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Effects of a Social-Emotional and Character Development Program on the Trajectory of Behaviors Associated with Character Development: Findings from Three Randomized Trials.

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Abstract

The effects of a school-based social-emotional and character development program, *Positive Action*, on the developmental trajectory of character-related behaviors was evaluated using data from three school-based randomized trials in elementary schools. Results come from 1) 4 years of data from students in 20 Hawai`i schools, 2) 3 years of data from students in 14 schools in Chicago and 3) 3 years of data from students in 8 schools in a southeastern state. Random intercept, multilevel, growth-curve analyses showed that students in both control and *Positive Action* schools exhibited a general decline in the number of positive behaviors associated with character that were endorsed. However, the *Positive Action* intervention significantly reduced these declines in all three trials. Taken together, these analyses 1) give insight into the normative trajectory of behaviors associated with character and 2) provide evidence for the effectiveness of *Positive Action* in helping children maintain a relatively beneficial developmental trajectory.

Key Words: School-based Intervention, Character, Randomized Trial, Trajectory of Behaviors

Introduction

Catalano et al. (2004) described the movement over the last 30 years from single-domain prevention programs focused on individual problem behaviors (drugs, delinquency, sexuality) to multiple-domain intervention programs that focus on both problem behaviors and what Catalano et al. (2004) and Flay (2002) called positive youth development. This movement from single-domain prevention to multi-domain prevention is consistent with the latest theoretical thinking in developmental (Lerner et al. 2005) and health promotion/prevention (Flay, 2000; Flay, Snyder, & Petraitis, 2009) literatures. In particular, there has been an increased 1) interest in social-emotional and character development (SECD; Elias, 2009) programs that focus on a child's social, emotional, and character development and 2) recognition that optimal development in these areas may provide the best protective factors against health-compromising and high-risk behaviors. SECD programs claim they can do more than just give a one-time boost to the number of positive behaviors associated with character development; they also claim that they can change the trajectories of character development of children.

The study of character covers multiple domains and is of interest to both theorists and prevention scientists. Recent developments include efforts to define character development within the framework of positive psychology (Parks, 2004), encouragement of character development in adolescents (Catalano et al., 2004; Lerner et al., 2005) and applications of the scientific method to better inform prevention programs that include promotion of character education (Berkowitz & Bier, 2004; CASEL, 2003). Reviews containing literature on character are found in several domains, including the academic (Eisenberg, Fabes, & Spinrad, 2006; Lerner et al., 2005), the applied (Benninga, Berkowitz, Kuehn, & Smith, 2006; CASEL, 2003), and the governmental (Catalano, Gavin & Markham, 2010; Ferber, Gaines, & Goodman; 2005).

These advances have stimulated increased interest among prevention scientists in the developmental pathway of positive behaviors associated with character from childhood into adolescence. The current research examines the developmental trajectory of positive behaviors from age 6 to 11. Previous theory and research are considered. The study reports the results of three randomized trials that test whether the *Positive Action* intervention can beneficially effect the development of positive behaviors related to character.

Eisenberg and Morris (2004) provided a review of what was known about prosocial development (a component of character development) at that time. Their main point was that, based on the increasing acquisition of cognitive tools, children should be increasing in behaviors associated with moral reasoning and prosocial development into and through adolescence. In general, the studies they reviewed (mainly cross-sectional) showed this increase of positive social behavior into and through adolescence. However, as described below, four subsequent studies using longitudinal data reported contrary results.

Kokko and collegues (2006) examined the trajectories of positive social behavior among a sample of 1,025 boys as reported by teachers between the ages of 6 and 12. The authors were surprised that the boys were found to decline or, at best, stay stable in positive social behaviors into adolescence. Nantel-Vivier et al. (2009) extended the age of observation with a cross-national comparison of 1037 boys from 10 to 15, with mother and teacher reports of prosocial behaviors for a Canadian sample and teacher and student reports for an Italian sample. Although differences existed between samples and by who reported (students, mothers, or teacher), similar declines in trajectories were observed. In 2007, Carlo and colleagues found strikingly similar results from high school student self-reports of their positive social behavior assessed between grades 7 and 12 with a sample of about 657 youth.

