much literature suggests that engagement is an important factor that needs to be examined in studies of intervention outcomes (Dane & Schneider, 1998; Dusenbury et al., 2003; O’Donnell, 2008); however, very little research actually addresses this concept. In the past, participant responsiveness to school-based programs has mainly been measured with students and principals, and teacher responsiveness needs further research. How much teachers engage in the intervention may affect student outcomes.

Previous research on school-based programs suggests that teacher buy-in can influence implementation quality (Datnow & Castellano, 2000), and implementation quality can moderate the effectiveness of SEL programs (Durlak et al., 2011). Therefore, when SEL programs are delivered in classrooms by teachers, their support may indirectly influence the outcomes of SEL programs through the quality of their implementation of the SEL program. An implementation study of a life skills training program supports this; it was found that lack of teacher support was not only associated with poorer
implementation quality, it was also related to poorer classroom behavior and lessened student engagement with the program (Fagan & Mihalic, 2003).

When programs are delivered by other school staff or non-school personnel, teacher buy-in may be even more important to consider, as teachers may either support or undermine the efforts of the person delivering the program. In a study of the barriers to successful implementation of school based prevention programs, Langley, Nadeem, Kataoka, Stein, and Jaycox (2010) found that clinicians who implemented these programs ranked lack of teacher support as one of the top four implementation barriers. These findings suggest that teacher support is important, whether teachers or other personnel deliver an SEL program.

To our knowledge there are no published studies that examine teacher buy-in to SEL programs; however, Kam et al. (2003) examined principal support as a factor that moderated the effectiveness of the PATHS program. The authors found a significant interaction between principal support and implementation quality. When implementation quality was high, students at schools with high levels of principal support showed improved emotional competence and reduced aggression and problem behaviors. However, when principal support was low, students did not display these improvements. This finding suggests the importance of buy-in and support for the PATHS program to be effective.

The Present Study

More research is needed to understand the effectiveness of the PATHS program for older elementary school students. In particular, effects on social competence should be examined, as this is an increasing focus of the curriculum for older students.
Additionally, participant responsiveness, or “buy-in,” is an important aspect of implementation that may impact the outcomes of SEL programs; however, there is no research on the effects of teacher buy-in on the outcomes of SEL programs. Teacher buy-in may be especially critical when teachers are not the ones delivering the intervention, as Durlak et al. (2011) found that SEL programs are more effective when delivered by teachers than by non-school personnel, and lack of teacher support is one of the primarily challenges to implementation by other personnel (Langley et al., 2010).

The present study aimed to evaluate the effectiveness of the Promoting Alternative Thinking Strategies (PATHS) program for 9- through 12-year-olds. More specifically, this project examined changes in students’ social competence, as measured by teacher reports of prosocial and aggressive behavior and student self-reports of social self-efficacy, before and after implementation of the PATHS program. In addition, this study explored whether teacher buy-in to the PATHS program, as measured by their engagement in the lessons, influenced the effectiveness of the intervention.

Method

Participants

Participants were recruited from four 9- through 12-year-old classrooms at a public Montessori elementary school in southwestern Ohio. All students whose parents provided written consent and who provided verbal assent participated in the study. A total of 97 students consented to participate; however 9 students withdrew from the school during the course of the year and did not complete the study. Four students were excluded from analyses, two due to lack of understanding the task and two others due to inability to complete measures at pre- or posttest. Thus, the final sample consisted of 84
students, which was about 60% of all enrolled students in 9- through 12-year-old classrooms.

The majority of the students were female (57%). Students ranged in age between 8 and 12 years, though most of the students (94%) fell between 9 and 11 years old at the start of the study. Race and socioeconomic status information was not collected as part of this study, but demographics for the school suggest that over 75% of students are African American, with the next largest group being Caucasian, and that over 80% of students are considered economically disadvantaged (Ohio Department of Education, 2013).

Measures

**Teacher Social Competence Rating Scale.** The Teacher Social Competence Rating Scale (Kam & Greenberg, 1999) is a 23-item teacher report of students’ positive and negative social behaviors. Teachers rate each student on a 6-point, Likert-type scale that ranges from 0 (Almost Never) to 5 (Almost Always). The Teacher Social Competence Rating Scale consists of four subscales. The present study examined responses to the aggressive behaviors (AGGR) and social and emotional competence (EMTN) subscales. Higher scores on the EMTN subscale indicate more well-developed social competence and higher scores on the AGGR subscale indicate more aggressive social behaviors (Kam & Greenberg, 1999).

