EFFECTS OF POSITIVE ACTION IN ELEMENTARY SCHOOL ON STUDENT BEHAVIORAL AND SOCIAL-EMOTIONAL OUTCOMES

ABSTRACT

The national conversation about the importance of social-emotional competencies, such as prosocial behaviors, responsible decision-making, and problem-solving, has increased greatly in the last 2 decades. There is, however, less robust evidence for social and emotional learning programs' impact on social and emotional outcomes when implemented in low-income, minority populations. The purpose of the present study is to evaluate the effectiveness of a school-based, universal program targeting social-emotional skills in late elementary school (grades 3–5) in a low-income, urban, minority population. Data were collected from 930 students over five waves. Growth curve analyses revealed evidence of favorable program effects on positive youth development, emotional health, self-esteem, problem behaviors, health behaviors, environmental climate, and academics. The study provides evidence for universal school-based interventions in low-income, urban, minority contexts in elementary school grades.

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T**HE** national conversation about the importance of social-emotional competencies, such as prosocial behaviors, responsible decision-making, and problem-solving, has increased greatly in the last 2 decades (Greenberg et al., 2017). States have integrated social and emotional learning (SEL) into school learning standards (Dusenbury et al., 2011), and the National Research Council (2012) states that intrapersonal, interpersonal, and cognitive skills are all critical for success in both education and the workforce. In 2018, the Collaborative for Academic, Social, and Emotional Learning (CASEL) reported that 18 states had SEL competencies for grades K–12, a drastic increase from one state in 2011 (CASEL, 2020). With the rise in states' addition of competencies and guidelines, there has been an increase in implementation of school-based SEL programs, and evidence that these programs are effective on outcomes such as problem-solving, self-esteem, and positive social behaviors (Durlak et al., 2011).

There is, however, less robust evidence for SEL programs' impact on social and emotional outcomes when implemented in low-income, urban, minority populations. Ethnic and racial minorities are disproportionately affected by poverty in the United States, with approximately 32% of Black or African American youth, 26% of Hispanic or Latino youth, and 31% of Native American youth living in poverty versus 11% of non-Hispanic White youth (Annie E. Casey Foundation, 2018). In the United States, poverty rates in urban areas are consistently higher than those in rural areas, with 16% of people in urban areas living below the poverty threshold, in comparison with 13% of people from rural areas (Bishaw & Posey, 2016). Previous research found that neighborhood socioeconomic status is associated with children's social and emotional development trajectories (Collie et al., 2019), and that prior social-emotional competence positively affects the academic outcomes of students from disadvantaged neighborhoods (Elias & Haynes, 2008). Socioeconomic status has also been linked to indicators of mental health, such that individuals living in poverty are more likely to suffer from feelings of hostility, psychological stress, and depression (Adler et al., 1994). Children from early childcare programs with greater family and neighborhood socioeconomic risk factors were found to have lower cognitive skills than their peers. In addition, these disadvantages were linked indirectly to these children's SEL development through their parents' self-reports of depressive symptoms, suggesting that children with more depressed parents had a greater likelihood of having SEL problems (Jeon et al., 2014).

In addition to having limited resources, low-income neighborhoods also tend to have limited supervision of teens and young adults, and youth in these environments face other challenges such as crime, homelessness, and substance abuse (US Department of Health and Human Services, 2001). Students may develop problem behaviors because of such risk factors inherent in their environment, and SEL competencies can serve as a buffer for these behaviors, helping students adapt more successfully (Reyes & Elias, 2011). For at-risk students, social-emotional competence becomes a protective factor that can moderate the relationship between individual risk factors and developmental outcomes, as well as mediate the relationship between risk factors and such outcomes (Domitrovich et al., 2017). Because SEL competencies are malleable, when interventions are delivered universally, such efforts can have a positive impact on students of all demographics and backgrounds, thus improving the overall health of society (Domitrovich et al., 2017). In light of the need to fill SEL and mental

health gaps for disadvantaged youth, further research is needed that explores the impact SEL efforts can have on diverse students' outcomes.

Developing young students' social-emotional competencies may also have long-term positive effects upon their lives as well as overall society. Teachers' ratings of kindergartners' social competencies were associated with their outcomes as young adults at 25 years of age across multiple domains including education, employment, criminal activity, substance use, and mental health (Jones et al., 2015). The Chicago Child-Parent Center program targeted SEL-related skills for preschool students, and in comparison with a control group, participants experienced greater rates of high school completion and fewer juvenile arrests (Reynolds et al., 2001). The High/Scope Perry Preschool Program also targeted SEL-related skills for preschool students, and in a follow-up study at age 40, program participants were more likely to be employed and have higher earnings than the control group (Belfield et al., 2006). In addition, participants had fewer lifetime violent crime arrests and lower rates of incarceration at the age of 40 (Belfield et al., 2006).

Over the past 2 decades, there has been a surge of research examining the effectiveness of SEL programs. Durlak et al. (2011) summarized findings from 213 evaluations of SEL programs, 120 of which included students in the elementary grades and 99 in urban areas. Results showed evidence of improvement as a result of SEL programs, with effect sizes (ES; Hedge's g) ranging from 0.22 to 0.57. The strongest effects were found for SEL skills (ES = 0.57) and academic performance (ES = 0.27). Taylor and colleagues examined the follow-up effects (6 months or more postintervention) of 82 SEL programs, 31 of which were in elementary grades (primarily grades 4 and 5), 14 were predominantly minority students, 14 were predominantly low-income students, and 41 were in urban areas (Taylor et al., 2017). Again, significant favorable effects were found in all outcome areas and were strongest for SEL skills (ES = 0.23) and academic performance (ES = 0.33).