Lerner and colleagues (2005) discussed what they saw as inherent in the idea of positive youth development, which is roughly analogous to the view found in Catalano and colleagues (2004) and the impetuous behind SECD programs. Lerner and colleagues present five Cs (competence, confidence, connection, character, and caring) that make up their larger concept of positive youth development. Even though they specify a separate component called character, others (e.g., Peterson & Seligman, 2004) have viewed the attributes involved in the other four C's as also being part of character. Lerner and colleagues (2008) measured the five Cs in order to construct a single global measure of positive youth development. Using this global measure with a sample of 1912 youth assessed between 5th and 8th grade, they found that the general developmental trend was negative; that is, youth endorsed fewer positive outcomes as they got older.

The results of the preceding studies (Lerner et al., 2008; Kokko et al., 2006; Nantel-Vivier et al.; Carlo et al., 2007) all indicate a decline in positive behaviors associated with character from middle childhood through the end of adolescence. There has been little discussion of reasons for this decline in the literature. Phelps, Zimmerman, Warren, Jeličić, von Eye, and Lerner (2009) discussed the decline but state that they plan on watching it for a few more years in order to understand it better. Kokko et al. and Nantel-Vivier et al. suggested that more work is needed to understand the decline. Carlo et al. gave several possible reasons for the decline, all of which focused on the environment surrounding boys in school.

Positive Action is one widely implemented social and character development program for school-age youth. Grounded in a broad theory of self-concept (Purkey, 1984), *Positive Action* was developed and revised by educational psychologist Carol Gerber Allred from 1977 to the present, with frequent additions and revisions over the years based on formative and monitoring

data. Most recently, the application of the Theory of Triadic Influence (Flay, Snyder, & Petraitis, 2009) has moved *Positive Action* in the direction of characterization as a Social-Emotional and Character Development program (Flay & Allred, 2010). The combination of the work by Purkey and Flay et al. posits the *Positive Action* program's influence on character as being through the reinforcement of positive behaviors associated with character development. Children begin a cycle of reinforcement in which positive thoughts lead to positive behaviors that generate positive feelings about self, which, in turn, lead to more positive thoughts and behaviors. More detailed descriptions of the *Positive Action* program are available at www.positiveaction.net and in the work of Flay, Allred, and Ordway (2001) and Flay and Allred (2010). The *Positive Action* program has already been shown to be effective in enhancing academic achievement and school involvement, while reducing disciplinary referrals, substance use, risky sexual behavior and violence (Beets et al. 2009; Flay et al. 2001; Flay and Allred 2003; Li et al. under review, Snyder et al., 2010). However, the effects of *Positive Action* on character development are as yet unreported.

The goals of the present study are two-fold: 1) to provide new information that can help reconcile conflicting findings regarding normative changes in positive behaviors associated with social-emotional and character development during middle childhood (ages 6 to 11 years), and 2) examine the effects of *Positive Action* on behaviors associated with socio-emotional and character development. Based on the recent longitudinal studies reviewed above, we expected to find decreasing reports of positive behaviors in each of three randomized trials of the *Positive Action* program. However, we also expected that children receiving the *Positive Action* program would have significantly mitigated declines in positive behavior.

In the three different randomized trials, a global measure of positive behaviors associated with social-emotional and character development was collected across varying lengths of times. We present the method, results, and discussion for each trial separately, followed by a final conclusion. Random-intercept multilevel growth models were performed to establish the normative developmental trajectory of positive behavior in each of the three trials as well as to provide tests of the effectiveness of the *Positive Action* program. Although a single model was hypothesized for all three sites, each site was run separately so that any differences in the linear model for each site might be explored without an overabundance of interactions.

Hawai`i Trial

Method

The Hawai`i randomized trial of the *Positive Action* program took place in 20 public elementary schools on three islands in the unified Hawai`i school district that encompasses the entire state. Student self-reports of their behavior were collected at five time points, on each of two cohorts (first graders and second graders at the start of the project). Data were collected for baseline at the end of the academic school year in half of both the control and PA schools and at the beginning of the next school year in the others. The remaining 4 waves of data were collected at the next four springs. Data were collected by research, rather than school, staff. The teachers within each of the ten program schools received the *Positive Action* training from the program developer. Brief update trainings were repeated at the start of each subsequent year in the program schools. The teachers in the ten control schools received no *Positive Action* training and were asked to not implement the program.