The Teacher Social Competence Rating Scale was created specifically for the PATHS program and is intended for use with elementary school-aged children. In previous research, both the AGGR ($\alpha = .92$) and EMTN ($\alpha = .93$) subscales demonstrated high levels of internal consistency (Kam & Greenberg, 1999). In the present study, the
The Children’s Self-Efficacy for Peer Interactions Scale. The Children’s Self-Efficacy for Peer Interactions Scale (CSPI; Wheeler & Ladd, 1982) is a 22-item, 4-point Likert-type self-report of children’s social self-efficacy. It was designed to measure how competent children feel when interacting with peers. Each item presents a social situation and asks the child whether responding in a certain way would be easy or hard for him or her. The child answers on a scale ranging from 1(HARD!) to 4(EASY!). Their ratings for each item are summed to produce a total score, with higher scores indicate higher levels of social self-efficacy. Additionally, total scores are calculated for each of two subscales, one that assesses social self-efficacy in conflict situations, and one that assesses social self-efficacy in non-conflict situations.

In previous research, the CSPI demonstrated adequate internal consistency, with a Chronbach’s alpha of .85 for the total scale, .85 for the conflict subscale, and .73 for the non-conflict subscale (Wheeler & Ladd, 1982). The present study also found adequate internal consistency for both the conflict ($\alpha = .86$) and non-conflict ($\alpha = .89$) subscales. The scale has also demonstrated test-retest reliability of .90 for boys and .80 for girls over a 2-week period, and construct validity when compared to measures of global self-concept, social efficacy, and social influence (Wheeler & Ladd, 1982).

Teacher engagement rating. The PATHS implementers, two psychologists and a psychology trainee on staff at the school, rated teachers on one item measuring how engaged they were in each PATHS lesson. The item is a 5-point Likert-type scale that ranges from 1(Very Disengaged) to 5(Very Engaged). Teachers who received a rating of
were not present in the room during the PATHS lesson. Teachers who received a rating of 2 were present during the lesson, but were engaged in other activities, such as grading or looking at cell phones. Teachers who received a rating of 3 were present and refrained from completing other activities, but also did not actively participate in PATHS. Teachers who received a rating of 4 were present and sitting with the group, but only contributed to the lessons once or twice with positive, productive comments. Teachers who received a rating of 5 were present, sitting with the group, and participated in the lesson at least three times with positive, productive comments. The PATHS implementers rated teachers on their engagement each week after the PATHS lesson and total engagement scores were summed at the end of the year. Then, the teachers were ranked in order of most engaged to least engaged. The top two were considered “high engagement,” and the bottom two were considered “low engagement.”

The teacher engagement rating was developed for the present study. There is no reliability or validity information available.

**Procedure**

Approval from both the Cincinnati Public Schools (CPS) and Xavier University Institutional Review Board (IRB) was obtained prior to collecting data for this study (Appendix G). Information about the study, including consent forms, was sent home with students during the second week of school. In order to facilitate the quick return of consent forms, small rewards, such as pencils, were offered to the children for bringing in their signed consent forms. Children who did not return consent forms still received the PATHS intervention but did not participate in the data collection for this study.
Once consent was obtained, students and teachers completed pre-intervention measures. The CSPI was administered to the students in a group setting, during a scheduled PATHS time. Students were told that they did not have to complete the measures and that they could stop at any time. The researchers explained the measures to the students, read each question out loud to the group, and were available to answer questions and help students who needed additional assistance. Teachers completed the Teacher Social Competence Rating Scale for each student in their class who provided consent.

After pre-intervention measures were completed, the PATHS program was implemented. In mixed-aged classrooms, the curriculum designed for the youngest students should be administered to the whole class (M. Greenberg, personal communication, February 14, 2012), so children received the fourth grade curriculum once a week for 30 minutes. The intervention was delivered by psychologists and a psychology trainee on staff. Due to time constraints, classrooms received between 14 and 20 lessons, out of a total of 40 possible lessons. There was some variation in which lessons were delivered in each classroom, and in the number of lessons that each classroom received, due to several factors, including school cancellation due to inclement weather days, field trips, and last minute changes in schedules. Teachers were encouraged to remain in the classrooms during PATHS lessons and engage in the program. At the end of each PATHS lesson, the psychologist or psychology trainee completed the teacher engagement rating scale.

At the end of the school year, students and teachers completed post-intervention measures. Students completed the CSPI again, and teachers once again filled out the
Teacher Social Competence Rating Scale for each student in their class who had provided consent.