Though there is a wealth of research on the impact of SEL programs, there is still a need to demonstrate effectiveness of these programs across diverse (e.g., low-income, minority) populations. Farahmand et al. (2011) reviewed 19 school-based mental health and behavioral programs in low-income and urban areas (11 in elementary school) and found significant favorable effects on social skills (ES = 0.31), internalizing behaviors (ES = 0.28), and academics (ES = 0.24). Racially diverse elementary students (45% of whom qualified for free/reduced lunch) participating in an after-school positive youth development (PYD) focused program experienced improvements in the areas of competency, connection, and caring toward others (Smith et al., 2017). The present study contributes to this growing research by evaluating the effectiveness of a school-based program targeting social-emotional skills in late elementary school (grades 3–5) in a low-income, urban, minority population. Further, the present study reports on outcomes in multiple facets of students' lives: (*a*) PYD, (*b*) emotional health, (*c*) self-esteem, (*d*) health behaviors, (*e*) problem behaviors, (*f*) environmental climate, and (*g*) academics.

Positive Action Program

Positive Action (PA) is a comprehensive, universal, school-based social-emotional and character development (SECD) pre-K–12 classroom-based curriculum (Flay &

Allred, 2010). The PA program content and approach is consistent with integrative and social-ecological theories of health and well-being such as the theory of triadic influence (TTI; Flay & Petraitis, 1994; Flay et al., 2009). TTI consists of three streams of influence: intrapersonal (e.g., biology, personality), social (e.g., social situation such as school), and cultural (e.g., laws, regulations). These streams function across three tiers of causation: proximal (e.g., emotions, cognition), distal (e.g., expectations), and ultimate (e.g., underlying causes). Taken together, these streams and levels create an interconnected web of factors that influence our behavior. These streams of influence are consistent with the ecological rings of socio-ecological models (e.g., Bronfenbrenner, 1977; McLeroy et al., 1988), which theorize rings of influence (individual, interpersonal/social, institutional, community, and societal), and the interaction across these rings influences our development. In addition, TTI considers both cognitive and affective processes within each stream of influence. Specifically, the program emphasizes building students' skills to make responsible decisions, solve problems effectively, recognize and manage their emotions, appreciate the perspectives of others, handle interpersonal situations effectively, be honest with themselves and others, and establish positive goals (Flay & Allred, 2010; Snyder & Flay, 2012).

The PA program's sequenced classroom curriculum consists of about 140 15-minute, age-appropriate lessons per grade taught 4 days per week for grades pre-K–6. The curriculum is divided into six units, each varying in the number of lessons (see Table 1). In PA, the "Thoughts-Actions-Feelings about Self" circle illustrates a self-reinforcing process that students learn about across these different units. According to this, thoughts lead to actions, which lead to feelings about oneself—a cycle that can be positive or negative (Flay & Allred, 2010). Units 3–6 focus heavily on learning and using social and emotional positive actions, with the goal of providing a strong foundation of these skills and behaviors for students. Teaching methods include role modeling

Table 1. Overview of Positive Action (PA) Unit Themes

Unit 1	Philosophy and Thoughts-Actions-Feelings Circle
	- Introduction to the PA intuitive philosophy
	- Discussion of differences between negative and positive actions
	- A review self-concept and the role of self, peers, and family
Unit 2	Physical and Intellectual Positive Actions
	- Identification of and practice in physical positive actions (exercising, healthy eating, dental hygiene, getting enough sleep, etc.)
	- Identification of and practice in intellectual positive actions (making good decisions, being motivated to learn, problem-solving, valuing learning, etc.)
Unit 3	Managing Yourself Using Social and Emotional Positive Actions
	- Identification of personal resources
	- Understanding that how we manage ourselves is a choice
	- Strategies for managing thoughts, actions, feelings, energy, etc.
Unit 4	Getting Along with Others Using Social and Emotional Positive Actions
	- How to treat others respectfully, cooperate, avoid bullying, and show appreciation, empathy, fairness, and kindness
Unit 5	Being Honest with Yourself and Others Using Social and Emotional Positive Actions
	- Discussion of the importance of telling the truth
	- Defining self-honesty
	- Strategies for honesty and accepting responsibility for actions
Unit 6	Improving Yourself Continually Using Social and Emotional Positive Actions
	- Helping children set physical, intellectual, social, and emotional goals
	- Reinforcing all PA concepts

the use of positive behaviors and use of the suggested strategies and activities. Teachers guide students to identify and practice positive behaviors in the physical, intellectual, social, and emotional areas of their lives, and students are given opportunities to experience how they feel about themselves when making positive choices (Ji et al., 2005). The recursive nature of the curriculum means that students are receiving this same message each year from teachers utilizing curriculum kits that are differentiated by grade and age appropriateness. The activities and content are scaffolded by grade level to build upon previous years' understandings, thus deepening students' understanding of the six units and key components of the program.