The schools receiving the *Positive Action* program were randomly assigned from matched pairs based on a multivariate index of factors related to academic risk (c.f., Dent et al.,

1993). This matching utilized the following school-level characteristics: proportion of students receiving free or reduced price lunches, percent stability of student enrollment, achievement scores on standardized tests, ethnic distribution, student-teacher ratios, school size, and school-level problem behaviors such as suspensions (see Beets, et al. 2009, for details). There were no significant differences between *Positive Action* schools and control schools at baseline on any of the variables used to match schools (Beets, et al., 2009).

Students were asked a series of questions about their behaviors and feelings associated with those behaviors. For this analysis, only the behavioral questions were considered. The purpose of these items was to collect information on the positive behaviors associated with character. This idea is more fully developed by Ji et al. (under review) in the development of a Student Character and Social Development Scale (SCDS) using data from the Chicago trial. However, not all of the items that were ultimately accepted as part of the SCDS, were available across all three sites; in each site the positively worded items that tapped the conceptualization of character underlying the SCDS were identified and utilized in the present analyses (16 items for Hawai`i). Examples included "Do you work hard in school?" "Do you respect others?" and "Do you try to be the best you can be?"

The same 16 behavior items were asked of students across all waves of data collection in Hawai`i. However, the response options differed between years. In grades 1-3 the items had three response options: "*no",* "*sometimes"*, and "*yes"*. For grades 4 and 5 four response options were used: "*none of the time*", "*some of the time*", "*most of the time",* or "*all of the time"*. To obtain consistent response options across time for the student reports, we coded the items as 1 if they answered *yes* for the three response-option scales, or *all of the time* for the four response-option scales. The sum of these items was then transformed into a POMP (percent of maximum

possible; Cohen, Cohen, Aiken & West, 1999) score so that student reports from the three studies would have the same range of 0-100. This transformation allows the results to be directly compared even with different numbers of items across sites and provides a global measure of positive behavior. An alpha was calculated for the dichotomized scale for each year; for the Hawai`i data, they were 0.74, 0.79, 0.83, 0.75 and 0.85 for waves 1-5, respectively.

We utilized a longitudinal growth-curve model with a random intercept at the student and school level. This model takes into account similarity of scores within children and within schools. Given our three-level model (observations nested in students nested in schools), two ICC values were obtained for student reports. One ICC is the proportion of variance due to schools and the other is the proportion of variance within children across time (see Table 1). As is typically the case, variance due to child (148.94; s.e. = 8.23) was much larger than variance due to school (4.433; s.e. = 2.15). However, the school ICC (see Table 1) was large enough to justify a three-level model of observations nested in children nested in schools.

The multilevel model adjusting for both individual- and school-level effects was estimated with Stata's xtmixed command using a full-information, maximum-likelihood estimator. Because age and gender each have been indicated to be important predictors of behavior at this age (Eisenberg, Fabes, & Spinrad, 2006), cohort and gender were included in the model. Our random intercept model can be expressed as

$$Y=\beta 0+\beta 1\text{condition}k+\beta 2\text{gender}jk+\beta 3\text{cohort}jk+\beta 4\text{year}ijk+\beta 5\text{year}ijk2$$
$$+\beta 6\text{year}ijk*\text{condition}k+\beta 7\text{year}ijk2*\text{condition}k+\zeta k+\zeta jk+\varepsilon ijk$$

where $\hat{Y}$ is the estimated POMP score for each child and i represents an observation at wave i (waves 0-4), j represents a child, and k represents a school. ζ_k represents the variance of the random intercept for each school or the deviation of the score for each school from the overall

mean score as represented by the intercept, β_0, and ζ_{jk} represents the variance of the random intercept for children in each school and the ε_{ijk} represents the residual at each wave (thus allowing transitory deviations at each wave from the predicted value of Y).