Results

The purpose of the present study was to examine the effects of the PATHS program on social competence in older elementary school students, as well as to investigate the influence of teacher buy-in to the program on student outcomes. To test this, a doubly multivariate repeated measures MANOVA was conducted. Teacher engagement served as a between-subjects variable, with students’ prosocial behavior, aggressive behavior, self-efficacy in conflict situation, and self-efficacy in non-conflict situations serving as dependent variables. Pillai’s Trace (\(V\)) is reported for the multivariate test because of unequal sample size in the two groups (Tabachnick & Fiddell, 2013). When the multivariate test was significant, follow-up univariate tests were run. The Bonferroni adjustment was used to reduce the likelihood of a Type I error. Additionally, correlations between teacher engagement scores and change in outcome variables over time were tested using Pearson’s product moment correlations. Change was calculated by subtracting total scores on each variable at pretest from total scores on each variable at posttest.

Preliminary Analyses

Descriptive statistics confirmed that the data were entered accurately and without error. Roughly 2% of data items were missing. Mean scores for the variable were substituted for missing data points. Normality was tested for all variables and problems with skewness and kurtosis were found for several outcome variables. Social self-efficacy for conflict situations and social self-efficacy for non-conflict situations were
corrected using a reverse square root transformation. Teacher report of prosocial and aggressive behaviors were corrected using a square root transformation. Means and standard deviations for the uncorrected variables are presented in Table 1. Correlations between the dependent variables are presented in Table 2.

To create the between-subjects variable, teacher engagement ratings were summed for each teacher. Because unequal numbers of lessons were delivered in each classroom, only ratings from 13 lessons that all four classrooms received were counted toward the total score. The total possible engagement score was 65; total engagement scores for the four teachers were 45, 37, 31, and 27.5. Most teachers received ratings of 3 or below most weeks, and a rating of 5 was only given one time during the year. The teachers who received scores of 45 and 37 were grouped as high engagement, and the teachers who received scores of 31 and 27.5 were grouped as low engagement.

Primary Analyses

There was a significant change over time in the combined dependent variables, \( V = .40, F(4, 79) = 13.39, p < .001, \eta^2_p = .40. \) There were significant changes over time in students’ self-reported social self-efficacy in conflict situations, \( F(1, 82) = 11.87, p = .001, \eta^2_p = .13 \) and non-conflict situations, \( F(1, 82) = 19.59, p < .001, \eta^2_p = .19, \) as well as on teacher reports of aggressive behaviors, \( F(1, 82) = 26.53, p < .001, \eta^2_p = .24. \) There was no change in teacher reports of prosocial behaviors, \( F(1, 82) = 0.017, p > .05. \) The interaction between teacher engagement and the intervention was not significant, \( F(4, 79) = 0.75, p > .05; \) however, there was a main effect of teacher engagement. Teachers who were more engaged in the PATHS program rated their students as displaying more aggressive behaviors than teachers who were less engaged in the
program, \( F(1, 82) = 17.76, p < .001, \eta^2_p = .18 \). The correlations between teacher engagement and change in outcome measures were not significant (see Table 3).

**Discussion**

Increasing concern regarding childhood social, emotional, and behavioral difficulties has led to more social and emotional programming in schools. The PATHS program has been associated with numerous positive outcomes, including improved conflict resolution (Greenberg et al., 1998). The present study’s results also support this; over the course of participation in the PATHS program, 9 to 12 year old students increased in self-reported social self-efficacy, both in conflict and non-conflict situations. Students rated themselves as being better able to handle social situations at the end of the school year, as compared to the beginning of the school year. Sections of the fourth grade curriculum focus on peer interactions and social problem solving (Greenberg & Kusche, 2011), so the students likely learned skills that increased their confidence for managing social interactions. Despite this focus of the curriculum, previous studies of PATHS with older students have not directly examined social competence as an outcome (Kelly et al., 2004). The present study addressed this gap in the research, and the large effect sizes found for both conflict and non-conflict social self-efficacy suggest that participating in PATHS may greatly improve older students’ perceptions of their own social competence.

The present study found no significant change in teacher reported prosocial behaviors over the course of participation in the PATHS program. Although teacher reports suggest some increase from the beginning to the end of the year, the behaviors did not improve enough to be significant. The intervention may simply have not been
effective at increasing prosocial behaviors in older students; however, this contradicts previous findings, which suggest that PATHS leads to significant increased positive social behaviors in younger students (Curtis & Norgate, 2007; Domitrović et al., 2007). Another possible explanation is that because teacher buy-in was generally low, students similarly were not fully engaged in the intervention, resulting in less impact of the program on behavior. Fagan and Mihalic (2003) found that students with teachers who were less supportive of a life skills training program showed less interest and involvement in the program themselves. Overall teacher engagement was fairly low in the present study, with most teachers receiving an engagement rating of 3 or lower most weeks. The present study did not measure student engagement, but it is possible that students were similarly disengaged.