As part of the program, teachers are provided with a detailed guide to the alignment of program lessons with instructional standards adopted in their state. The program also includes teacher kits for every classroom, as well as components focused on teacher training, counselor and family training, and school-wide climate development. Supporting materials include posters, tokens, and certificates to encourage positive behavior, as well as information on conducting assemblies, creating PA newsletters, and establishing a PA committee. The counselor's kit provides resources for school counselors to help develop positive actions with higher-risk students (Snyder, Acock, et al., 2012).

Previous quasi-experimental and experimental studies have shown the effects of PA on a range of outcomes at the end of grade 8, such as academic performance, substance use and other problem behaviors, health behaviors, emotional health, and PYD that align with the units in Table 1 (e.g., Bavarian et al., 2013; Bavarian, Lewis, Acock, et al., 2016; Duncan et al., 2019; Lewis et al., 2016; Lewis, DuBois, et al., 2013; Lewis, Schure, et al., 2013; Silverthorn et al., 2017; Stalker et al., 2018). Although many of these studies examined the long-term effects of PA from elementary school to middle school or high school, fewer studies have explored the effects of PA in elementary school grades (i.e., K–5). Therefore, our current knowledge about whether the program can be effective in a shorter time frame is limited. Using the same data as the present study, Li et al. (2011) found that fifth-grade students in PA experienced fewer substance use and violence-related behaviors, as well as fewer bullying and disruptive behaviors. Using data from three different evaluations of the program, Washburn et al. (2011) examined the effects of PA on character development of students in elementary school from three states. This study found PA to mitigate the decline in character development for students in PA schools.

The present study examines the effects of the program on seven content areas and previously unreported outcomes in grades 3–5: (*a*) PYD, (*b*) emotional health, (*c*) self-esteem, (*d*) health behaviors, (*e*) problem behaviors, (*f*) environmental climate, and (*g*) academics. Based on prior findings, we hypothesized that by the end of grade 5, students in PA schools would have more positive outcomes than students in non-PA schools.

Method

Design and Sample

The design and sample of the study are detailed elsewhere (Lewis et al., 2017). The 14 schools participating in the study were drawn from 483 K–6 and K–8 Chicago

Public Schools. To be eligible for inclusion in the study, the following criteria were used for each school: 50–140 students per grade level with student mobility below 40%, more than 50% of students from low-income backgrounds, and less than 50% of students passed state achievement tests (Ji et al., 2008). In addition, each school needed to be community based, meaning that enrollment was drawn from the community in which the school was located (Ji et al., 2008). Sixty-eight schools met this eligibility criteria, of which 18 agreed to participate, and the seven best-matched pairs were selected for participation (Ji et al., 2008; Schochet & Novak, 2003). Matching variables were racial demographic, percentage of students that met or exceeded state achievement tests, attendance and truancy rates, percentage of students receiving free or reduced lunch, mobility of students, number of students per grade, percentage of parents involved in school activities, percentage of teachers who met minimal teaching standards, and crime rate (Lewis et al., 2017). The seven pairs were recruited for participation. These pairs matched the demographic distribution across the school district. A series of *t* tests revealed that the PA and control schools were not significantly different from each other on any of the matching variables at baseline or at several other points during the study (Lewis et al., 2017) and that these schools as a group did not differ significantly from the remainder of the 68 schools eligible for the study (Flay, 2012; Ji et al., 2008).

All teachers in the current study received 2–3 hours of PA training at the beginning of the school year (Lewis et al., 2017). Each subsequent year, there were 2 hours of annual training, with additional training for key staff members on the tenets and implementation of the school-wide components. The PA research team also held consultations with school administrators each year and provided additional workshops in the second and third years of the study for teachers of the cohort students (Li et al., 2011).

The trial was longitudinal with a place-focused, intent-to-treat design (Vuchinich et al., 2012). Specifically, a grade cohort of students in the seven matched pairs of schools was followed, beginning in grade 3 (fall 2004) and at seven additional times (waves) over 6 years. The present study focuses on data collected at five time points: fall 2004 (beginning of grade 3), spring 2005 (end of grade 3), fall 2005 (beginning of grade 4), spring 2006 (end of grade 4), and spring 2007 (end of grade 5; Waves 1–5).[1] Parental consent and student assent were obtained before students, parents, or teachers completed surveys when students were in grade 3. Seventy-nine percent of parents provided consent at baseline, and consent rates ranged from 65% to 78% for Waves 2–5. Students joining the study at later waves were consented at that time.

The total number of students enrolled in the study across all five waves was 930, of whom 53% were female, 50% were African American, 28% Hispanic, 7% White, and 14% other (e.g., Asian, and Native American, and "Other"). The average number of waves per student was 2.95, reflective of the high mobility of this population. Across the study, the average percentage of students that qualified for free or reduced lunch in study schools was 86.47%. More than half (55.4%) of the sample had a household income of less than $20,000 (Social and Character Development Research Consortium, 2010). With respect to maintenance of the baseline sample size, 515 students were present at Wave 5 (82% of the Wave 1 sample). The place-focused intent-to-treat design allows for this kind of mobility as late entrants to the trial are included in the study (Vuchinich et al., 2012).

Implementation

Fidelity of implementation was assessed using several sources of data, including teacher reports of number of program activities delivered in the classroom as well as reports of both the school staff person overseeing implementation and the member of the research team who provided technical assistance to treatment schools regarding implementation. In general, there was variability between schools in implementation, especially in the initial years, with improvements over the course of the trial (Bickman et al., 2009). In Waves 1–5, the average number of lessons taught per week was 3.59 (range 0–5), and the average quality of delivery was 2.90 (range 2–4; Malloy et al., 2015). Students also reported their overall satisfaction with the program. The mean rating ranged from 3.28 to 3.61 (minimum = 1, maximum = 4) across the trial.