We hypothesized that β_1 for condition, which represents the initial difference between the children in the program and control conditions (condition was coded 0 for control and 1 for *Positive Action*), would not be significant because of randomization. It is included to verify the randomization and to adjust for any possible baseline differences. We hypothesized that β_2 would be significant and negative because boys were expected to report fewer positive behaviors and gender was coded as a 1 for boys and a 0 for girls (Eisenberg, Fabes, & Spinrad, 2006). β_3 was expected to be significant and negative because children in the older cohort were expected to have fewer positive behaviors initially than children in the younger cohort and cohort was coded 0 or 1 for the younger or older cohort. β_4 and β_5 test for the normative trajectory of positive behaviors. We hypothesized that β_4 would be significant; that is, we expected there to be a negative trajectory overall. We also included the quadratic term, β_5, to test whether the linear trajectory accelerated or leveled off significantly over time.

The inclusion of the interaction between β_6, (condition and year) and β_7 (condition and the quadratic term) allow our models flexibility in estimating possible differences in linear and quadratic components of trajectories associated with whether a student was attending a school implementing the *Positive Action* program. Our study hypotheses predicted a positive interaction between year and condition as well as between year and condition squared (i.e., those children who were in the *Positive Action* condition would report greater increases in positive behaviors relative to the children in the control condition over time and the rate of this increase would grow over time).

Because some children changed schools, were sometimes absent for an administration of the questionnaire, or refused to answer selected items, there were missing data at all waves. For student reports of their own behavior, 1,544 students responded at the first wave, 2,116 at the second wave, 1,498 at the third wave, 1,493 at the fourth wave and 696 at the final wave. The sharp drop at the final wave was because 6 of the 20 schools (3 control and 3 *Positive Action*) did not contain sixth grade and the entire older cohort in those schools was lost to follow-up. We had a total of 7,347 observations from 2,646 children distributed over 20 schools, with an average of 2.8 waves of data for each student. To deal with missing data, full-information, maximum-likelihood estimation was used with the xtmixed command. Given that parents, not students, usually decide if a student is in a school or not, it is likely that the missing at random assumption of full-information, maximum-likelihood estimation was met (Brown, et al. 2008; Olsen & Schafer, 2001).

Results

The random intercept multilevel model of student reports of behavior had an overall Wald χ^2 (7) = 1,227.18, $p < .001$. The variance at the school level and the individual level, as reported in Table 1, were both substantial and the likelihood ratio χ^2 for the multilevel model versus an OLS regression with 2 degrees of freedom was 669.84, $p < .001$. The Wald χ^2 test is similar to an overall model F-test and gives an idea of overall model fit. The likelihood ratio χ^2 supports the use of a multilevel model.

The main effect of condition (at baseline) was significant ($B_1 = 3.73$, $p < 0.05$) (see Table 1). The significant baseline difference in reports of positive behavior is most likely an artifact of fitting a quadratic model, as the baseline differences in behavior were not different using a simple t-test ($M_{\text{control}} = 67.57$, $M_{\text{PA}} = 68.07$, $t(1576) = –0.29$, *ns*). As hypothesized, boys reported

significantly fewer positive behaviors than girls ($B_2 = –8.14$, $p < 0.001$). The children from the older cohort also endorsed fewer positive behaviors ($B_3 = –7.05$, $p < 0.001$). Contrary to our hypotheses, the main effect of year was not significant ($B_4 = –0.00$, $p > 0.05$). The year squared term was significant and negative ($B_5 = –1.72$, $p < 0.001$) indicating an accelerating decline in the endorsement of positive behaviors during elementary school.

Findings further revealed, as hypothesized, a significant interaction between year and condition ($B_6 = –4.45$, $p < .05$) and between year square and condition ($B_7 = 1.48$, $p < .001$). The year by condition interaction is the slope of the curve at year zero, with the year square by condition interaction slowing that decline over time.

[Table 1 About Here]

The baseline mean on the endorsement of positive behaviors in PA and control schools was a close match (68.07 and 67.57, respectively). By the fifth wave there had been a substantial reduction in the number of positive items the children in both sets of schools endorsed with sample means of 50.88 and 37.23 for the children in the *Positive Action* and control schools, respectively. An estimate of the size of the program effect (a simple Cohen's d for the final wave controlling for baseline differences) was 0.46 (see table 1).