Another factor that may explain the lack of improvement in prosocial behaviors is the possibility of biased teacher ratings. Students’ self-reports of their perceived ability to effectively handle social situations increased from pre- to posttest, but teacher ratings did not reflect a corresponding change in observed behavior. While students’ perceptions simply may not have translated into actual behaviors, it could also be that teachers did not accurately rate their students’ behaviors. Although teacher ratings are a useful method for assessing students’ social behaviors, they are not free from bias. Teachers may have preconceived notions about certain students that influence their ratings and are also likely to give more weight to recent or unusual events when making ratings (Merrell, Buchanan, & Tran, 2006). In the present study, teachers may have attended more to examples of aggressive or problematic behaviors and failed to notice positive social interactions. Additionally, teachers may have higher expectations for behavior at the end of the year
compared to the beginning, and may have rated behaviors against a higher standard at posttest.

Contrary to the hypothesis that aggressive behaviors would decrease after participation in the PATHS program, the present study found a significant increase in aggressive behaviors from the beginning of the school year to the end of the year. This finding is concerning, as well as inconsistent with some previous research. Kam et al. (2004) found reductions in externalizing problem behaviors in elementary school students after exposure to the PATHS program, and Curtis and Norgate (2007) found similar results. However, other evaluations of PATHS and other SEL programs have found no reductions in externalizing behaviors, especially with older students (Domitrovich et al., 2007). For example, Cooke et al. (1997) found significant improvements in third through fifth grade students’ prosocial beliefs and behaviors after participation in an SEL program, but found no decrease in aggressive behaviors. Raimundo, Marques-Pinto, and Lima (2013) found that an SEL program was effective in reducing aggressive behaviors in fourth grade boys but not girls. The present study did not examine gender differences, so it is unknown whether the PATHS program was more effective at reducing aggression in boys than girls.

One explanation for the present findings may be that selected or targeted interventions are more effective at reducing aggression than universal prevention and promotion programs (Wilson & Lipsey, 2007). The PATHS program is a universal intervention, and therefore may not be the most efficacious intervention for aggressive behaviors. This may explain the observed increase in aggressive behaviors, as previous research suggests a natural increase in aggressive behaviors over the course of the school
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year (Cooke et al., 1997; Taub, 2002). Perhaps because PATHS was not effective at reducing aggression, this natural increase was observed in the present study.

Another possible explanation may be that the program takes longer to impact aggressive behaviors. The PATHS program aims to reduce aggressive behaviors by promoting SEL skills and attitudes. The program asserts that emotional understanding is critical to problem solving (Kam et al., 2004). As a result it may be that an increase in social self-efficacy precedes an increase in social and emotional competence and prosocial behaviors, which precedes a reduction in aggressive behaviors. Students reported feeling more confident about their abilities to manage social situations, and over time, this confidence may lead to increased positive behaviors, and eventually, fewer problem behaviors. Cooke et al. (2007) found support for a similar hypothesis. Students who increased in prosocial behaviors were more likely to show reductions in aggressive behaviors than students whose prosocial behaviors did not increase. Taub (2002) asserted that students need to acquire new skills and attitudes before replacing old ways of behaving. As such, the students’ increased understanding of problem solving skills, as evidenced by their increase in social self-efficacy, may precede a reduction in aggressive behaviors. Continuing follow-up examinations with the same sample may yield reductions in aggression as time progresses.

Similar to the lack of observed increase in prosocial behaviors, the increase in aggressive behaviors found in the present study may suggest that an alternate factor is influencing teachers’ reports. It may be that teachers were experiencing burn out by the end of the school year and as a result of decreased patience, exaggerated poor ratings of students’ behaviors. Jennings and Greenberg (2009) suggested that
behaviors escalate, teachers become exhausted and frustrated, which may lead them to more reactive, punitive forms of managing behaviors. These punishments then may lead to further problematic behaviors by students, and the cycle may continue to worsen as the year progresses. Additionally, teachers may be more optimistic at the beginning of the year, and therefore may be more likely to rate behaviors as less problematic. As the year progresses and they become both more aware of students’ behaviors and less tolerant of those behaviors, they may rate similar behaviors as more problematic. In the future, it may be ideal to delay collecting pre-intervention measures until teachers have had adequate time to get to know their students.