Data Collection Procedures

Student surveys were administered by research staff during class time. During Waves 1 through 5, research staff read survey instructions and items aloud. In general, most survey questions were on a 4-point Likert scale (e.g., 1 = NO!, 2 = no, 3 = yes, 4 = YES! or 1 = None of the time, 2 = Some of the time, 3 = Most of the time, 4 = All of the time), though some measures were binary (e.g., "yes" or "no"). One set of questions (problem-solving) asked students to select the most appropriate response (from five choices) after reading a scenario that involved conflict between two or more students.

Measures

Seven content areas were measured: (*a*) PYD, (*b*) emotional health, (*c*) self-esteem, (*d*) health behaviors, (*e*) problem behaviors, (*f*) environmental climate, and (*g*) academics. Detailed information about each measure, all of which are student self-report, is available online at https://www.boisestate.edu/education-ipa/about-the-project/about-the-data/ and in the prior articles that analyzed data for middle school effects (i.e., using all 8 waves of data). Table 2 outlines example outcomes and survey questions within each content area as well as the article that describes middle school effects of the program.

Prior studies examined elementary school effects on five outcomes: general character (Washburn et al., 2011), and substance use, violence, bullying, and disruptive behaviors (Li et al., 2011). Therefore, these outcomes are not included in this article.

Analyses

All analyses are consistent with prior papers that analyzed data from Waves 1 through 8. Analyses were conducted using Stata 14 and M*plus* version 7. Primary analyses consisted of estimating three-level growth curve models (waves of observations nested in students nested in schools) that tested whether the PA intervention had a beneficial effect on measures from third to fifth grade. This approach allows for an analysis of the multiple waves of available data while taking into account individual variation across students as well as the trajectory of change over time.

Table 2. Summary of Positive Action Content Areas and Example Outcomes

Content Area	Example Outcomes	Example Items	Middle School Effects Paper	Effect Size Range
Positive youth development	Empathy, prosocial interactions, self-control, problem-solving	1) I do things that are good for the group. 2) I apologize when I have done something wrong.	Lewis et al., 2016	.05–.78
Emotional health	Life satisfaction, anxiety, depression	1) I have a good life. 2) I often worry about something bad happening to me.	Lewis, DuBois, et al., 2013	.13–.26
Self-esteem	Peer, school, adaptive and maladaptive processes	1) I am as good a student as I would like to be. 2) I have a hard time seeing good things about myself.	Silverthorn et al., 2017	.02–.46
Health behaviors	Hygiene, healthy food choices, sleep	1) I eat fresh fruits and vegetables. 2) I go to bed by 9:00 on school nights.	Bavarian, Lewis, Acock, et al., 2016	.19–.48
Problem behaviors	Substance use, bullying, aggressive behaviors	1) [Have you ever . . .] Smoked a cigarette (or used some other form of tobacco)? 2) It is OK to yell at others and say bad things?	Lewis, Schure, et al., 2013	.26–.68
Environmental climate	Attachment to peers, rewards for prosocial behaviors from teachers and parents, neighborhood	1) My parents tell me that they are proud of me. 2) People in my neighborhood work together to get things done.	Bavarian, Lewis, Silverthorn, et al., 2016	.01–.85
Academics	Self-reported grades, disaffection with learning	1) I don't try very hard in school. 2) In class, I only work as much as I have to so that I don't get in trouble.	Bavarian et al., 2013	.02–.78

Note.—Effect sizes are absolute values.

The varying distributions of the measures were taken into account in the specification of the models. Stata's version 14 "xttobit" command was used for outcomes that had a generally normal distribution but excess frequencies of the highest or lowest scores (i.e., ceiling or floor effects). This typically indicates that a normal distribution would have been possible had more extreme item options been used, but the higher scores were censored due to the response options. The "censored" regression tobit model in "xttobit" provides the most accurate statistical specification for such outcomes. Stata's "xtmixed" command was used for normally distributed outcomes, "xtmelogit" for binary outcomes, and "xtmepoisson" for count outcomes. These latter commands allowed for three-level model estimation (waves of observation within students within schools).

For the growth curve analysis of each measure, we first estimated a random-intercept model including condition (i.e., PA or control school), time (measured as study duration in years), condition by time (condition × time), and quadratic terms for time and the interaction of condition by time (time² and condition × time², respectively), expressed as:

$$\widehat{Y}_{tij} = \beta_0 + \beta_1\left(\text{condition}_j\right) + \beta_2\left(\text{time}_{tij}\right) + \beta_3\left(\text{condition}_j \times \text{ttime}_{tij}\right) + \zeta_j + \zeta_{ij} + \varepsilon_{tij},$$