Discussion

Figure 1 (first panel) shows these findings graphically. As hypothesized, the number of positive behaviors endorsed decreased from year to year and this decrease was partially mitigated by the significant positive effect of the *Positive Action* program. We also see that, even though the main effect of condition was significant, the accelerating decline of the control group, coupled with the effects of *Positive Action,* created a much larger gap by the end of the study. It appears that the effect of *Positive Action* here was to eliminate the acceleration in the decline of

positive behaviors. This is best seen in the figure as the linear nature of the *Positive Action* line compared with the quadratic curve of the control line. Even with *Positive Action,* there was a steady decline with fewer positive behaviors expected each year.

The Hawai`i student reports of positive behaviors support the most current research on positive behaviors associated with character, namely that the prevalence of these behaviors falls as children enter adolescence (Kokko, Tremblay, et al. 2006; Carlo, Crockett, et al. 2007). They also show that a global measure of positive behaviors declines from 1st grade to 6th grade, extending backwards the work done by Lerner, et al. (2008) on older children. These data also provide new evidence for the effectiveness of *Positive Action*. In particular, results indicated that, in addition to reducing health-compromising and high-risk behaviors (Beets et al., 2009), *Positive Action* also mitigates the decline of positive behaviors associated with character.

[Figure 1 About Here]

Chicago Trial

Methods

A second matched-pair randomized study, conducted in 14 elementary schools in the Chicago Public School system, provided five data points across 3-years where data were collected from a single cohort: beginning and end of grades 3 and 4 and the end of grade 5. As in the Hawai`i trial, the teachers within each of the seven program schools received the *Positive Action* training from the program developer and brief update trainings were repeated at the start of each subsequent year. The teachers in the seven control schools received no *Positive Action* training and were asked not to implement the program. The schools in Chicago were matched and randomized in a similar fashion to those in the Hawai`i trial (Li et al., under review). As in

Hawai`i there were no significant differences at baseline on any of the variables used for matching (Ji et al., 2008; Li et al., under review).

The same method of creating a global measure of positive behaviors using a POMP score was used as in the Hawai`i trial. A total of 28 behavior items were asked that included 12 items common to the Hawai`i trial, each with the same four response options: "*none of the time*", "*some of the time*", "*most of the time",* or "*all of the time"*. Although the problem of different response options over time did not exist in Chicago as it did Hawai`i, and all items of the SCDS were present, to stay consistent across trials the 28 items were coded 1 for or "*all of the time"* and 0 otherwise. The 28 items were then summed and transformed into a POMP score. Alphas for the dichotomized scale were 0.91, 0.93, 0.94, 0.95 and 0.94 for waves 1-5, respectively.

We used the same multilevel growth model with the Chicago data as the Hawai`i data, but without the cohort variable (as only a single cohort was followed in Chicago). β_5, the year square parameter, and β_7, the year square by condition parameter, were not significant, and the model was rerun without the quadratic effects. A log-likelihood test showed that the model did not significantly degrade with the omission of these two parameters (Log-likelihood $\chi^2(2) = 0.98$, *ns*).

As in Hawai`i, missing data were handled through use of full-information, maximum-likelihood estimation. Chicago had 593 students at the first wave of data collection, 557 at the second wave, 547 at the third wave, 512 at the fourth wave and 497 at the final wave. For the positive behaviors in Chicago, we had a total of 2,704 observations from 936 children distributed over 14 schools, with an average of 2.9 waves of data for each student. Since the data were collected annually in Hawai`i, but biannually in Chicago, the time variable for Chicago was

changed to reflect the difference (0, 1, 2, 3, 4 years in Hawai`i, and 0, .5, 1, 1.5, 2.5 years in Chicago).

Results

The results for positive behavior had an overall model Wald $\chi^2(4) = 443.07$, $p < 001$, supporting the overall significance of the model. The multilevel model also fit better than an OLS regression model, $\chi^2(2) = 630.85$, $p < .001$. Taken together, we have a multilevel model that reduces variation in the outcome and performs better than an OLS regression.