A final possible explanation may be that during that last few weeks of school, when teachers were completing their ratings, students were anticipating the end of the school year and behaving in more problematic ways, due to excitement (Taub, 2002). Initially, the researcher planned to collect posttest data about one month prior to the end of the school year, to avoid this possible confounding problem; however, due to constraints set by the school as well as teachers’ delays in completing the forms, many of the ratings were completed during the last two to three weeks of the school year. At this point, students had finished end of year testing and were preparing for summer vacation, which may have contributed to difficult behaviors.

The present study may not have found significant results similar to previous research on the PATHS program due to differences in demographic characteristics between this study’s sample and most other samples previously examined. The study was conducted at a public Montessori elementary school, and most of the students were African American and economically disadvantaged. This is the first known study in
Montessori classrooms; all other research has taken place in traditional classrooms. Montessori classrooms are mixed-aged, and 9 through 12-year-old students were in classrooms together. The PATHS curriculum has different lessons for each grade, and at the suggestion of one of the PATHS creators, the fourth grade curriculum was delivered in each classroom (M. Greenberg, personal communication, February 14, 2012). This curriculum may not have been developmentally appropriate for the older students in the classroom.

Previous research on the PATHS program has been done with diverse samples (Domitrovich et al., 2007; Greenberg et al., 2010); however, the majority of studies that support PATHS’s effectiveness have included mostly Caucasian participants (Curtis & Norgate, 2007; Kam et al., 2004). Kam et al. (2003) examined the effectiveness of PATHS with a sample similar to the present study, consisting of mostly African American students (79%) from low-income families (85%), and found no significant differences in teacher reports of students’ aggressive behaviors. When examining SES, previous evaluations have found that PATHS has been less effective at improving social competence at schools with high levels of poverty (Greenberg et al., 2010). Given the present school’s high number of economically disadvantaged students, this may explain the lack of improvement in teacher reports of prosocial and aggressive behaviors.

The present study did not find support for the hypothesis that teacher buy-in to the PATHS program would moderate the effectiveness of the program. This area remains under-researched, so explanations are offered tentatively. First, the item used to measure engagement was created for this study and has not been otherwise validated, so there may have been problems with measurement. Three different implementers rated teacher
engagement and inter-rater reliability was not established. This may have led to inconsistencies in measuring engagement.

Another explanation is that in the present study, teacher engagement was fairly low across all four teachers, and as a result, there may not have been distinct high engagement and low engagement groups. It is likely that the present study did not capture a broad range of teacher engagement and was unable to make accurate comparisons between the two groups, because the groups were not substantially different from each other.

Additionally, school-based mental health clinicians rather than teachers implemented the PATHS program, so teacher buy-in may have been less influential. Students may have been more attentive to the program implementers rather than their teachers. Finally, the engagement rating only measured how engaged teachers were during the lessons; future research should attempt to address how often teachers integrate PATHS concepts into other classroom activities or lessons, as a more well-rounded measurement of engagement.

Although there was no significant interaction between teacher engagement and the intervention, the present study found a significant main effect of teacher engagement on aggressive behaviors. High engagement teachers rated their students as displaying more aggressive behaviors than low engagement teachers. This may be the result of several factors. Highly engaged teachers may be more attuned to problems in their classroom and therefore more accurate in their reporting of aggressive behaviors. Conversely, it may be that high engagement teachers were more engaged in the PATHS program because they felt that their classrooms were more problematic, and thus felt a
greater need for the intervention. Because the ratings of aggressive behavior were subjective, it is difficult to know if there were actual differences between classrooms or if the findings were due to inconsistencies in response style. Future studies may consider including more objective measures of students’ behaviors, including disciplinary referrals.

**Limitations and Future Directions**

The present study had several limitations, the biggest being the lack of control group. As a result, it is unclear whether changes in the dependent variables over time are actually due to participation in the intervention, or simply due to the passage of time and maturation. Future studies should utilize a control group in order to isolate intervention effects.

The present study also has limited external validity. The study was conducted at a Montessori elementary school, so results may not be generalizable to traditional schools. Additionally, the sample consisted of mostly African American, economically disadvantaged students, which is not representative of the general population. Future research should examine PATHS in a variety of school settings with diverse populations of students, so that results can be generalized.