where $\widehat{Y}_{tij}$ is the estimated score on the outcome at time t (Waves 1–5), for student i, in school j. Condition was a binary variable at the school level (level 3), with 0 indicating control status and 1 indicating receipt of PA. Time was measured as years since beginning of program implementation to more accurately reflect the data collection times, rather than treating each time point as equally spaced, which was a total of 2.58 years by the end of grade 5. Table 3 shows the data collection time points and how time was coded for each. The effect of the intervention was tested with the statistical significance of the β_3 coefficient. This indicated if the students in the PA schools changed differently over time than those in the control schools, and whether this was in the predicted direction. The ζ_j term represents the deviation of a school's mean score from the mean score for all schools. The ζ_{ij} term represents the deviation of each student's score from their school's mean. The ε_{tij} term represents the residual at each wave. Quadratic terms (β_4 for $time_{tij}^2$ and β_5 for condition × $time_{tij}^2$) were included initially to test for nonlinear change but were found to lack statistical significance and thus dropped from the final models. For the three-level model, this analysis was conducted by adding tests for whether the trajectory of change differed across students (i.e., a random coefficient model; ζ_{1ij} for $time_{tij}$). A likelihood-ratio test was performed to determine whether the random coefficient model provided a better fit than the random intercept model (Rabe-Hesketh & Skrondal, 2008). Model estimates for the better-fitting models are reported in the appropriate tables. Censored ("xttobit") models did not allow for random coefficient models and thus are all random intercept models. For all analyses, missing values were handled using full information maximum likelihood estimation (Enders & Bandalos, 2001).

Effect sizes for continuous measures in the form of standardized mean differences were computed using estimated means at baseline and study end point from fitted models and observed standard deviations (Lipsey & Wilson, 2001), and using the Cox transformation in the case of binary outcomes (Sánchez-Meca et al., 2003). Therefore, the effect sizes are the standardized mean difference effect sizes between groups and represent the difference between PA and control school students at study end point based on the condition × time effect. Effect sizes were calculated by first entering the model estimates into the equation above to get estimated differences in the treatment and control group means at baseline and at Wave 5. Then, the baseline difference between means was subtracted from the difference between treatment and control at Wave 5. The resulting number was divided by the pooled standard deviation at baseline to get the effect size (Lipsey & Wilson, 2001). For binary outcomes, we took the natural log of the odds ratio coefficient for the condition × time effect to get the unstandardized b (logit). We did this for baseline and Wave 5. The Wave 5 coefficient was multiplied by 2.58 to indicate the time since baseline. The baseline

Table 3. Data Collection Time Points

Grade	Wave	Season	Year	Time (in Years)
3	1	Fall/Beginning	2004	0
3	2	Spring/End	2005	.58
4	3	Fall/Beginning	2005	1
4	4	Spring/End	2006	1.58
5	5	Spring/End	2007	2.58

coefficient was subtracted from the Wave 5 coefficient and then this difference was divided by 1.65 to derive an estimated effect size in the same standardized mean difference effect size metric as outcomes treated as continuous (see Chinn, 2000; Sánchez-Meca et al., 2003).

Some outcomes were modeled as two-level growth curves (i.e., waves of observations nested in students or waves of observations nested in schools). This is because, at the time of the original Wave 1–8 analysis, "censored" outcomes analyzed using the xttobit command could only be two-level. To remain consistent with the prior analyses and published results, Waves 1–5 models were analyzed in the same fashion. For the PYD outcomes, these analyses were modeled as waves of observations in students (in the Wave 1–8 models, sensitivity analyses were modeled as waves of observations in school; results were similar to nesting observations in students). For the self-esteem, health behavior, and academic outcomes, these analyses were modeled as waves of observations in schools. The exceptions for censored models are the environmental climate outcomes; for Waves 1–8 these outcomes were modeled as three-level using the Stata "gsem" command, which was previously unavailable for censored outcomes.

Two outcomes (anxiety and depression) were not collected until grade 5; therefore, for this study, only one wave of data was available. For these outcomes, Poisson endpoint regression models were run; all outcomes were counts of symptoms or incidents. Consistent with the prior grade 8 analyses, these regressions also included a baseline control variable of negative affect (Lewis, DuBois et al., 2013).

Results

Growth curve analyses revealed statistically significant effects in each of the content areas. When considering the percentage of outcomes within each content area with significant results, the category with the greatest percentage was PYD (69% vs. 25%–50% for all other outcomes). Table 4 presents the results of the models as well as the effect size for each outcome. Effects of PA across Waves 1–5 can be seen in the "condition × time" column. For outcomes not assessed until Wave 5 (e.g., depression), effects of PA are in the "condition" column.

For positively valenced outcomes (e.g., prosocial interactions, peer self-esteem, hygiene), the statistically significant condition × time coefficient (or odds ratio above 1, depending on the outcome) indicated that students in PA schools had a more positive trajectory over time. For example, for "prosocial interactions," students receiving PA had higher scores at grade 5 (the end of the study) than students in the control group (condition × time; $b = .09$, $p < .01$).

For negatively valenced outcomes (e.g., aggressive problem-solving, maladaptive self-esteem processes, normative beliefs supporting aggression), the negative condition × time coefficient (or odds ratio below 1, depending on the outcome) indicates that students in PA schools had lower scores than students in non-PA schools at grade 5. Again, these findings indicate that PA mitigates the increase of problem behaviors or challenges. For example, for "normative beliefs supporting aggression," students receiving PA had lower scores at grade 5 (the end of the study) than students in the control group (condition × time; $OR = .62$, $p < .01$).