The main effect of condition was negative ($B_1 = –6.77$, $p < .05$) indicating that, despite random assignment of schools, students in *Positive Action* schools started with a lower POMP score at baseline than students in control schools. As hypothesized, boys reported significantly fewer positive behaviors than girls ($B_2 = –7.06$, $p < 0.001$). The main effect of year was negative and significant ($B_4 = –12.36$, $p < .001$), indicating the predicted general decline in positive behaviors. The year by condition interaction was significant and positive ($B_6 = 4.62$, $p < 0.001$) as predicted as well, indicating a positive program effect.

Children in *Positive Action* schools had a mean score of 67.64 at baseline and children in control schools had a mean of 72.38. By the final wave of the study, children in control schools had a mean score of 42.23, and children in *Positive Action* schools had a higher mean of 46.08. An estimate of the size of the program effect (a simple Cohen's d at the final wave, controlling for baseline differences) was 0.39.

Discussion

The children in Chicago *Positive Action* schools started on average lower than children in control schools but, over the course of the study, *Positive Action* children surpassed the control children and, at the end of the study, had a higher mean score than the control children, overall

replicating the findings reported from the Hawai`i trial. We see in the bottom middle panel of Figure 1 that, as in Hawai`i, the student data showed that children had a negative trajectory of positive behaviors into the beginning of adolescence. The figure also shows the ability of *Positive Action* to change the trajectory substantially. Unlike in the Hawai`i trial, neither group was accelerating in their decline.

Southeastern State Trial

Methods

The Southeastern state trial was conducted in 8 rural public elementary schools, with five age cohorts that ranged from children in kindergarten to fourth grade at wave 1. The data were collected at the end of each of three consecutive academic years. A limitation of the Southeastern state data was that the first measurement occurred at the end of the first year of implementation, so no direct baseline comparison was possible. Nonetheless, we can compare the trajectories of children in the *Positive Action* program for three years, from the end of the first year of intervention thru the end of the third year of intervention. The teachers within each of the four program schools received the *Positive Action* training from the program developer at the beginning of the project, but no follow-up trainings. The teachers in the four control schools received no *Positive Action* training and were asked not to implement the program.

The schools in the southeastern state were matched and randomized, but this was done by the school district, which has not released details of how they matched or randomized. We do have a set of baseline characteristics for the Southeastern state schools (school-level variables similar to those used in Chicago and Hawai`i trials) and Table 2 indicates that the control and *Positive Action* schools were not statistically different at the school level on any of the 7

variables tested. Unlike in the Hawai`i and Chicago trials, student data were collected by school district personnel rather than research staff.

[Table 2 About Here]

As in Chicago and Hawai`i, a set of items asking about frequency of positive behaviors associated with character were asked each year; 14 items were asked, including 12 items common across the other trials. In grades 2-4 the items had three response options: "*no",* "*sometimes"*, and "*yes"*. For fifth grade, the items had four response options: "*none of the time*", "*some of the time*", "*most of the time",* or "*all of the time"*. To allow comparison across time and consistent with the other trials, the items were dichotomized, summed and converted into a POMP score to provide a global measure of positive behavior. Alphas for the dichotomized scale were 0.71, 0.71, and 0.73, for waves 1-3, respectively.

The same initial multilevel model was utilized for the analysis of the data as in Hawai`i; however, β_7 (Year^2 X condition interaction parameter) was not significant so the model was re-estimated without this interaction term. To test the effect of these changes on model fit, a log-likelihood test was run and the model fit did not degrade significantly with the above omission (Log-likelihood $\chi^2(2) = 0.23$, $p > .05$).

The Southeastern state trial had 1,652 students at the first wave, 1,944 students at the second wave, and 1,504 students at the third wave. There were a total of 5,100 observations distributed over 8 schools for 2,610 children with an average of 2.0 waves of data for each student. As in the other trials, full maximum-likelihood estimation was used to account for missing data. Because the data from this trial did not include a baseline measurement, any results reported for baseline are extrapolated by the model.