A third limitation was the reliance on self-report data, which can be problematic with children. Children may lack the insight necessary to complete self-report surveys and may not have accurately reported their social competence. Further, students may have felt the need to present as more competent than they truly felt, and may have exaggerated their answers. During data collection, there were times when students discussed answers with each other or looked at each other’s papers. Though this was
immediately corrected when noticed, it may have increased students’ desires to present as more confident and efficacious.

Reliance on teacher report data was also a limitation, as teachers may have exaggerated reports of problematic behavior at the end of the school year, due to burn out. Additionally, at the end of the school year, teachers had many other responsibilities and may not have devoted adequate time to completing the student behavior ratings or satisfaction surveys. In fact, two of the four teachers did not complete the satisfaction survey. As a result, this variable could not be used to measure buy-in, as originally proposed. Although several efforts were made to encourage the teachers to complete the measure, because it was given at the end of the year, follow-through was problematic. In future studies, this should be given earlier, perhaps a full month before the end of the school year. Similarly, the pretest may have been too early in the year, while teachers were more optimistic about their students’ behaviors. Finally, having only four teachers may have also been problematic when measuring teacher buy-in. Future studies should examine a larger group of teachers in order to better study the effect of buy-in.

Another limitation to this study was the lack of enough time during the school year to implement the entire PATHS curriculum. The fourth grade curriculum consists of about 40 lessons, but in most classrooms, fewer than 20 lessons were implemented. There were particular difficulties this year due to inclement weather, as well as testing schedules, field trips, and other conflicts that resulted in several weeks without PATHS lessons. As a result, students were exposed to less than half of the curriculum. Had they received more of the intervention, they may have shown improvements in behavior. In future evaluations, intervention dosage should be increased.
Finally, the PATHS program was implemented by school-based mental health clinicians rather than teachers, and previous research suggests that SEL programs are most effective when implemented by teachers (Durlak et al., 2011). Future studies should evaluate the effectiveness of teacher-led PATHS with older students.

Conclusions

Despite limitations, the present study fills a gap in the existing literature on the PATHS program by measuring outcomes with older elementary school students. PATHS was found to be associated with an increase in 9- through 12-year-old students’ social self-efficacy, for both conflict and non-conflict situations. The present study also explored teacher buy-in to SEL programs, which is an important aspect of program implementation that still needs further research. Although no significant results were found in this area, the present study offers a starting point upon which future research can expand.
References


Harlacher, J. E. (2010). *Social and emotional learning as a universal level of support: Evaluating the follow-up effect of Strong Kids on social and emotional outcomes.* ProQuest Information & Learning. 70(9-), 3340.


Table 1


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Table 2

*Correlations between Scores on the CSPI and Teacher Social Competence Rating Scale*

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*Note. *p < .05, **p < .01*
Table 3

**Correlations between Teacher Engagement and Change in Scores on the CSPI and Teacher Social Competence Rating Scales**

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*Note. *p < .05, **p < .01*
Appendix A

Teacher Social Competence Rating Scale (Domitrovich, Greenberg, Kusché, & Cortes, 2008)

This measure was copyrighted by Celene A. Domitrovich, Ph.D., Mark T. Greenberg, Ph.D., Carol A. Kusché, Ph.D. and Rebecca C. Cortes, Ph.D. in 2008 and is available with purchase of PATHS materials.
Appendix B

Children’s Self-Efficacy for Peer Interactions Scale (CSPI; Wheeler & Ladd, 1982)

This measure was available for non-commercial research without permission. Please refer to the following article for more information.


doi:10.1037/0012-1649.18.6.795
Appendix C

PATHS Teacher Satisfaction Survey

This measure was copyrighted by Celene A. Domitrovich, Ph.D., Mark T. Greenberg, Ph.D., Carol A. Kusché, Ph.D. and Rebecca C. Cortes, Ph.D. in 2008 and is available with purchase of PATHS materials.
Appendix D

Teacher Engagement Rating

How engaged was the teacher in today’s PATHS lesson?

1 = very disengaged

2 = somewhat disengaged

3 = neither engaged nor disengaged

4 = somewhat engaged

5 = very engaged

Criteria:

1(Very disengaged): Teacher was not present in classroom during PATHS lesson

2(Somewhat disengaged): Teacher was present in classroom, but frequently doing other things during PATHS lesson, such as grading papers, checking cell phone, or having side conversations

3(Neither engaged nor disengaged): Teacher was present in classroom but did not sit in PATHS circle or verbally participate at all during the lesson

4(Somewhat engaged): Teacher sat in PATHS circle and made one to two positive, productive comments during the lesson

5(Very engaged): Teacher sat in PATHS circle and participated at least three times during the lesson with positive, productive comments
Appendix E

Parent Consent Form

Dear [School] Parent or Guardian,

Your son or daughter is being given the opportunity to participate in a project conducted at [your school] with the [organization name]. This school year, students at [school] will receive weekly lessons from the Promoting Alternative Thinking Strategies (PATHS) curriculum, which teaches students problem-solving, self-control, and emotional awareness skills.