Discussion

Findings from the present study demonstrate the effects of the PA SEL curriculum when delivered within a low-income, urban, minority elementary school setting. Consistent with prior research, results showed that students in PA schools had more positive outcomes than students in non-PA schools. There were significant program effects for at least one outcome in every content area; however, the PYD content area had the largest percentage of indicators to show relative improvement. These PYD outcomes are most closely aligned with the underlying theory of PA, especially Units 3–6 on learning and managing social and emotional positive actions. Thus, study findings are consistent with the theory that PA first builds SECD, which in turn can increase other positive outcomes, while decreasing negative outcomes. Indeed, several studies of PA have shown measures of SECD to be a mediator between PA and outcomes such as substance use (Lewis et al., 2012), emotional health (Lewis, DuBois, et al., 2013), and health behaviors (Bavarian, Lewis, Acock, et al., 2016). In addition, no negative program effects were observed for any outcome. All significant negative signs were for reductions of negative behaviors (peer group affiliation with bad friends, negative moral center, depression, anxiety, maladaptive self-esteem processes, victimization, and disaffection with learning).

Social-emotional competencies for students may be predictive of their future success. However, the National Academy of Sciences reported that although 60% of students begin school with the cognitive skills necessary for success, only 40% begin elementary school possessing the SEL skills needed to be successful (Ashdown & Bernard, 2012). Much like other subjects in school, social and emotional skills must be scaffolded for students according to students' readiness to obtain such skills, as well as their individual stage of development (Jones & Bouffard, 2012). School-wide SEL programs that recognize such differences and scaffold learning for students—based on developmental and age differences—may be especially impactful, for with maturation and experience, students can expand their repertoire of such regulatory strategies (Osher et al., 2016). The elementary years may be a particularly critical time for this to happen, because during students' transition to puberty, gray matter volume in the prefrontal cortex peaks, and there is significant reorganization of prefrontal systems, which are associated with significant changes in preadolescents' capacity for self-regulation and self-reflection (Zelazo & Carlson, 2012). In an analysis of universal interventions targeting aggressive and disruptive behavior across K–12 students, Wilson and Lipsey (2007) found that younger students showed greater program effects than older students did. Prior research has also demonstrated that SEL skills are linked to reduced likelihood of later substance use and violence, and it is therefore appropriate developmentally to target SEL skills during childhood before the onset of such behaviors (Duncan et al., 2019). Building SEL-related competencies in elementary school can help students be better prepared for these changes and may help mitigate such negative outcomes. Taken together, this demonstrates the importance of exposing students to SEL in early grades.

This study also contributes to the body of evidence of SEL programs in low-income, urban, minority settings. Positive associations have been found between early exposure to SEL-related programming and students' later academic experiences, including decreased rates of grade retention and decreased participation in remedial

Table 4. Summary of Effects on Student Behavioral and Social-Emotional
Outcomes at Grade 5

Scales	Intercept	Condition	Time	Condition × Time	Time^2	Effect Size (SD) [CI]
Positive youth development:						
Prosocial interactions	3.69	−.09	−.40***	.09**	.06**	.40 (.07) [.27–.53]
Honesty	3.70	−.14	.30***	.11**	−	.58 (.07) [.45–.71]
Self-development	3.86	−.11	.12***	.04	−	.18 (.07) [.05–.31]
Self-control	3.59	.14	.48***	.14***	.05*	.53 (.07) [.40–.66]
Respect for teacher	4.05	−.13	.29***	.09*	−	.47 (.07) [.34–.60]
Respect for parent	4.15	.17	−.24***	.12**	−	.61 (.07) [.48–.74]
Self-concept	3.57	−.07	−.09***	.05*	−	.22 (.07) [.09–.35]
Peer group affiliation— good friends	3.54	−.10	−.44***	.07$^+$	.08**	.25 (.07) [.12–.38]
Peer group affiliation— bad friends[a]	1.68	.24**	.17***	−.17***	−	−.46 (.07) [−.59 to −.33]
Aggressive problem- solving[b]	.11	.97	1.03***	.57**	.79*	−.87 (.07) [−1.01 to −.73]
Competent problem- solving[b]	66.08	.82	.26***	1.75**	1.41**	1.00 (.07) [.86–1.14]
Negative moral center	1.02	.07	.40***	−.14***	−.04$^+$	−.51 (.07) [−.64 to −.38]
Positive moral center[a]	3.63	−.15*	.11$^+$	.07*	−.07**	.27 (.07) [.14–.40]
Empathy	2.43	.04	−.21***	.01	.03***	.09 (.07) [−.04–.22]
Altruism	1.67	−.07	−.39***	.03	.08***	.09 (.07) [−.04–.22]
Self-efficacy for peer interaction	2.84	−.05	.39***	.00	−.08	.00 (.07) [−.13–.13]
Emotional health:						
Depression[c]	1.57	−.15	−	−	−	−.09 (.09) [−.27–.09]
Anxiety[c]	3.13	−.44*	−	−	−	−.21 (.09) [−.39 to −.03]
Positive affect	3.36	.03	−.09***	.03	−	.11 (.07) [−.02–.24]
Negative affect	2.02	.01	−.04*	.01	−	.03 (.07) [−.10–.16]
Life satisfaction	3.46	.06*	−.09***	.06*	−	.36 (.07) [.23–.49]
Self-esteem:						
Peer	3.79	−.16	−.11***	.08*	−	.34 (.07) [.21–.47]
School[d]	3.99	0	−.08	−.20	.06	.30 (.07) [.17–.43]
Family	4.14	−.01	−.12***	.04	−	.19 (.07) [.06–.32]
Appearance	3.61	−.04	−.10**	.07	−	−.24 (.07) [−.37 to −.11]
Sports	3.93	−.08	−.06*	.05	−	.21 (.07) [.08–.34]
Global	3.23	.01	−.00	.02	−	−.10 (.07) [−.23–.03]
Adaptive processes	3.71	−.09	−.12***	.05	−	.24 (.07) [.11–.37]
Maladaptive processes	2.35	.16*	−.09***	−.06**	−	−.25 (.07) [−.38 to −.12]
Health behaviors:						
Hygiene	4.34	−.16	.15***	.10*	−	.51 (.07) [.38–.64]
Unhealthy food	3.14	.02	.02	−.05	−	−.16 (.07) [−.29 to −.03]
Healthy food and exercise	3.45	−.03	−.29***	.06	.07**	.21 (.07) [.08–.34]
Sleep	.93	.85	.51***	1.16	−	.33 (.07) [.20–.46]
Negative behaviors:						
Normative beliefs supporting aggression[b]	.37	1.76	2.15***	.62**	−	−1.1 (.07) [−1.24 to −.96]
Environmental climate:						
Teacher attachment	3.9	−.09	−.27***	.08*	−	.29 (.07) [.16–.42]
School attachment	3.63	−.11	−.51***	.03	−	.15 (.07) [.02–.28]
Peer attachment	3.6	.07	−.07**	.03	−	.11 (.07) [−.02–.24]
Parent attachment	4.49	−.02	−.11**	.06	−	.40 (.07) [.27–.53]
Teacher rewards for prosocial behavior[a]	3.66	−.17	−.56***	.11*	−	.84 (.07) [.70–.98]
Parent rewards for prosocial behavior[a]	3.75	−.25*	−.55***	.15***	−	.52 (.07) [.39–.65]
Positive school orientation	3.08	−.06	−.60***	.07*	.11***	.24 (.07) [.11–.37]