Results

The results for positive behavior in the southeastern state had a significant overall model (Wald $\chi^2(6) = 624.97$, $p < 001$). Again, the multilevel model fit better than an OLS regression model, $\chi^2(2) = 317.63$, $p < .001$.

Because students in the Southeastern state trial were first measured at the end of the first year, but not at the baseline, the intercept is an extrapolated value. The main effect of condition (at extrapolated baseline) was not significant ($B_1 = –2.18$, $p > 0.05$). Boys reported significantly fewer positive behaviors than girls ($B_2 = –7.77$, $p < 0.001$). The children from the older cohorts endorsed fewer positive behaviors ($B_3 = –4.51$, $p < 0.001$). The year term was significant and in the hypothesized negative direction ($B_4 = –13.32$, $p < 0.001$) and the year squared term was significant and positive ($B_5 = 1.69$, $p < 0.01$), indicating a decelerating rate of decline in the endorsement of positive behaviors during elementary school. The interaction of year by condition was, as hypothesized, positive and significant, $B_6 = 2.15$, $p < 0.01$. This is the intervention effect, as the year square by condition interaction was not included in the final model.

At the end of the first year, our proxy for the baseline mean, reported levels of positive behavior were similar for children in the control and *Positive Action* schools (77.83 and 77.51, respectively). At the end of the study (third wave), the mean number of positive behaviors reported by children in the control schools dropped to 69.89 compared to 74.23 in the *Positive Action* schools. An estimate of the size of the program effect, Cohen's d at the final wave, controlling for baseline differences, was 0.22.

Discussion

The mitigation of the decline in endorsement of positive behaviors by students in the Southeastern state trial is illustrated in the lower right panel of Figure 1 and is consistent with the

results from Hawai`i and Chicago. We also have a replication of the decline in positive behaviors over time. The students in this trial started at much higher levels than in either Hawai`i or Chicago and saw decreasing declines across time. Although this trial is not as methodologically strong as the other two, the greater number of cohorts and the replication of results strengthen both the arguments that behaviors decline into adolescence and that *Positive Action* mitigates this decline.

Conclusion

Even though each trial had its own racial and socioeconomic demographics, students in each trial responded similarly to the *Positive Action* program. In each case, the children in *Positive Action* schools showed smaller declines compared with children in control schools. Thus, the *Positive Action* program prevented a significant reduction in positive behaviors.

Overall, the normative declining developmental trajectories that we found are consistent with those found by Lerner (2008) with his global measure of positive behavior, and the literature on pro-social behavior (Carlo, Crockett, et al. 2007; Kokko, Tremblay, et al. 2006; Nantel-Vivier et al. 2009). Given that each of these trials focused on schools in high risk areas (i.e. poverty), it is possible that the declines we found were driven by a combination of exposure to high-risk conditions and a lack of access to protective resources (i.e. positive role models, opportunities for constructive interactions, emotional support) as suggested (Carlo et al., 2007). Developmental theory (e.g., Bronfenbrenner, & Morris, 2006; Wiesner, Capaldi, & Patterson, 2007) generally acknowledges the impact of environments in shaping behaviors. This does not, however, mean that the more cognitive-centered theory presented by Eisenberg et al. (2006) is incorrect; it may be that the lack of resources in these areas overpowers any gains through cognitive development. More work on this hypothesis is needed.

Future research also should examine other possible causes of the variability in developmental trajectories for positive behaviors found in this and other studies. The present study showed that the *Positive Action* intervention beneficially influenced the trajectories in diverse contexts. Further work should consider other factors that may shape the levels and slopes of positive behavior. In addition it would be important to determine if there are subpopulations of children who respond differently to the intervention utilizing growth-mixture modeling to consider variation in developmental trajectories in the context of evaluating interventions such as *Positive Action* (Segawa et al., 2005).