We will be evaluating how effective the PATHS program is for our students. This evaluation has two parts that involve students. First, teachers will fill out a form regarding students’ behavior at the beginning, middle, and end of the school year. Second, students will complete a task that measures their perceptions of their own abilities to interact with their peers. The students will rate items that describe social interactions as “EASY!,” “easy,” “hard,” “HARD!” for them. This will also happen at the beginning, middle, and end of the school year. These activities will help us see if PATHS is able to improve social competence over time.

For your child to participate in the PATHS program evaluation, we need your permission. There are minimal to no risks for your child if he or she participates, but lots of benefits. By participating, your child will help us to better understanding if this program is working at our school to create a school culture marked by positive relationships and behavior. All the data collected for this program evaluation will remain confidential, and your child’s name will not appear on the social competence task or the student behavior form. Instead, your child will be assigned an ID number that will appear on these documents. All program evaluation documents will be kept in a locked file cabinet at Xavier University and destroyed after seven years.

To give permission for your child to participate in the [school] PATHS program evaluation simply return the attached form. Children will receive a small prize (e.g., pencil) upon returning their form.

Refusal to participate will have no negative effect on your child; he or she will still receive the PATHS curriculum in their classroom and will simply not participate in the emotion matching task or student behavior form. You are free to withdraw your child from the program evaluation at any time.
If you have any questions about the PATHS curriculum, please contact [principal] at [number]. If you have questions about the program evaluation you may contact [researcher] at [contact information].

Thank you,

[Principal] Jennifer Gibson Sehra Polad

Promoting Alternative Thinking Strategies (PATHS) Curriculum Evaluation

To allow your child to participate in the evaluation of the PATHS curriculum, please keep the attached letter and return this form to your child’s teacher.

I have been given information about this program evaluation and its risks and benefits, and have had the opportunity to ask questions and to have my questions answered to my satisfaction. I freely give my consent for my child to participate in this program evaluation.

Child’s Name: __________________________________________________________

Teacher: ______________________________________________________________

____________________________ ______________________ ________________
Parent/Guardian Signature  Phone #                          Date
Appendix F

Teacher Consent Form

Dear Teachers,

[School], the [Organization Name], and Xavier University are collaborating to evaluate the effectiveness of the Promoting Alternative Thinking Strategies (PATHS) curriculum at [school].

This evaluation has three parts. First, teachers will fill out a form regarding students’ behavior at the beginning, middle, and end of the school year. Second, students will complete a task that measures their perceptions of their own abilities to interact with their peers. The students will rate items that describe social interactions as “EASY!,” “easy,” “hard,” “HARD!” for them. This will also happen at the beginning, middle, and end of the school year. These activities will help us see if PATHS is able to improve social competence over time. Finally, at the end of the year teachers will complete a brief survey regarding their satisfaction with the PATHS program.

Parents will be asked to provide consent for their child to participate in the study. We would also like your consent to participate in the study by completing behavior ratings for your students and the teacher satisfaction survey. There are minimal to no risks to participation, but lots of benefits. By participating, you will help us to better understanding if this program is working at [school] to create a school culture marked by positive relationships and behavior. All the data collected for this evaluation will remain confidential, your name and the children’s names will not appear on the emotion matching task or the student behavior forms. Instead, the children will be assigned an ID number that will appear on these documents. All evaluation documents will be kept in a locked file cabinet at Xavier University and destroyed after seven years. Refusal to participate will have no negative effect on you; your students can still receive the PATHS curriculum in your classroom. You are also free to withdraw from the evaluation study at any time.

If you have any questions about the PATHS curriculum, please speak with the [organization staff]. If you have questions about the program evaluation you may contact [researcher].

Thank you!

Jen Gibson, Ph.D.
Xavier University

Sehra Polad, M.A.
Xavier University

__________________________

If you agree to participate by complete behavior forms for consented students and a teacher satisfaction survey, please sign below.

I have been given information about this program evaluation and its risks and benefits, and have had the opportunity to ask questions and to have my questions
answered to my satisfaction. I freely give my consent to participate in this research project.