Table 4. (*Continued*)

Scales	Intercept	Condition	Time	Condition × Time	Time²	Effect Size (*SD*) [CI]
Student perception of						
neighborhood context	2.97	−.04	−.26***	.02	.04*	.09 (.07) [−.04–.22]
Feelings of school safety	2.41	.01	.07*	.04	−	.11 (.07) [−.02–.24]
Victimization	.98	.09	−.22***	−.06*	.09***	−.02 (.07) [−.15–.11]
Academics:						
Disaffection with learning	1.79	.14	.34***	−.12**	.16***	−.41 (.07) [−.54 to −.28]
Self-report grades	7.88	−.01	−.59***	.13		.20 (.07) [.07–.33]

Note.—Effects of Positive Action (PA) over Waves 1–5 can be seen in the "Condition × Time" column. For outcomes not assessed until Wave 5 (e.g., depression), effects of PA are in the "Condition" column. The "Time" column represents the effect of time for the control condition (condition = 0), so this should not be interpreted as a trend for the overall sample. *SD* = standard deviation. CI = confidence interval.

[a] These outcomes showed significant baseline differences, consistent with previous reporting (Lewis et al., 2017). Differences favored the control group, with the exception of peer group affiliation—bad friends, which favored the PA group.

[b] These outcomes are binary and the results presented are odds ratios.

[c] These outcomes were not assessed until Wave 5.

[d] This outcome also had a significant condition × time² effect of .10, $p < .05$.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

academic services (Reynolds et al., 2001). Not only do SEL competencies affect the academic performance of students from such settings, but SEL skills and support can also serve as protective processes for these students as well (Elias & Haynes, 2008). In general, students' social and emotional development trajectories are influenced by the environments they experience (Beyer, 2017). High-poverty neighborhoods tend to have an overrepresentation of people living with mental illnesses (Chow et al., 2003), and minority populations are disproportionately affected by acts of violence (US Department of Health and Human Services, 2001). An analysis of 77 universal interventions targeting aggressive and disruptive behavior found that students from lower socioeconomic backgrounds experienced larger program effects than students from middle-class backgrounds did (Wilson & Lipsey, 2007). Furthermore, Farahmand et al.'s (2011) meta-analysis determined that although universal interventions had positive effects for low-income urban students, targeted interventions directed at students with problem behaviors specifically actually had negative effects. When delivered in low-income, minority settings, universal SEL interventions such as PA can benefit at-risk youth and have lasting impacts on the overall health of society.

Implications

Results from this study demonstrate that PA can be effective in elementary school grades, as well as in low-income, urban, minority populations. PA is an example of a comprehensive SEL curriculum seeking to target many aspects of a child's SECD, as outlined in the units in Table 1. Although these unit themes are the same for each grade level, each grade's curriculum kit is differentiated for developmental appropriateness, meaning that students were recursively taught the same key SEL concepts across their elementary years and with each grade's lessons becoming increasingly complex each year. Findings suggest that this scaffolded instruction and multiple-year duration may be key for an SEL program to have significant impacts on student SEL outcomes.

Researchers have contended that the teacher's ability to effectively implement SEL activities in the classroom is what ultimately leads to desirable student outcomes (Ee et al., 2014). However, the time and resource costs of behavioral interventions can put a burden on school staff (Foster et al., 2007), making SEL instruction challenging for schools and teachers who are already spread thin. The National Council for Accreditation of Teacher Education (2010) also determined that teacher education programs in the United States are not providing sufficient coursework for teachers in the child development sciences, and that there is often a gap between the theory and new teachers' classroom practices. A research-based program, such as PA, that provides all scoped and sequenced materials for a school ensures that school leaders and teachers can focus solely on successful implementation. Finally, PA has been shown to positively influence a variety of outcomes across different domains, preventing the need for multiple programs or interventions to address different outcomes. The comprehensive, school-wide components within the PA curriculum kits likely acted as reinforcers for this growth, as well; students were not just receiving PA lessons in their classrooms but also experiencing PA in other areas of their school life—thus helping to explain student growth in the environmental domain. Findings suggest that the student growth across such a wide range of outcomes may be indicative of the multiple program components working together.