The combination of three trials in three geographically dispersed school districts, each with diverse populations of students, provides strong evidence that the *Positive Action* program significantly reduced the normative decrease in positive behaviors associated with character as children develop from age 6 to 11 years. The demographic and cultural differences between the Hawai`i trial, the urban setting of the Chicago trial, and the more rural southeastern state trial could account for observed differences in levels and slopes of positive behaviors associated with character. Such differences in trajectories are common in the available literature on the normative trajectories of positive behaviors (Carlo, Crockett, et al. 2007; Kokko, Tremblay, et al. 2006; Nantel-Vivier et al. 2009), but analysis of reasons for the differences is beyond the scope of this paper.

There was variation in the implementation of the intervention that may have influenced its effects. Teachers in all three trials received initial training, but the Southeastern state teachers did not receive the subsequent annual refresher training. Program effects were still evident (though smaller) in the Southeastern state, suggesting that this program's fidelity may depend, to some extent, on the consistent retraining of school staff by program staff. However, all schools

that began the trial were included in the analysis regardless of level of implementation, following intent-to-treat criteria at the school level.

Overall, this research shows the effectiveness of *Positive Action* in mitigating the decrease in self-reported positive behaviors. This study adds to the literature on preventive interventions that actively support the development of positive behavior and character. Past reports of the beneficial effects of *Positive Action* have shown effects on school-level variables, such as academic achievement (Flay, Allred, & Ordway, 2001; Flay & Allred, 2003; Snyder et al., 2010) and negative behavioral outcomes (Beets et al., 2009; Li et al., under review). However, the theoretical basis (Flay & Allred, 2010) and day-to-day protocol of the intervention focuses on promoting positive attitudes and behaviors. The reduction in negative behaviors and improvement in academic achievement is considered as a result of more positive individual development. It is clear that this approach is effective. But to better understand and demonstrate the mechanism of these beneficial effects it is essential to show that the intervention influences the development of positive behavior. This report partially fills that gap by showing the effects of *Positive Action* on positive behaviors related to character development. Further research is needed to clarify the role of positive behavior as a potential mediator for the effects of this intervention on negative outcomes and academic achievement. Nevertheless, this study provides new insights on preventive interventions that apply a comprehensive approach that includes the development of positive cognitive, emotional and behavioral characteristic in school-aged children.

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Table 1. Results for Multi-level Growth Model in Three Trials

	Hawai`i		Chicago		Southeastern State	
Predictor	B	t	B	t	B	t
Intercept	73.79	60.79***	75.27	36.27***	104.48	46.53***
Condition (PA= 1)	3.73	2.50*	–6.77	–2.46*	–2.18	–1.19
Gender (boy = 1)	–8.14	–12.18***	–7.06	–4.75***	–7.77	–11.89***
Cohort (older = 1)	–7.05	–10.46***	Na	Na	–4.51	–17.82***
Year	0.00	0.00	–12.36	–17.22***	–13.32	–6.60***
$Year^2$	–1.72	–7.02***	Na	Na	1.69	3.43**
Year X condition	–4.45	–3.68**	4.62	4.63***	2.15	3.40**
$Year^2$ X condition	1.48	4.76***	Na	Na	Na	Na
Random Effects	Variance	S.E.	Variance	S.E.	Variance	S.E.
School	4.43	2.15	14.47	9.09	2.81	1.95
Individual	148.94	8.23	335.96	23.59	127.35	8.52
Residual	351.73	7.13	395.86	13.12	270.33	7.53
ICC (school level)	0.01		0.03		0.01	
ICC (between scores)	0.29		0.43		0.34	
PA & Control Mean	11.63		10.98		4.87	
Cohen's d	0.46		0.39		0.22	

†At final wave accounting for baseline differences

Table 2. Baseline Equivalence for Schools in a Southeastern State

	Control Schools		*Positive Action Schools*		
	Mean	*SD*	*Mean*	*SD*	*p*
Enrollment	532.50	147.15	543.25	113.60	0.91
Percent Free/Reduced Lunch	61.08	10.30	70.98	14.93	0.32
Percent Special Education Programs	5.40	1.64	4.58	0.97	0.42
Percent Limited English Proficiency	31.03	4.23	32.58	4.18	0.62
Average Daily Attendance Rate	97.33	1.78	96.93	2.31	0.79
Suspensions	0.18	0.13	0.10	0.20	0.55
Retentions	3.05	1.59	2.93	2.94	0.94