Teacher Name (printed): _________________________________________________________

Teacher Signature: _______________________________ Date: ________________
Appendix G

IRB Approval Letter

August 23, 2013

Jennifer Gibson
Xavier University
MI 6511

Re:  Protocol #1164, *Evaluating the Effectiveness of the PATHS Curriculum in Montessori Schools*

Dear Dr. Gibson:

The IRB has reviewed your requests to modify your study, referenced above. We understand that a small reward will be offered to students upon returning the informed consent, you will be adding new measures and including a new age group of participants, you will be adding research assistants and modifying the consent to include age and gender information. We are able to continue to approve your study based on the information you provided. Therefore, your above-referenced study, as modified, continues to be approved in the Exempt category under Federal Guidelines 45CFR46.

Please note that if you wish to further modify your study, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We truly appreciate your efforts and attention to compliance within the spirit of human subject’s protection. We wish you great success with your research.

Sincerely,

[Signature]

Morell E. Mullins, Jr., Ph.D.
Chair, Institutional Review Board
Xavier University

MEM/sb
Summary

**Title:** PATHS with Older Students: An Examination of Social Competence and Teacher Buy-In

**Problem:** Childhood social, emotional, and behavioral difficulties are a growing concern for schools. In many schools, over 50% of students exhibit some type of learning, behavior, or emotional problem (Center for Mental Health in Schools at University of California, Los Angeles, 2008). Schools may be particularly concerned about the impact that these social, emotional, and behavioral problems have on students’ academic achievement and general success at school, as social and emotional factors have a large impact on learning. One response to the social, emotional, and behavioral problems faced by youth has been the development of school-based social emotional learning (SEL) programs, which target behaviors, cognitions, and emotions in five main competency clusters: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2003; Zins & Elias, 2007). Only a few studies have evaluated SEL programs in upper elementary school classrooms, and more research is needed to understand the effectiveness of these programs for older elementary school students. In particular, the effects of SEL programs on social competence should be examined with older students, as this is an increasing focus of SEL curricula for those ages. Additionally, participant responsiveness, or “buy-in,” is an important aspect of implementation that may impact the outcomes of SEL programs. Research has shown that principal buy-in moderates the effectiveness of SEL programs (Durlak et al., 2011; Kam et al., 2004); however, there is no research on the effects of teacher buy-in on the outcomes of SEL programs.

**Method:** Eighty-four students in 9 to 12 year old classrooms in a Montessori elementary school completed self-report measures of social self-efficacy before and after participating in the Promoting Alternative Thinking Strategies (PATHS) program, over the course of the school year. Their teachers also filled out ratings of students’ prosocial and aggressive behaviors at the beginning and end of the school year. Additionally, PATHS implementers rated the teachers’ levels of engagement in the program each week.

**Findings:** A mixed-model MANOVA yielded a significant change over time in the combined dependent variables, $V = .40, F(4, 79) = 13.39, p < .001, \eta^2_p = .40$. Students reported increased social self-efficacy in conflict situations, $F(1, 82) = 11.87, p = .001, \eta^2_p = .13$ and non-conflict situations, $F(1, 82) = 19.59, p < .001, \eta^2_p = .19$, at the end of the school year, as compared to the beginning of the school year. Teachers reported an increase in aggressive behaviors, $F(1, 82) = 26.53, p < .001, \eta^2_p = .24$ over the course of the school year. There was no change in prosocial behaviors, $F(1, 82) = 0.017, p > .05$. 
The interaction between teacher engagement and the intervention was not significant, $F(4, 79) = 0.75, p > .05$; however, there was a main effect of teacher engagement. Teachers who were more engaged in the PATHS program rated their students as displaying more aggressive behaviors than teachers who were less engaged in the program, $F(1, 82) = 17.76, p < .001, \eta^2_p = .18$. Pearson’s product moment correlations revealed no significant relationship between teacher engagement and change in outcome measures.

*Implications:* The present study found results that support the effectiveness of the PATHS program at improving 9 to 12 year old students’ social self-efficacy, both in conflict and non-conflict situations, which addresses a gap in previous research. The present study also found a significant increase in aggressive behaviors from the beginning of the school year to the end of the year. This finding is concerning but may be explained by a number of factors, including teacher bias or burn out, insufficient time for changes in behavior to take place, lack of effectiveness of this particular intervention, or a natural increase in aggression over the course of the school year.

The present study did not find support for the hypothesis that teacher buy-in to the PATHS program would moderate the effectiveness of the program. This area remains under-researched, and would benefit from further examination.