Limitations

One limitation in this study is that the data set relies on self-reports from students. Such self-reports may be biased (Podsakoff et al., 2003). Self-reports are also susceptible to social desirability such that students may overstate their positive thoughts, feelings, and behaviors or understate their negative thoughts, feelings, and behaviors to feel as if they "fit in" with expectations of their peers and society (King & Bruner, 2000). This study did not utilize parent or teacher reports. Wigelsworth et al. (2010) point out that parents have a restricted frame of reference compared with teachers; that is, parents only see SECD and related behaviors of their child, whereas a teacher sees many children. Teachers, however, fill out surveys for many children, and measures may lose their sensitivity with the burden of completing so many surveys (Wigelsworth et al., 2010). In addition, the teachers rating the students changed every year; that is, several different teachers rated the same students through the trial. Therefore, student self-reports may be the most reliable for reporting social-emotional competencies. With respect to external validity, given the sampling design, the findings have some generalizability to low-income schools in Chicago, and perhaps to similar environments: low-income, urban, minority schools that would self-select to participate in a trial of this nature. The small number of pairs (i.e., seven) and schools (i.e., 14) limited statistical power for this study; however, evidence of significant program effects were found despite this limitation.

Future Directions

A future research study should examine which variables may act as mediators for program outcomes, helping to explain how the PA program achieves its effects. For example, prior research on PA has shown that SEL skills mediate program effects on

health behaviors (Bavarian, Lewis, Acock, et al., 2016), emotional health (Lewis, Du-Bois, et al., 2013), and substance use (Lewis et al., 2012). Other possible mediation effects include how variations in SECD student growth explain the effects of PA on student outcomes (e.g., self-esteem and academic performance), as well as changes in student perceptions of school climate.

Future research should explore for whom PA is most effective by examining program effects for different subgroups of students. It is possible that the level of PA effect on student outcomes varies among different groups of students, and identifying which indicators differentiate between students with high and low program effects could lead to a better understanding of how different students may respond to PA in their schools. For example, a possible direction is determining if PA is equally effective for students of different ethnic and demographic (e.g., gender) backgrounds, as well as whether students with differing onset and developmental pathways respond differently to PA in their schools (e.g., levels of previous substance use or violent behaviors could help explain differences in program effects). Another idea is to expand on previous PA research (Duncan et al., 2017) investigating if students who are at higher risk of negative outcomes will experience greater program effects than those who are less at risk. Such risk factors for future analyses could include those related to life circumstances (e.g., family engagement), environment (e.g., neighborhood disorder and school climate), and emotional well-being (e.g., anxiety and self-esteem). Examining the relation of such risk moderators to student outcomes will help explain how PA may be especially impactful for at-risk groups of students.

Another direction is to investigate PA effects on student outcomes within variations in program implementation at the school level (i.e., climate kits), student level (i.e., family engagement), and classroom level (i.e., teacher fidelity of implementation). For instance, how do variations in school, student, and classroom levels of implementation affect individual student effects? Examining each of these separately could help shed light on the role that each plays in the developmental trajectory of PA students. This would also help determine whether these different areas of implementation mediate and/or moderate PA effects.

Finally, future research could examine how PA schools' environment may change and evolve over time, as well as the relationship between different aspects of school climate and student outcomes. Previous research utilized student, teacher, and parent reports on different elements of school climate, including safety, well-being, involvement, satisfaction, and overall school quality, to determine that PA has a positive impact on school environment (Bavarian, Lewis, Silverthorn, et al., 2016; Snyder, Vuchinich, et al., 2012). Examining the role of climate further would help explain how a comprehensive, whole-school SEL approach may affect students' perceptions of their school's environment, shedding light on how such SEL efforts and school climate may work together to achieve program effects.

Conclusion

This study examined the impact of an SEL program on many student outcomes in elementary school. This program has been shown to be effective for improving student-level outcomes, and it includes many elements that have been put forth as key recommendations

to be a successful intervention. Effective SEL efforts systematically enhance students' social-emotional and ethical behaviors and teach students how to apply these skills in their lives, helping children learn how to set positive goals, make positive decisions, acknowledge the perspectives of others, and understand how to interact with others in an effective manner (Weissberg & O'Brien, 2004). Beneficial SEL programs are based on child development theories and provide developmentally appropriate lessons for students, with efforts that can be bolstered by the involvement of school staff and parents. Integrated SEL programs also help provide the framework and coordination to promote social, emotional, and academic growth for all students (Weissberg & O'Brien, 2004). Therefore, school and state leaders might consider prioritizing funding to implement such universal SEL programs with measured positive results, especially within our most vulnerable communities. Teachers, principals, and school districts should consider PA as a program to implement in their classrooms to help diverse students develop important SEL competencies and skills.

Notes

    1. The same cohort of students was followed through the end of grade 8 (spring 2010) for a total of eight waves.

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